

ONLINE PIANO LESSONS WITH YOUNG BEGINNER STUDENTS:

A mixed-methods approach

Supervisors:

Dr Tania Lisboa
Dr Dave Camlin
Dr George Waddell

Dainora Ivanova, Royal College of Music

Abstract

Online teaching in music performance education has experienced notable growth in recent years, driven by technological advancements, increased internet access, and a rising demand for flexible learning options. While some studies support the effectiveness of online lessons, others question their suitability. This project focused specifically on teaching and learning in the context of online piano lessons for children aged five to nine - a group often overlooked in existing research. The main aim was to explore the factors that contribute to both satisfaction and dissatisfaction with online piano lessons, as perceived by teachers, parents, and students. The study also examined which teaching practices were perceived as most effective for young beginners in an online setting and the primary reasons for offering online piano lessons in 2024. This research employed an explanatory mixed-methods design. The first phase of the project included a survey completed by 107 teachers and 45 parents. The quantitative questions were analysed using multiple regression analysis, as well as descriptive statistics methods, while the open-ended questions were analysed using content analysis. The second phase consisted of semi-structured interviews with nine teachers, five parents, and seven students. Thematic analysis was used to analyse the interviews. While the first phase focused on identifying the key factors influencing satisfaction, the second phase offered more in-depth explanations. The results indicated that children's developmental readiness—expressed through their independence and ability to sustain focus—was strongly linked to satisfaction, with lower levels associated with dissatisfaction. Other factors included parental involvement, technological issues, teacher physical absence, and both student and teacher characteristics. Teachers and parents noted that younger beginners generally benefited less than older or more experienced students from online instruction. This study offers an original contribution by providing one of the first mixed-methods investigations in this area with young beginner students, with findings that can inform teacher training and curriculum design in digital instrumental instruction.

Table of Contents

Table of Contents

Abstract	2
Table of Contents	3
List of Figures	12
List of Tables	16
Abbreviations	18
Chapter 1 Introduction	19
1.1 Background and Rationale for the Study	19
1.2 The overview of the thesis	20
Chapter 2 Literature Review	22
2.1 Introduction	22
2.1.1 Online music education: evolution, contexts, and current landscape	23
2.1.2 Technological issues and solutions in online lessons	25
2.1.3 Access to online music education	27
2.2 Instrumental music teaching in online settings	28
2.2.1 An overview of instrumental one-to-one online lessons	28
2.2.2 Skill development and acquisition	30
2.2.3 Age-related considerations.....	33
2.3 Educational foundations in instrumental and piano teaching	35
2.3.1 Piano pedagogy.....	35
2.3.2 Teaching styles and approaches	38

2.3.3 Teaching young beginner students: development, expectations, and pedagogical approaches.....	43
2.3.4 Parental involvement and support.....	46
2.4 Pedagogical approaches in online teaching	48
2.4.1 Online teaching approaches	48
2.4.2 Adaptation and innovations	51
2.4.3 Use of video recordings in asynchronous teaching.....	53
2.4.4 Teacher competencies and characteristics	55
2.5 Interpersonal aspects of teaching	57
2.5.1 Teacher and student behaviour and communication	57
2.5.2 Interpersonal interactions and relationships	59
2.5.3 Impact of teacher's physical absence	61
2.6 Student learning and motivation	63
2.6.1 Student engagement	63
2.6.2 Student motivation.....	65
2.6.3 Independence and autonomy	66
2.7 Current developments in online education	68
2.8 Feasibility and satisfaction	70
2.9 Summary and implications	72
Chapter 3 Methodology and Project Design.....	74
3.1 Introduction	74

3.2 Theoretical framework	74
3.3 Research questions.....	76
3.4 Analysis of methodologies and methods used in relevant literature.....	78
3.5 Epistemology and methodology	80
3.6 Overview of the research design and analysis	82
3.7 Research Ethics	84
3.8 Recruitment	85
3.9 Reflexivity of the researcher.....	88
Chapter 4 Research Methods	90
4.1 Introduction	90
4.2 Phase I: Data collection methods.....	90
4.2.1 Survey design.....	90
4.2.2 Survey flow	93
4.3 Participants	94
4.4 Data Preparation for analyses	102
4.4.1 Preparing data for quantitative data analysis	102
4.4.2 Missing data.....	105
4.4.3 Latent variables	106
4.4.4 Validity tests	109
4.5 Data Analysis	112
4.5.1 Multiple regression analysis.....	112
4.5.2 Descriptive statistics.....	113
4.5.3 Content analysis	114

4.5.4 Coding procedures in content analysis	115
4.6 Phase II: Data collection methods.....	116
4.6.1 Interview questions.....	117
4.7 Participants	118
4.7.1 Teacher profiles	118
4.7.1 Parent profiles.....	120
4.7.1 Student profiles	120
4.8 Data analysis	121
4.8.1 Thematic analysis	122
4.8.2 Coding procedures in thematic analysis.....	122
4.9 Integration of findings	123
4.10 Summary of research methods	124
Chapter 5 Results: Understanding Teacher and Parent Satisfaction in Online Piano Lessons – A Quantitative Analysis	125
5.1 Introduction	125
5.2 Factors affecting teachers’ and parents’ satisfaction with online piano lessons	125
5.2.1 Teachers’ survey.....	126
5.2.2 Parents’ survey.....	129
5.3 Additional factors that might have an impact on online piano lessons	133
5.3.1 Teachers’ survey.....	133
5.3.2 Parents’ survey.....	135

5.4 Online Piano Lessons: Before, During, and After COVID-19	136
5.5 Students who struggled while having online piano lessons	139
5.6 The use of technology in online piano lessons	140
5.6.1 Technological setup	140
5.6.2 Videoconferencing software	143
5.6.3 Broadband connectivity	145
5.6.4 Asynchronous tools	147
5.6.5 Teacher's confidence in using technology	149
5.7 Summary of quantitative results	150
Chapter 6 Results: Experiences Behind the Numbers: Content Analysis of Teacher and Parent Reflections	152
6.1 Introduction	152
6.2 Teachers' survey	152
6.2.1 Teachers' survey themes	152
6.2.2 Negative experiences	153
6.2.3 The positives	167
6.2.4 Student's behaviour, age, and capabilities	172
6.2.5 New opportunities	176
6.2.6 Teaching adaptability	178
6.2.7 Neutral experiences	179

6.2.8 Practical challenges of online piano lessons	180
6.2.9 Code Relations Browser according to survey questions (Teachers' survey)	182
6.3 Parents' survey	184
6.3.1 Parents' survey themes	184
6.3.2 Negative experiences	186
6.3.3 The teaching	192
6.3.4 The positives	193
6.3.5 Parents' preferences	194
6.3.6 Parents' Reflections	195
6.3.7 Code Relations Browser according to survey questions (parents' survey)	196
6.4 Summary of teachers' and parents' qualitative survey results.....	197
Chapter 7 Results: Teaching Strategies and Experiences in Online Piano Lessons – Interviews with Teachers, Parents, and Students.....	202
7.1 Introduction	202
7.2 Teachers' interview analysis.....	202
7.2.1 The negatives	203
7.2.2 Student's abilities and characteristics	206
7.2.3 Teaching approaches and suggestions	210
7.2.4 Positive experiences.....	216
7.2.5 Parental support	217

7.2.6 Why teach online nowadays?.....	220
7.2.7 Summary of interview analysis with teachers	221
7.3 Parents' interview analysis.....	224
7.3.1 The negatives	224
7.3.2 Positive adaptation.....	227
7.3.3 Parents' feelings about online piano lessons	228
7.3.4 Student's age and abilities	230
7.3.5 What is the role of a parent?	231
7.3.6 What parents suggest to teachers.....	232
7.3.7 The aims and goals of the parent.....	233
7.3.8 Summary of interview analysis with parents	234
7.4 Students' interview analysis.....	235
7.4.1 The negatives	236
7.4.2 Online lessons are the same.....	237
7.4.3 Preference for face-to-face lessons	238
7.4.4 Benefits of online lessons.....	239
7.4.5 Parental involvement.....	239
7.4.6 Students' expressions of compassion	240

7.4.7 Summary of interview analysis with students	240
7.5 Comparisons and conclusions among teachers', parents' and students' perceptions ..	241
Chapter 8 Integration of Findings: Bringing the Data Together	245
8.1 Introduction	245
8.1.1 The overview of teachers', parents', and students' experiences of online piano lessons	247
8.2 How do student independence, skill acquisition, motivation and parental support affect teachers', parents' and students' satisfaction with online piano lessons	252
8.2.1 Student Independence	253
8.2.2 Parental Involvement.....	255
8.2.3 Skill acquisition.....	257
8.2.4 Motivation.....	258
8.3 Additional factors that might have an impact on online piano lessons	260
8.3.1 Prior experience having online piano lessons, connectivity issues, teacher confidence and asynchronous learning	260
8.3.2 Teacher-student relationship	262
8.3.3 The teaching approach and style	264
8.3.4 Teacher's physical absence	267
8.4 The teaching methods that teachers and parents find helpful when teaching young students online	269
8.4.1 Technological setup	269

8.4.2 Teaching suggestions in an online lesson setting	271
8.5 The main motives why teachers and parents choose online piano lessons nowadays...	274
8.5.1 It all depends on aims and goals	275
Chapter 9 Discussion: Interpreting Teacher, Parent, and Student Perspectives	278
9.1 Introduction	278
9.2 Student developmental level	279
9.3 The level of parental involvement	282
9.4 Perceptions of presence: emotional proximity and pedagogical trust.....	285
9.5 When goals shape perceptions of online lessons	288
9.6 Teacher practices and characteristics in online lessons	289
Chapter 10 Conclusions.....	292
10.1 Introduction	292
10.2 Summary of Findings	293
10.3 Limitations	294
10.4 Implications for practice and policy	301
10.5 Future research	2979
10.6 Contribution to knowledge.....	302
• References	301
• Appendices	317

List of Figures

Figure 4.1 Teachers' demographics.	95
Figure 4.2 Teachers' educational level.	96
Figure 4.3 Teachers' employment status.....	97
Figure 4.4 Teachers' professional situation.	97
Figure 4.5 Parents' gender.....	99
Figure 4.6 Parents' educational level.	100
Figure 4.7 Parents' employment status.....	101
Figure 4.8 Parents' country of residence.	101
Figure 4.9 The number of children in a family.	102
Figure 5.1 Teachers' reported access and use of online teaching modes for lessons.	137
Figure 5.2 Parents' reported access and use of online teaching modes for lessons.	138
Figure 5.3 Students who struggled with online piano lessons, according to teachers.....	139
Figure 5.4 Teachers' technological setup.	141
Figure 5.5 Students' technological setup according to teachers.	142
Figure 5.6 Technological setup used by students as reported by parents.	143
Figure 5.7 Videoconferencing software used by teachers.	144

Figure 5.8 Videoconferencing software used by students as reported by parents.	145
Figure 5.9 Issues with connectivity according to teachers.	146
Figure 5.10 Issues with connectivity according to parents.	146
Figure 5.11 Frequency of teachers sending video recordings to students.	148
Figure 5.12 Frequency of students receiving video recordings from teachers.....	148
Figure 5.13 Teachers' confidence in using technology during online piano lessons.	150
Figure 6.1 Teachers' content analysis, main (parent) themes.....	153
Figure 6.2 Teachers' content analysis: first-level codes within the theme 'Negative experiences'.	154
Figure 6.3 Teachers' content analysis: second-level codes within the theme 'Technological issues'.	155
Figure 6.4 Teachers' content analysis: second-level codes within the theme 'Students' behaviour during the lesson'.	157
Figure 6.5 Teachers' content analysis: second-level codes within the theme 'Piano teaching – technical aspects'.	158
Figure 6.6 Teachers' content analysis: second-level codes within the theme 'Teaching approach'.	160
Figure 6.7 Teachers' content analysis: second-level codes within the theme 'Student-teacher relationship'.	162
Figure 6.8 Teachers' content analysis: first-level codes within the theme 'Positive experiences'.	168

Figure 6.9 Teachers' content analysis: first-level codes within the theme 'Teaching adaptability'.	179
Figure 6.10 Teachers' content analysis: first-level codes within the theme 'Neutral experiences'.	180
Figure 6.11 Parents' content analysis, parent (main) themes.	186
Figure 6.12 Parents' content analysis: first-level codes within the theme 'Negatives'.	188
Figure 6.13 Parents' content analysis: second-level codes within the theme 'Negatives related to teaching'.	191
Figure 7.1 An example of a camera setup for online piano lessons.	214
Figure 8.1 Data integration – preference for face-to-face lessons.	248
Figure 8.2 Data integration – neutral experiences.	249
Figure 8.3 Data integration – negative experiences.	250
Figure 8.4 Data integration – positive experiences.	251
Figure 8.5 Data integration – parental involvement and support.	256
Figure 8.6 Data integration – skill acquisition.	258
Figure 8.7 Data integration – motivation.	259
Figure 8.8 Data integration – connectivity issues.	261
Figure 8.9 Data integration – teachers' confidence, prior xperience of teaching/having online lessons, and asynchronous teaching.	262
Figure 8.10 Data integration – teacher-student relationship.	264

Figure 8.11 Data integration – teaching approach.	266
Figure 8.12 Data integration – teacher’s physical absence.....	268
Figure 8.13 Data integration – technological setup.	270

List of Tables

Table 3.1 Research design.	82
Table 5.1 Multiple regression analysis, teachers' survey.	127
Table 5.2 Cook's distance, teachers' survey.	127
Table 5.3 Collinearity statistics, teachers' survey.	128
Table 5.4 Q-Q Plot, teachers' survey.	128
Table 5.5 Multiple regression analysis, parents' survey.	130
Table 5.6 Cook's distance, parents' survey.	130
Table 5.7 Collinearity statistics, parents' survey.	131
Table 5.8 Q-Q Plot, parents' survey.	131
Table 7.1 Interviews with Teachers, Negative Themes.	205
Table 7.2 Themes from teacher interviews: students' behaviour, age, and capabilities.	209
Table 7.3 Themes from teacher interviews: teaching approaches and suggestions, and teaching adaptability.	215
Table 7.4 Themes from teacher interviews: positive experiences.	217
Table 7.5 Themes from teacher interviews: parental involvement.	220
Table 7.6 Themes from teacher interviews: technological setup and new opportunities.	221
Table 7.7 Themes from parent interviews: the negatives.	226

Table 7.8 Themes from parent interviews: positive adaptation.....	228
Table 7.9 Themes from parent interviews: face-to-face or hybrid lessons.....	229

Abbreviations

CFA – Confirmatory Factor Analysis

CMB – Code Matrix Browser

CRB – Code Relations Browser

HE – Higher Education

ICT – Information and Communication Technology

OPL – online piano lessons

Q – question

SDT – Self-determination Theory

TPACK – Technological, Pedagogical and Content Knowledge

Chapter 1 Introduction

1.1 Background and Rationale for the Study

The transition to online teaching in March 2020 was abrupt and unanticipated for music educators worldwide due to the COVID-19 outbreak, and my own experience was no exception. I moved all my face-to-face lessons online in early March 2020, even before official restrictions were introduced in the UK on March 23, 2020 (GOV.UK & Service, 2022). At that time, I was teaching more than 40 students privately and would normally visit all of them at their homes using public transport. The decision to cease in-person teaching was made out of concern both about the risk of infection on public transport and about contracting the disease from so many pupils and their parents. At the time, schools remained open, and the decision to cease in-person teaching came as a surprise to many of the families I worked with. However, parents supported the move and helped their children connect with their first online lessons.

Initially, the shift felt unexpectedly positive. Without the need to commute to students' homes, I found myself with renewed energy. As many of my pupils were already preparing for upcoming exams, lessons mainly involved reinforcing familiar repertoire, and very little new material had to be introduced. However, the challenges became apparent when we began learning new pieces from scratch. I realised that some of my students relied on me pointing at the notes during face-to-face lessons, whereas online, they had to follow the score by themselves. Some beginners struggled to recognise the notes on the score and locate them on the piano — something I would normally demonstrate directly on their instrument, but now had to explain and show on the screen. At that time, a large proportion of my students were young beginners (between ages 5 and 9), and I soon realised that the demands of online teaching were significantly different for this age group. Many struggled with the increased responsibility for tasks they had previously relied on me to model—such as reading notation, identifying rhythms, and locating keys on the piano. While some students adapted and developed greater independence, others found the transition more difficult, a pattern reflected in their comments during the interviews for this study.

In contrast to my own experiences and challenges, as a researcher, I noticed that there was an overwhelmingly positive tone in much of the published literature on online music education. Studies such as Dammers (2009) and Pike and Shoemaker (2013) reported favourable outcomes with older students, particularly in areas such as sight-reading and general musicianship. These

accounts were also echoed in practitioner blogs and social media posts, where online teaching was often framed as innovative and effective. My own experience, in contrast, was far more mixed. After four months of continuous online teaching, I felt exhausted and professionally stretched. This disconnect prompted the central research question for this thesis: What factors shape the satisfaction or dissatisfaction of teachers, parents, and students in this context? With a background in piano pedagogy and years of experience teaching children from the age of five, I was increasingly curious—both professionally and pedagogically—about whether this mode of instruction truly serves the needs of younger learners.

As a result, the study's focus reflects a combination of my personal experiences as a practitioner and the themes emphasised within the wider literature. This thesis examines why some teachers excel in online settings while others find the experience unsatisfactory or limiting. It examines how satisfaction with online piano lessons is shaped by pedagogical preferences, technological challenges, parental expectations, and students' developmental readiness. To date, little research has focused specifically on the experiences of young beginner students in online instrumental tuition. This study contributes to that gap by drawing on the perspectives of teachers, parents, and students, offering a more nuanced understanding of what enables or hinders effective online piano instruction at the earliest stages of learning.

1.2 The overview of the thesis

This thesis is structured in a conventional way. It begins with the Introduction (Chapter 1), followed by a Literature Review (Chapter 2), which outlines and critically engages with the key literature relevant to this study. The Methodology and Project Design (Chapter 3) presents the research questions and discusses the methodological decisions, with reference to existing research practices.

The central part of the thesis consists of the analysis and results. As this is a mixed-methods study, multiple forms of data collection and analysis were used to address the research questions. Data were gathered in two phases: the first phase involved surveys completed by piano teachers and parents whose children had experienced online piano lessons (OPL), and the second phase consisted of semi-structured interviews with teachers, parents, and piano students. The data collection and analysis procedures for both phases are detailed in Chapter 4.

The analyses are presented across four chapters. Chapter 5 presents the quantitative results, including multiple regression analysis and descriptive statistics. Chapter 6 presents the qualitative content analysis of open-ended responses from the surveys. Chapter 7 focuses on the thematic analysis of the interview data. These chapters are not structured as separate studies, as all analyses contribute to addressing the four research questions. Finally, Chapter 8 provides an integration of the findings, organised by research question, bringing together the different strands of analysis into a coherent whole.

While the study was designed around the research questions, the discussion (Chapter 9) moves beyond these to consider the broader themes and implications that emerged during the analyses. In doing so, it reflects the complexity of online piano education and highlights contributions that were not anticipated at the outset. The findings show that children's developmental level is very important in online piano lessons, as it affects their independence, communication, understanding, and self-regulation. Teachers stressed the role of parents, who often had to support their children by reinforcing instructions or helping them to express questions and feelings. A problem-solving attitude and their teaching approach were also seen as essential for teachers to adapt successfully and feel satisfied with the lessons. In general, online lessons were considered more suitable for older or more advanced students, while younger beginners could benefit only if they were developmentally ready and supported by parents. This is followed by the Conclusion (Chapter 10), which summarises the key findings, the study's limitations, and suggests directions for future research and implications for practice. The thesis concludes with the bibliography and appendices.

Chapter 2 Literature Review

2.1 Introduction

The literature reviewed here represents a range of international, peer-reviewed publications written in English between 2001 and 2024. While educational systems and music pedagogical traditions may differ from country to country, many of the core challenges and adaptations associated with online instrumental teaching—such as student engagement, parental involvement, teacher adaptability, and technological access—are shared across contexts. Given that this study collected data from an international cohort of teachers and parents, it was important to include peer-reviewed literature from various parts of the world to reflect this diversity and provide a broader comparative lens.

In order to understand what has been researched specifically about online music teaching and learning, a wide scope of sources has been included—covering early years, primary and secondary education, higher education (HE), and adult learning, across both group and one-to-one settings. The literature spans various educational levels and formats, but the main interest here lies in how music teaching and learning take place in online environments. This includes the different ways teachers and students have adapted to this format. That said, Section 2.2 narrows in on instrumental one-to-one lessons, which is the specific focus of this study. It is important to note that most publications from 2020 onwards reflect the context of the COVID-19 pandemic, when teachers had no choice but to move their teaching online. These studies, therefore, differ in nature from those written before 2019, as they are influenced by unique circumstances such as lockdowns, isolation, and health or financial insecurity. However, more recent work has begun to look beyond the ‘emergency teaching’ during the pandemic and to examine online teaching in a broader, longer-term context.

In addition, this literature review includes a broader discussion of general music education topics that have not yet been explored in depth within online music education research. These include piano pedagogy, teaching styles and approaches, parental involvement, and student age. Some broader educational sources were also included—particularly around themes like motivation, independence, and autonomy—as these are not always fully addressed in the online music education literature. While this review brings together much of what has already been explored in

online music education, it also highlights areas that still need more attention. Even in the most recent studies, such as Vardi (2024), the focus is still on teachers' experiences during the pandemic, which shows that research into current, post-pandemic realities is still limited.

2.1.1 Online music education: evolution, contexts, and current landscape

Research into synchronous online music lessons began as early as 2000s with Maki (2001) analysing classroom music lessons via videoconferencing software, Dammers (2009) investigating 9 trumpet lessons with a grade 8 student using Skype videoconferencing software, and Riley (2009) conducting a study with trainee teachers from a university in the USA who cooperated with an elementary school in Mexico. In the next decade, researchers' attention shifted to more specific research, such as teaching piano using a Disklavier and internet MIDI software (van Stam & Shoemaker, 2010; Pike & Shoemaker, 2013; Pike, 2017; Kruse et al., 2013) or Roland VR-3EX audio-video mixer and streamer (King et al., 2019a, 2019b). Other studies focused on specific online teaching methods and outcomes (Dumlavwalla, 2017; Koutsoupidou, 2014), teaching and curriculum in higher education institutions (HEI) (Johnson, 2017), or student and teacher behaviour (Duffy & Healey, 2017; Dye, 2016).

Until 2020, online music education was the subject of increasing attention from teachers, practitioners, and researchers, and was being considered a sufficient way to teach or substitute for face-to-face lessons. However, March 2020 marked a point in history when the whole world was ordered to stay home and self-isolate due to the global COVID-19 pandemic. This meant that online education became the only way of teaching, and many teachers who had not been previously introduced to this type of setting had to adapt almost overnight. A new term emerged in recent literature – emergency remote teaching – referring to a curriculum that responds quickly to new circumstances and has not undergone time-tested processes (Hodges et al., 2020, p. 9). Hodges et al. (2020, p. 12) argue that comparing face-to-face lessons with an online version of the same course (as in emergency teaching) is irrelevant, as courses and lessons were abruptly migrated to an online medium due to the global health crisis. Moreover, Hodges et al. (2020, p. 12) state that online education is perceived as weaker than face-to-face instruction, but this may be due to online courses being implemented as emergency measures without adequate planning.

Throughout 2020 and 2021, online teaching was the primary method of music teaching in most countries (UNESCO, 2020), and many researchers seized the opportunity to investigate this phenomenon. A large amount of research has therefore been produced on various teaching and learning settings, including early years music (Papatzikis, 2021), classroom music education (Calderon-Garrido & Gustems-Carnicer, 2021; Daubney & Fautley, 2020; Joseph & Lennox, 2021), instrumental lessons (de Bruin, 2021; Daugvilaite, 2021; Okay, 2021; Ververis & Apostolis, 2021), higher education and conservatoire establishments (Biasutti et al., 2021; Rucsanda, 2021; Schiavio et al., 2021;), online group composition (Gibson, 2021; Onderdijk, 2021), community music (Salvador et al., 2021), and pre-service teacher's programmes (Cheng & Lam, 2021; Chrysostomou & Triantafyllaki, 2020; Chua & Tan, 2021; Joseph & Lennox, 2021; Kibici & Sarikaya, 2021; Thomas et al., 2021; Thorgersen & Mars, 2021; Yilimaz et al., 2021). Having said that, not all aspects of music education and pedagogy have been thoroughly investigated, and one of those is the teaching of synchronous online instrumental music performance lessons to preschool and primary-school-age students, who are at a critical stage of musical development. Due to the scarcity of the literature on young beginner students having online music lessons, research focused on this group of learners will be of crucial importance in music education.

It is also important to note that while a majority of pre-pandemic research used advanced technological tools such as Disklavier and Midi keyboard to investigate the feasibility of online lessons (King et al., 2019a, 2019b; Kruse et al., 2013; Pike, 2017; Pike & Shoemaker, 2013; van Stam & Shoemaker, 2010), most of the research conducted during 2020 is with participants who used home-based equipment, such as computers, laptops, tablets, or phones, relying on different levels of bandwidth, which might have impacted the quality of their lessons as well as the experience (e.g., Daugvilaite, 2021; Onderdijk et al., 2021; Papatzikis, 2021; Rucsanda et al., 2021; Salvador, Knapp and Mayo, 2021; Schiavio et al., 2021). Moreover, as people were not allowed to socialise for the greater part of the year 2020 and spent time at home and online, they have suffered a negative impact on their well-being (Cheng & Lam, 2021; Joseph & Lennox, 2021; Kupers et al., 2022; Okay, 2021), whereas the research before the pandemic did not have to account for such a factor.

More recent studies conducted after lockdowns, when participation in online music education became optional, also highlight comparable issues—such as technological barriers, reduced engagement, and the difficulty of fostering interaction in a virtual environment

(Martínez-Hernández, 2022; Schiavio & Nijs, 2022). These findings suggest that such challenges are not simply a consequence of the lockdown period. While many studies conducted during the COVID-19 pandemic reflect the extraordinary circumstances of that time, future research—including studies like the one presented in this thesis—should focus on more typical conditions, where opportunities for social interaction are unrestricted and external pressures are less pronounced.

After the COVID-19 pandemic, online teaching is no longer regarded as a new or complex concept. There is an increasing number of online courses being offered worldwide, ranging from individual one-on-one lessons to full higher-education degrees (e.g., MEd Music Education, Trinity Laban Conservatoire of Music and Dance). In addition, new software and apps continue to be developed to support digital learning, alongside the growing integration of artificial intelligence (Li & Wang, 2024). The knowledge accumulated in recent years can help identify which teaching practices are effective in an online setting, highlight potential challenges, point to other factors that need to be considered, and inform the design of well-planned programmes for future online teaching.

2.1.2 Technological issues and solutions in online lessons

Almost all research into synchronous online music, including the research conducted during or after the pandemic, education has reported technological issues such as latency (i.e. the time lag between participants during the video call), problems with video or sound, or calls being cut off which affected the performance of the lesson (e.g., Daugvilaite, 2021; Martínez-Hernández, 2022; Joseph & Lennox, 2021; Joseph & Merrick, 2021; Okay, 2021; Nugroho & Biasutti, 2024; Onderdijk et al., 2021; Papatzikis, 2021; Rucsanda et al., 2021; Salvador, Knapp and Mayo, 2021; Schiavio et al., 2021; Vaizman, 2022; Váradi et al., 2024). In many instrumental lesson settings, it was concluded that due to the delay, it is impossible to play duets in time, accompany, or sing simultaneously (e.g., Dammers, 2009; Martínez-Hernández, 2022; King et al., 2019a; Koutsoupidou, 2014; Maki, 2001; Riley, 2009; Ververis & Apostolis, 2020). The inability to count or sing at the same time with the student leads to the use of a metronome, verbalising instructions more clearly, demonstration, and repetition (Dumlavwalla, 2017; Koutsoupidou, 2014). However, one of the most common solutions is blending synchronous lessons with asynchronous ones by using videos made by teachers or students (Martínez-Hernández, 2022; Joseph & Lennox, 2021;

Váradi et al., 2023; Ververis & Apostolis, 2021). Additionally, latency issues have prompted the creation of new websites and software that would help playing together in a group such as JackTrip and Sonobus, as well as Sofasession and eJAMMING AUDiiO for synchronous audio-only lessons.

A few pre-pandemic researchers stress having good teaching equipment to start with, such as a Disklavier or weighted-key digital piano with USB cable or MIDI interface, internet MIDI software, good broadband, videoconferencing software (Pike & Shoemaker, 2013; van Stam & Shoemaker, 2010;), external microphones and video cameras, and Roland's VR-3EX video and audio mixer (King et al., 2019a, 2019b); for two-way MIDI connection, www.timewarptech.com is recommended, and Classroom Maestro (from the same software package) can be used to show the music staff and music notation (van Stam & Shoemaker, 2010). However, set-up is rarely discussed in mid-pandemic and post-pandemic articles as not all teachers and pupils could afford such equipment; therefore, they used conventional tools such as laptops, tablets, or iPads with built-in cameras and microphones (e.g., Daugvilaite, 2021), which might have had a negative impact on online lesson experience. Onderdijk et al. (2021) and Jospeh & Merrick (2021) also commented that not having the right equipment for synchronous interaction might impact students' learning.

Gibson (2021, pp. 161–162) also suggests that teachers might need to invest more in equipment in the future: the quality of one's microphone, software, or internet connection 'limiting the whole experience'. Pike (2021) in her study with music teachers confirmed that teachers with a 'growth mindset' invested in better equipment during the pandemic; therefore, they were more satisfied with the results they achieved while teaching online; however, not all teachers chose to invest or upgrade their equipment. Several studies have reported that the low quality of devices (used by both students and teachers) as well as students' unavailability of appropriate instruments have impacted the quality of lessons, resulting in teachers lowering their standards (Nugroho & Biasutti, 2024; Váradi et al., 2024).

Hernandez (2021, pp. 185–186) suggests the following tools to enhance online lessons: sound-absorbing and sound-proofing materials for improved acoustics, a professional microphone instead of a built-in one, a signal processor, an Ethernet cable to enhance connectivity, and an

output device. The importance of broadband speed has been stressed since 2001 (Maki, 2001). However, even two decades later, using conventional videoconferencing software such as Zoom, Skype, Microsoft Teams, Facebook Messenger, FaceTime, or Adobe Connect, everyone in the existing literature experienced latency issues. However, lower-latency software, which could be used for online or videoconferencing lessons, might not be affordable for every teacher or student, such as LOLA (Riley et al., 2016). This low-latency audio-visual technology was perceived as an effective platform for jamming, collaborative playing, and improvisation and more effective than PolyCom (Pike, 2017) or Skype (Riley et al., 2016, p. 21) which relies on 1 Gigabit network connection between the locations which is usually only available through research and educational networks, hence, cannot be connected from home.

It can be concluded that teachers (and students) may need to invest more in equipment if they plan to hold online lessons long-term, especially if they did not do so during the pandemic, as equipment significantly affects lesson quality. Furthermore, while it is important for teachers to explore and identify the technological setup that best supports both their teaching and their students' engagement and progress, organisations such as Music Mark (The UK Association for Music Education) could play a valuable role in providing training and guidance to support this process.

2.1.3 Access to online music education

The pandemic brought long-standing inequalities in education to the surface, exposing the reality that not all students had equal access to the tools needed for online learning. While some students were able to continue their music education relatively uninterrupted, others were significantly disadvantaged due to a lack of devices, space, or adult support at home. Many students from lower socio-economic backgrounds have been reported not to have the means to have online instrumental or music lessons, such as laptops or computers, broadband, instruments or even a quiet space (ABRSM, 2021; Biasutti et al., 2021; Calderón-Garrido & Gustems-Carnicer, 2021; Daubney & Fautley, 2020; Joseph & Lennox, 2021; Nugroho & Biasutti, 2021; Schiavio et al., 2021; Tanriguden, 2021; Thorgersen & Mars, 2021). Consequently, in order to solve the problems of a lack or inaccessibility of musical instruments, a shortage of devices, and distraction from other family members, the asynchronous or blended teaching practice was used more in Greece (Ververis & Apostolis, 2020, p. 8).

Lockdown exposed inequalities between wealthy and less wealthy households. Three-quarters of children from the wealthiest households used digital technology to support their learning during lockdown compared to just 54% of those from the poorest families, according to the Institute for Fiscal Studies (IFS). The same study by the IFS shows that one in ten primary school children in England had no access to a smartphone or any other internet-enabled device during lockdown and children from wealthier households were significantly more likely to be given access to a device by their parents than those from the poorest families. (ABRSM, 2021, p. 28)

In contrast, not all countries face such issues. ‘Swedish compulsory and secondary schools are required to ensure that all students have access to digital devices. In 2019, 96% of the population had access to the internet at home, which makes Sweden the second most internet-dense country in Europe’ (Thorgersen & Mars, 2021, p. 226). These findings show that issues around socio-economic status go beyond individual circumstances. Whether students and teachers can access the right tools for online lessons often depends on much bigger structural factors. Still, a person’s financial situation can directly affect their ability to teach or learn in an online setting.

2.2 Instrumental music teaching in online settings

This section summarises the research into one-to-one online synchronous instrumental lessons with various age groups. It raises the question of whether the technology, the student’s age and level or the teaching style contributes most to the online lesson experience. While studies conducted prior to the pandemic conclude that online platforms provide a feasible way of delivering lessons, research conducted during the pandemic questions whether the lessons can be held online long-term.

2.2.1 An overview of instrumental one-to-one online lessons

One-to-one instrumental online lessons present different opportunities and challenges compared to online lessons in virtual classrooms or various collaborative groups. This section will focus on studies that were based on one-to-one lessons with smaller numbers of participants and a more specific focus on learning and teaching approaches. All studies discussed in this chapter are with primary and secondary-school age students apart from Dammers (2009) and

Kruse et al. (2014), who studied a college-level students. Considering the amount of literature on online music teaching, instrumental one-to-one online lessons, particularly with younger – students aged 5 to 9, have not been thoroughly explored.

As mentioned at the beginning, early studies on online teaching were well-defined and used as much advanced technology as possible. One of the first studies with internet MIDI keyboards with two-way MIDI connection and external video cameras was conducted by Shoemaker and van Stam (2010). Their study involved two 8-to-10-year-old students in Zambia and a teacher in North America, utilising asynchronous tools due to latency and connection issues. While the teacher posted instructional videos related to the previous or upcoming lesson, students were encouraged to post their own videos for practice and share them with the teacher. Both authors agreed that the success of these lessons was due to the blend of synchronous and asynchronous teaching and learning. However, they do acknowledge that there is a cost associated with obtaining the technology and software, and that an adult with basic computer knowledge is needed to support a young student.

The study of a grade-8 trumpet student taught by Dammers (2009) acknowledged that the delay between video and audio was disorienting, making it impossible to play duets, challenging to see facial expressions, and impersonal. However, Dammers (2009) also noted a few advantages, such as teaching in remote locations, convenience, and digital file sharing. A similar study with one college-level piano student was conducted by Kruse et al. (2013). In general, both the teacher and the student were pleased with the progress and the results, noting that the lessons felt natural and that the student gained more independence. Several benefits of online lessons were discovered: improved playing skills, learning how to use equipment and technologies, independence, imagination and enthusiasm related to the new medium of teaching and learning (p. 50).

One of the exemplars of online piano teaching is a study conducted by Pike and Shoemaker (2013), who focused on enhancing sight-reading skills among beginner piano students in two groups: one group received face-to-face instruction while the other was taught online. The online setup used included digital pianos, MIDI software, acoustic pianos, and Skype videoconferencing software. The study concluded that there was no significant difference between the groups and

that online instruction is just as valuable as face-to-face instruction. The study revealed various teaching methods and learning outcomes, including engagement, communication, and parental support, which are further described in subsequent sections.

Another study valuable to this research project, due to its focus on online teaching approaches and learning outcomes, was conducted by Dumlavwalla (2017) with her 5 young piano students (ages 9-17). Dumlavwalla (2017) had been teaching her students for 3 to 9 years prior to moving online for 5 months. Students and parents were generally positive about online lessons, and students became more confident. However, the study revealed several drawbacks, including a lack of the teacher's presence to assist with playing apparatus, sound delays, and the teacher's inability to count, play, or sing alongside the students. Although it was reported that the students were motivated and improved their playing during the course, the researcher felt that she was unable to match the emotional connection she had achieved during in-person lessons (p. 18). The study, in agreement with Pike and Shoemaker's (2013) findings, reported an increased level of independence, engagement, and problem-solving among students (Dumlavwalla, 2017, pp. 154–155).

Pike and Shoemaker (2013), and Dumlavwalla (2017) studies remain models of such research, examining the specific lesson details, teaching approaches, and learning outcomes associated with exclusively online piano lessons. Furthermore, while studies such as Daugvilaite (2021), Joseph and Lennox (2021), Okay (2021), and Salvador et al. (2021), which were conducted during the pandemic, mostly examined participants' experiences, the data is affected by factors such as stress, excessive screen time, and burnout, which were not present prior to the pandemic. Therefore, a further investigation into instrumental online practices in the post-pandemic world is necessary to capture the changes in teaching and learning.

2.2.2 Skill development and acquisition

In this section, the focus is on how students develop core playing skills—such as feeling and maintaining a steady pulse, rhythm awareness, note reading, understanding dynamics and phrasing, and maintaining good hand position and posture. It also looks at the specific difficulties teachers face when fostering these skills in online instrumental lessons, and the practical ways they have adapted their methods to address those challenges. Certain conventional methods—

such as singing or clapping simultaneously with the student—had to be adapted for the online environment. In settings where the teacher’s physical presence and opportunities for immediate verbal and non-verbal feedback are limited, supporting students’ skill acquisition becomes a considerably more complex task.

Developing rhythmic accuracy and maintaining a steady tempo are widely recognised as foundational components of musical skill acquisition (e.g., Davidson & Correia, 2002; Matsuo & Sakaguchi, 2024; Vigl et al., 2024). A few researchers analysed the most common teaching approaches used to overcome latency issues, such as clapping and counting aloud before playing, playing a rhythmic segment and having the student listen and copy, or recording accompaniment tracks which were uploaded on Dropbox (Pike, 2017, p. 112). Damon and Rockinson-Szapkiw (2018) also found a solution to use pre-recorded accompaniment for the singers played on a student’s phone or laptop (p. 27). However, a Kodály instructor in Koutsoupidou’s (2014, p. 250) project was unable to overcome the latency issues and completely omitted activities such as part-singing or canon.

Sight-reading has been thoroughly explored by Pike and Shoemaker (2013). They conducted an intervention with two groups: the first group studying piano sight-reading through traditional face-to-face instruction, and the second group using live online video instruction. Online sessions used digital pianos, internet MIDI software, acoustic pianos, and Skype. The insignificant difference in the outcome between these two groups demonstrates that online instruction is a viable method for teaching sight-reading. Interestingly, those who studied sight-reading online exhibited more independence than those in the control group (p. 154). These students carried out physical tasks, including locating specific spots on the score, writing assignment notes, highlighting challenging passages, playing related MP3 accompaniment tracks on the computer, and facilitating video calls and MIDI connections. This raises the question of whether the online group became more independent due to the physical absence of a teacher and completing tasks on their own, or due to the extensive teaching methods used to substitute for the teacher.

Despite the importance of sound quality to instrumental playing, only a few researchers have confronted this issue. Dumlavwalla (2017, pp. 12–13) expressed dissatisfaction with the low sound quality and the inability to judge the dynamic contrasts and shaping. To solve this issue,

Dumlavwalla asked the parents to record their children playing while offline. However, regarding teaching phrasing and rubato, Dumlavwalla (2017) says that it can be difficult to describe it verbally; students may need to experience the timing by playing alongside the teacher, which may not be possible in an online setting. Okay (2021, p. 207) reports a teacher's frustration similar to that seen in Dumlavwalla's (2017) study: while having online lessons exclusively, students seemed to have 'lost their tone'. Dumlavwalla (2017, p. 14) expressed that her students 'were not projecting their sound as well as they had been in the past', that she was 'not entirely pleased with their quality of tone', and that 'their performances were also a bit shaky' due to a long period of time playing at home without an audience, which confirms that not all aspects of performance can be replicated online. The music teachers in Aaberg's (2023) survey about their teaching experiences during the pandemic also noted difficulty teaching tone production to violin students, expressive musical concepts, and the inability to play simultaneously with the teacher made it difficult to teach phrasing.

Only a few studies acknowledged adjusting students' posture and technique as a separate teaching method or a possible issue in online lessons. Pike (2017, p. 112) noticed that the intern teachers in her study completely ignored their students' improper sitting and hand positions for the first three weeks of teaching, which shows that novice teachers might need more experience and instruction when teaching online for the first time. In King et al.'s (2019, p. 211) study, it was reported that teaching bow hold was very challenging. The instrumental teacher surveyed by Ververis and Apostolis (2020, p. 7) expressed that 'this problem was more obvious in novice students... the correct posture of the student was gradually worsening, because it was difficult to correct the student without my physical presence, no matter how explicit I was in describing the problem'. Furthermore, some teachers in this study stated that novice students were limited in their learning of the pieces without the necessary correction of technique. One guitar teacher expressed that: '[he] could not give proper guidance to the correct positioning of body and hands because even though [he] could see that something was wrong, it was not possible to fix it, just by using words' (Ververis & Apostolis, 2020, p. 7). Additionally, Váradi et al. (2024) in the survey for primary, secondary and tertiary music teachers identified that the inability to correct the student immediately, as well as the difficulty in correcting hand, mouth, body posture, intonation and sound, poses a difficulty in teaching skill acquisition and results in negative views towards online music lessons.

In summary, skill acquisition—one of the most important aspects of learning an instrument—has been hindered in online settings. Nevertheless, many teachers found ways to adapt their methods to support students' progress. Looking ahead, longitudinal studies would be valuable in exploring the long-term effects of learning skills online compared to face-to-face instruction, and in determining whether exclusively online tuition can provide training of a level sufficient to produce professional musicians.

2.2.3 Age-related considerations

A limited number of studies have examined one-to-one instrumental online lessons with young students (8-17 years old), either by examining their own teaching practices (Dumlavwalla, 2017; 2013; Pike & Shoemaker, 2015; Shoemaker & van Stam, 2010), collaborating with teachers and reflecting on their experiences (King et al., 2019a, 2019b; Okay, 2021; Ververis & Apostolis, 2020), or by observing other pedagogy interns' online lessons for eight weeks (Pike, 2017). However, only a few of these studies have focused on practical aspects of online teaching, such as teaching sight-reading (Pike & Shoemaker, 2013), maintaining a steady pulse or adjusting posture (Dumlavwalla, 2017; Pike, 2017), with the remaining studies capturing the experiences of students, parents, and teachers.

Why is a student's age so important? The primary school years (5 to 7) mark a critical period for development. Very young musicians may have limited prior knowledge, and the teacher would need to adopt different teaching strategies. According to Hallam (1998, p. 53), young students have 'relatively undeveloped language and literacy skills, their concentration span is relatively short, and their general knowledge will be limited'. Needless to say, teaching approaches have to be clear and concise compared to those used with older or adult learners in formal instrumental and vocal lesson settings. Young learners may require substantial support—even in face-to-face instrumental lessons—with specific tasks such as maintaining proper sitting and playing posture or locating bar numbers or following notes on the score (Dye, 2016; McPherson & Gabrielsson, 2002). According to Harter (1999), children at the lower end of the age range (5-6 years old) may be less capable of self-regulation and independence than children at the upper end of the age range (8-9 years old). This is because autonomy and self-regulation are related to cognitive development, such as the ability to inhibit impulses, plan, and carry out goal-directed behaviour. These abilities tend to develop and mature as children grow older.

There is a scarcity of literature that focuses on young beginner students in an online music setting, and only several studies have identified issues with younger beginner students having online lessons: 'Beginners' lack of foundational knowledge' (Salvador et al., 2021, p. 206). A significant body of research has concluded that online lessons can be highly challenging for beginners due to the lack of physical touch and teachers' inability to develop rapport with students (Duffy & Healey, 2017; Dumlavwalla, 2017; Koutsoupidou, 2014). A violin teacher who participated in Koutsoupidou's (2014, p. 251) research believes that '[online learning] requires a certain level of maturity and discipline in order for it to be efficient'. She addresses her concern as to whether online learning is suitable for young learners: 'It's [Skype lessons] a one-dimensional experience that I feel [is] somehow incomplete. It works for people who are independent-minded and who have self-discipline. I would not recommend it for younger students'.

Interestingly, the survey by Aaberg (2023) for string teachers investigated their teaching experiences during the pandemic and they were specifically asked to rate each age group (5 or younger, 6-10, 11-13, 14-17, 18+) of how well they managed to teach physical technique, basic musical concepts, expressiveness, tone production and practice strategies, as well as about student's experiences of being cooperative, attentive, frustrated, adaptive or tired of virtual lessons. Group 5 or younger scored the lowest in all sections, and the 6-10-year-olds were in second place. This shows that teachers struggled to teach certain playing and music concepts to younger students, as well as to manage students' attentiveness and cooperation at those ages, has been more difficult online.

According to Martínez-Hernández (2022) who surveyed music teachers in Spain across various specialties (those who were teaching infants to those who taught adults across a range of instruments) claimed that the student group who 'obtained a better-perceived performance in online learning was secondary education (61%), and the age group that obtained a lower performance level was primary education (52%)'. This suggests that the factors influencing this perception require further exploration, and this group of learners should not be overlooked in the research.

Moreover, a few authors have claimed that teaching beginner students online is not feasible

(Dammers, 2009; Koutsoupidou, 2014; Okay, 2021; Váradi et al., 2024), while others have reported that their attitude changed a few weeks into teaching. The graduate pedagogy interns in Pike's (2017, p. 111) study came to a consensus at the very beginning of the 8-week project that piano could not be taught to beginners in an online environment. However, after reflection, improved preparation, and refining their teaching techniques, they recognised that online teaching was a feasible way to teach beginners. Coincidentally, Dumlavwalla (2017, p. 12) also reported that by the third week, her confidence in teaching online increased, and she was able to teach online more effectively.

Thus, there is a need for research that focuses specifically on young beginner students, addressing the challenges outlined earlier and examining both the advantages and disadvantages of online lessons. Such research should also investigate why lessons are successful with some students and not with others, as has been explored with other age groups. Furthermore, there is a lack of research that considers how factors such as student independence, skill acquisition, and motivation collectively influence teacher and parent satisfaction with young children's online music education.

2.3 Educational foundations in instrumental and piano teaching

While this thesis focuses on online piano lessons, it is essential to consider broader literature around music education in general, including piano pedagogy in particular, the teaching styles and approaches, as well as how learners learn and teachers' pedagogical strategies. It concludes by examining the specific challenges and needs of young beginners aged 5 to 9, setting the stage for understanding why this age group has been selected as the focus of the current study.

2.3.1 Piano pedagogy

As the focus of this thesis is on piano teaching and learning in online settings, it is important to outline what piano teaching involves and which playing mechanics are usually addressed in lessons. While there are countless books on piano technique, this section does not attempt to cover them in detail but instead gives a sense of the diversity of the literature and the options piano teachers have available today.

Historically, some of the earliest publications were on harpsichord playing in the Renaissance, with composers such as François Couperin and Jean-Bernard Rameau writing on fingering, phrasing, and style. C. P. E. Bach was among the first to write about piano playing as distinct from harpsichord technique, giving particular attention to fingering and especially to the use of the thumb (Arshinova, 2022). Towards the end of the eighteenth century, three main schools of piano playing became recognised in London, Vienna, and Paris, each with its own priorities. Muzio Clementi, often associated with the London school, advocated technical exercises and etudes, and described playing with ‘hammer-like fingers with a motionless hand’ (cited in Arshinova, 2022). Louis Adam, representing the Parisian school, placed more emphasis on phrasing, legato, and melody, while Carl Czerny in Vienna recommended turning the hand and forearm in the direction of a passage to aid fluency (Arshinova, 2022).

Later figures such as Busoni, Kogan, Neuhaus, Hoffmann, Steinhausen, Breithaupt, and Deppe developed what we now think of as classical piano pedagogy. Neuhaus (1993), writing from the Russian tradition, argued that tone production and the cultivation of sound imagination should be taught from the outset, with attention not only to accuracy but also to the expressive shaping of phrases. Sandor (1981), in contrast, centred his teaching philosophy on rhythm and movement, stressing biomechanics, bodily freedom, and the avoidance of tension. These examples show how much piano technique varies, and how regional traditions often shaped what individual teachers themselves learned and later passed on.

Arshinova (2022) summarises that the fundamental skills of piano playing are correct seating and hand position, reading music notation and rhythm, sight-reading, coordination of hands and eyes, aural skills, musical memory, finger fluency, musicality, and the development of fine motor control. Although many of these apply to other instruments too, the technical emphasis differs across schools. More recent pedagogical texts build on this earlier knowledge and often focus on how teachers can introduce these skills: whether through demonstration, progressive exercises, or carefully deciding when to bring in pedalling (Uszler, Gordon, & Mach, 2010).

In the twentieth century, piano pedagogy was also influenced by broader educational ideas such as those of Suzuki, Kodály, Dalcroze, and Orff, which stressed musicianship, creativity, and learning through experience. Bastien’s *How to Teach Piano Successfully* (1988) takes a down-to-

earth approach, giving teachers examples of how to pace lessons and introduce skills gradually. Rhythm is one of the areas he stresses, seeing it as essential to establish alongside reading and technique. Fanny Waterman, whose *Piano Lessons* books shaped piano teaching in the UK, emphasised posture, hand position, and finger strength from the very beginning, while also insisting that dynamics and rhythm should be integrated into lessons rather than added later. In her approach, expression was cultivated from the first stages, and skills such as pedalling were introduced gradually, once the student had developed balance and tone control (Waterman, 1999).

More recent writers also question some of the traditions of earlier piano schools. According to McLachlan (2018), technical security at the piano is only possible when the fingers are firm, but the larger joints stay relaxed. He is particularly critical of Hanon's idea that fingers should be lifted high, calling it a recipe for tension. Fraser (2011) puts more weight on the body as a whole, pointing out that tension often creeps in when a pianist sits badly or fails to use the arm properly. Neuhaus (1993) looked at the problem from another angle, describing what he called 'pianophobia', where technical problems are tied up with fear of wrong notes and unnecessary movements. This demonstrates the variety of piano teaching and playing techniques available today.

One area of discrepancy is the use of tactile approaches. In some traditions, teachers corrected hand position or posture by physically guiding the student. Tobias Matthay (1932, 1947), an influential British pedagogue, advocated showing students the sensation of weight transfer and relaxation through gentle manipulation of the wrist or arm representing the Russian school, similarly believed that at times the teacher needed to place the student's hand or arm correctly in order to demonstrate tone, weight, or relaxation. What was once considered routine — moving a student's hand or arm to show weight or posture — is now questioned. Safeguarding policies in many institutions ask teachers to avoid touch altogether (e.g., Musicians' Union, 2023). As a result, most teachers in the UK and elsewhere often rely on demonstration, verbal explanation, and metaphor instead; however, there are still teachers following the Matthay or Neuhaus school.

All in all, piano pedagogy is not uniform: teachers draw on a wide range of traditions and materials, and in one-to-one contexts, it is often left to the individual to choose or combine

methods. What seems less certain is how teachers choose to work in practice. Do piano lessons still follow the old master–apprentice model, or are teachers shifting towards more student-centred approaches? How this balance is managed in lessons will be considered in the next section.

2.3.2 Teaching styles and approaches

The broader music education literature identifies a range of teaching styles and approaches that can be applied to instrumental and vocal tuition, each with different implications for student learning. One of the pioneers in this area is Hallam (1998), who distinguishes several key models: the transmission of knowledge, where teaching is largely teacher-led and content is delivered directly; the apprenticeship model, which emphasises modelling and imitation (nowadays it is more often called master-apprentice model); the development of autonomy and independence, where the teacher’s role is to gradually hand over responsibility to the student; and the facilitation model, in which teachers act as guides and enable students to construct their own understanding rather than simply receiving information.

What Hallam (1998) described as transmission and apprenticeship is often labelled in more recent work as teacher-led, or didactic teaching (e.g., Koutsoupidou, 2008; Goffi-Fynn, 2024). Here the teacher tends to control the repertoire and pacing, as well as the overall direction of the lessons. Despite the increasing attention given to more student-centred methods, this way of teaching is still widely found in instrumental pedagogy. It is especially noticeable in conservatoire settings, where teachers often identify with particular lineages or ‘schools’ of playing. Gaunt (2010) shows how some students understood their teachers as carrying traditions that could be traced back to earlier generations of performers, while Carey and Grant (2015) note that teachers themselves frequently legitimised their authority through such connections. In conservatoires, many teachers still connect their work to particular traditions, for example the Viennese, Italian or Russian schools. This idea of lineage continues to influence instrumental teaching and gives it a certain professional weight (Concina, 2023).

For young beginners, a more teacher-centred approach usually means that the teacher chooses the piece, demonstrates how it should sound, and takes the child through each step. This pattern

is still common in instrumental teaching and is well documented in the literature (Hallam, 1998; Gaunt, 2010). The teacher tends to decide the order of activities and steps in quickly when hand position or note reading needs correcting (Harris, 2013). A student-centred approach looks different. Here, the teacher may offer a choice of pieces, ask the child which activity they would like to do, or let them try to solve a small difficulty before stepping in (Kupers et al., 2017). Informal approaches also fit naturally into this style: simple improvisation games, echo-playing, and playing by ear give children room to explore sounds and make musical decisions (Green, 2002; Andrews, 2013; Baker & Green, 2013). Andrews (2013) supports the idea that young beginners can benefit from both teaching approaches. Taken together, the examples suggest that teachers often move between the two approaches, adjusting the level of direction to suit the child's age, confidence, and stage of readiness.

Recent discussions in music education place more emphasis on autonomy-supportive and student-centred teaching, where the teacher facilitates the learning and the teaching is based around students' needs and goals (e.g., Goffi-Fynn, 2024; Koutsoupidou, 2008). Hallam (1998) had already gestured toward this idea, writing about 'the development of the intellect, autonomy and independence', and more broadly about 'the facilitation of learning'. In practice, autonomy-supportive teaching can take many forms. In practice, autonomy-supportive teaching can take many forms, such as inviting students to select the repertoire they wish to play, encouraging them to set personal goals, or allowing them to decide the pace and order of tasks within a lesson (Evans & Bonneville-Roussy, 2016). In online music lessons, de Bruin (2021, p. 5) mentions that teachers displayed certain behaviours for the students to become more autonomous and confident while learning online: 'modelling respect, recognition of difference, critical thinking [...], encouraging student ownership and empowerment'. Asking questions that promote critical thinking, as well as asking about students' lives outside the lesson, is another positive tool to encourage students' autonomy (Blackwell et al., 2020).

Interestingly, not only skill acquisition but also autonomy itself can be scaffolded. Techniques include promoting intrinsic motivation, explaining the assignment, asking students to take responsibility for their learning, being patient while they try to solve the problems themselves, and acknowledging students' emotions (Reeve & Jang, 2006; Renwick & Reeve, 2012). Teachers can also bolster student autonomy by asking what the student wants to play, responding to student questions, and giving positive feedback (Kupers et al., 2014, 25). 'However, teachers can

also undermine student autonomy by uttering directives, asking controlling questions, and criticizing the student' (Reeve et al., 2004; Reeve & Jang, 2006, cited in Kupers et al. 2014, p. 25). The question arises: how much freedom and support does the teacher need to provide for the student to learn efficiently while also developing autonomy and independence? Kupers et al. (2017), in their analysis of 3 teacher-student dyads, concluded that it depends on the teacher being autonomy-supportive and the amount of support the student needs. Pol, Volman and Beishuizen (2010) suggest that the balance lies in adjusting support to the learner's needs and gradually withdrawing it as they gain confidence. The question, then, is how teachers can balance the learning objectives and facilitate students' needs at the same time. Sawyer's (2004, 2011) idea of 'disciplined improvisation' points in the same direction: effective teaching requires responsiveness and flexibility, rather than rigid adherence to a single style.

In broader literature on education, especially with younger children or students at the early stages of learning, the theories of Piaget and Vygotsky are particularly influential. Piaget (1952) saw children as active builders of knowledge, working things out by interacting with their surroundings and gradually moving through different stages of development. His work is often used to support exploratory or student-centred approaches, where learners are given room to try things out, make mistakes, and come to their own conclusions. Vygotsky (1978) took a different angle, stressing the role of social interaction. His idea of the Zone of Proximal Development suggests that children can manage tasks with help that they could not yet achieve alone. The help — what later came to be called scaffolding — might come from a teacher, a peer, or even a parent, and is meant to fade as the learner grows more confident. While Piaget points to the importance of self-directed discovery, Vygotsky reminds us of the value of guided support, making both theories relevant for understanding the balance between independence and structure in instrumental teaching.

A related development is the recognition of informal learning approaches in music education. Green (2002) describes these as both conscious and unconscious practices that occur through enculturation, peer interaction, and self-teaching. Informal learning has been embedded in initiatives such as Musical Futures (Andrews, 2013; Baker & Green, 2013; Hallam, Creech & McQueen, 2017), which sought to address declining participation in school music. Musical Futures was intended to move the focus away from traditional teacher-led lessons and towards activities where students could play by ear, improvise, compose, or learn with and from peers. Studies on Musical Futures suggest that this shift can lead to greater enjoyment and motivation,

and that students often develop teamwork skills and a stronger sense of independence as a result. At the same time, teachers have pointed out the difficulty of fitting such informal practices into school systems that are shaped by performance targets and inspection frameworks (Hallam, Creech & McQueen, 2017).

Studies of informal learning in both group and individual settings further illustrate its potential. In a study of an extra-curricular recorder group, Andrews (2013) showed that teacher-led instruction worked well for passing on technical basics, but the children particularly enjoyed the later stage where they could work more independently and learn from one another. Baker and Green (2013) reported similar benefits in secondary lessons, where ear-playing tasks not only supported improvisation but also made sight-reading and general motivation stronger. At the individual level, Kooistra (2016) observed that informal piano lessons encouraged holistic play, flexibility, and student agency, with the teacher acting as a facilitator rather than a sole source of expertise.

One of the most recent studies on online teaching style was conducted by Pozo et al. (2021), who concluded that teachers displayed more controlling behaviours with younger (aged 6 to 9) students who displayed lower levels of autonomy, reasoning that the students should develop cognitive and performance skills before being given more autonomy. This corresponds to Kupers et al. (2015) statement that autonomy should be carefully scaffolded while teaching younger beginners. Pozo et al. (2022) also categorise more controlling and teacher-centred styles as 'direct' or 'reproductive', and the autonomy-supportive style as 'constructive' (Pozo et al., 2021). The middle ground between the two, Kupers et al. (2017) call 'disciplined improvisation', while Pozo et al. (2021) define it as an 'interpretative' teaching style. Additionally, Pike (2021) after surveying and interviewing pre-college and college-level music teachers during the pandemic, noticed that teachers with a growth mindset (i.e., those who adapted their teaching to online teaching) were most likely those who also preferred student-centered teaching philosophy and usually 'produced' more autonomous students, what resulted in more effective teaching and more satisfied teacher and student.

The studies point in different directions, which makes it hard to claim that one teaching style works best in every situation. What seems clear is that teachers draw on a mixture of strategies,

shifting between direct instruction, modelling, scaffolding, or facilitation depending on the student and the expectations of the institution.

2.3.3 Teaching young beginner students: development, expectations, and pedagogical approaches

Teaching young beginner students requires an understanding of children's developmental characteristics, their cognitive and physical abilities. Although there are many methods available, teachers usually adapt their approach to match the child's stage of development. Learners aged approximately 5–9 are in a period of rapid growth in motor control, attention, and early literacy, and these characteristics have direct implications for how piano lessons are structured and what students can reasonably achieve in their first years of learning. Piano teaching at this level draws on a variety of practitioner-led methods and materials (e.g., Blickenstaff, 2013, cited in Ernst, 2012; Clark, 1976; Chronister, 1995), but the ideas underpinning these approaches also connect closely with research on how young children learn, stay motivated, and develop musically (Hallam, 2016; McPherson & Gabrielsson, 2002; Creech & Hallam, 2010) (Section 2.6). Together, these bodies of literature provide an important context for understanding the experiences of young beginners in online settings.

Children aged roughly 5–9 are still developing the cognitive and motor skills that underpin early instrumental learning. Younger children (around age 5–6) are often working within Piaget's (1952) preoperational stage, which means they can imitate actions and repeat simple patterns, but they often find it hard to explain why something works or to hold several ideas in mind at once. Those who are slightly older typically begin to show the more organised, concrete reasoning associated with the early concrete operational period. At this point, they cope better with short sequences, simple cause-and-effect, and tasks that involve comparing one thing with another. From a Vygotskian perspective, learning at this stage is strongly shaped by social interaction and guided support. Vygotsky's (1978) concept of the Zone of Proximal Development suggests that children can carry out tasks with assistance that they could not yet manage independently. In instrumental lessons, this support may come from the teacher, a parent, or both, and is gradually reduced as the child gains confidence and skill. This helps explain why younger beginners often require close guidance in areas such as posture, coordination, or reading notation, and why parental involvement can play a particularly important role at this stage.

Children aged 5–9 are still developing the cognitive and physical skills that underpin early instrumental learning. Carmichael (2014) notes that children in this age range are gradually developing the coordination, hand strength, and reading skills needed for piano playing, which means that technical work is usually introduced in small, carefully paced steps. These developmental characteristics also influence lesson design: younger beginners concentrate best when tasks are short, varied, and supported by clear visual modelling, rather than relying on abstract explanations.

Their ability to concentrate is equally variable. Research on early childhood suggests that attention fades quickly at this age unless the activity is engaging or changes in some way (e.g., Adolph & Hoch, 2019). In practice, this often means moving between activities quite quickly. Many teachers structure early lessons around a string of short tasks—singing a phrase, clapping a rhythm, trying a small technical idea, or playing a brief piece—rather than staying with one activity for too long. Harris (2013) also encourages this kind of pacing, arguing that varied, manageable tasks and simple musical "games" help maintain curiosity and keep children thinking musically from moment to moment, which also encourages student-centred approaches which result in higher engagement and student attainment (Section 2.3.2).

Early music-reading studies emphasise that beginners often use broad cues such as contour and directional movement when first interpreting notation, only gradually developing the ability to decode pitches with accuracy (McPherson & Gabrielsson, 2002). In practice, this means that early notation work is usually limited to simple directional or pattern-based tasks. It also results in teachers pointing at the score to help students track the notes (Waterman, 1999) or using tactile approaches to support visual and kinesthetic understanding (Neuhaus, 1958) (Section 2.3.1). This approach reflects how beginner readers make sense of visual information and apply it in practice by playing the instrument with a teacher's help.

For most teachers, the early goal is to support good habits at the keyboard, introduce essential musical ideas, and make the first lessons enjoyable enough that the child wants to continue. When children first begin lessons, much of the work centres on developing a sense of pulse and simple rhythmic or melodic patterns, as well as establishing comfortable posture and hand use at the piano (Clark, 1976; Faber & Faber, 1993). Musical understanding is prioritised alongside

technical skill, and many contemporary pedagogues emphasise the need to connect instrumental skills through integrated, holistic learning (Harris, 2013).

Establishing healthy technique in the early stages is essential for preventing tension and developing long-term fluency. Clark (1976) writes a great deal about establishing ease at the piano in the first lessons, especially how the child sits and how their hands rest on the keys. Her focus is mostly on keeping things natural so that tension does not creep in later. Chronister (1995) approaches the same issue from a slightly different angle. He often talks about the value of large, simple movements at the start, because young children tend to find broader gestures easier to imitate than small technical adjustments. Blickenstaff's work (2013) is less technical, but he stresses the need to keep early tasks short and manageable so that children do not become overwhelmed. Together, these authors encourage a gradual approach to early technique, keeping the first steps simple so that children can develop a sense of physical ease.

A common starting point involves exploring the keyboard through the two- and three-black-key groups, which helps young learners recognise patterns before they encounter full notation (Bastien, 1985; Faber & Faber, 1993). Teachers also tend to point out a few landmark notes—Middle C and nearby F or G—so that children have reference points across the keyboard. Clark (1976) places much of the early reading work on simple relationships—steps, skips and repeated notes—rather than long strings of isolated note names. A similar approach is found in Pauline Hall's tutor books, where children begin with short patterns they can recognise quickly. Harris (2013) also encourages teachers to reduce the amount of isolated information given at once, and to help learners make musical sense of notation through patterns and familiar shapes. McPherson (2005) also notes that beginners read more securely when they think in small musical units rather than decoding each note separately.

However, for some teachers, the first stage of learning does not involve notation at all. Young children who are just becoming confident readers can find written music hard to relate to, so teachers sometimes start with copying short patterns or gestures at the keyboard. This keeps the early work concrete and manageable and postpones the more abstract demands of reading the notes on the stave. Many authors describe this as 'sound-to-sign', which means introducing short

patterns or pieces by imitation in the early stages, allowing children to play musically before they are ready to read notation (McPherson, 2005; Gordon, 1997).

Teachers typically introduce rhythm notation alongside pitch, encouraging children to clap, speak, and internalise patterns before playing them. Many teachers draw on Kodály ideas when introducing rhythm. In this approach, children speak patterns using simple rhythm words—ta, ti-ti, and so on—before they see any notation (Houlahan & Tacka, 2015). Teachers often pair the spoken rhythms with clapping or a small movement, simply to help children feel what the pattern is doing. For younger beginners, this physical element tends to make the rhythm easier to understand. Several other studies have compared the effects of different spoken rhythm systems on children's rhythm reading and performance. In Palmer's (1976) and Colley's (1987) studies, the learners who practised with rhythm syllables outperformed those who did not. Colley's findings also suggested that a system separating beat subdivisions—similar to the way Gordon's approach organises rhythm—led to a better understanding of rhythm.

Regarding student progress, Clark (1976) emphasises that early progress should prioritise musical expression and physical ease over rapid movement through repertoire. Harris (2013) points out that a child's confidence, curiosity, and general musical understanding matter far more in the long run than how quickly they pick up technical details. For most young beginners, these qualities develop through simple activities such as copying short patterns, learning a few pieces by rote, and trying things out at the keyboard with the teacher's guidance. This balanced approach allows children to experience musical success while gradually building the skills needed for more advanced repertoire, independence, and literacy.

The literature on early piano pedagogy makes it clear that teachers' choices in the first lessons are closely tied to the developmental abilities of young children and to the musical and technical foundations they need at this stage. Young learners rely heavily on visual modelling, short, varied tasks, multi-sensory approaches, and adult scaffolding as they develop technique, notation fluency, and musicianship. However, several aspects of teaching that are self-explanatory in face-to-face lessons, such as the teacher showing and explaining the keys on the same (mutual) piano, or clapping or playing together, might be more difficult to replicate in online situations due to the student's lack of visual and verbal understanding at this age. Thus, it would be interesting

to find out how the teachers dealt with the technical aspects of teaching young beginner students and if they adapted or invented new teaching methods to support the young learners online.

2.3.4 Parental involvement and support

One suggested solution to the problem of a teacher's physical absence in online lesson settings was involving parents. Several studies have reported a positive impact and a sense of connectedness when parents become involved in their child's online music lessons (Calderón-Garrido & Gustems-Carnicer, 2021; Joseph & Lennox, 2021; Papatzikis, 2021). The importance of a harmonious parent-student-teacher communication triangle has been found to be a defining factor of successful music attainment in the wider context of music education research (Creech, 2009; Creech, 2010; Hallam & Creech, 2011; Upitis et al., 2017). Upitis et al. (2017), in a study with 2583 parents who responded to a survey, also note the significance of parental support with young beginner students, with support gradually fading away as students become more self-efficient. On the other hand, the researchers observed that certain type of parental involvement (i.e., controlling or putting pressure on teachers or students) may have a negative impact on a child's development (Cheng & Lam, 2021). Therefore, 'the nature of parental interventions needs to be carefully articulated, as some behaviours and actions may be more helpful than others' (Upitis et al., 2017, p. 85).

There are teaching methods that require more support from parents than others, for instance, the Suzuki method. In the Suzuki method, parents are involved in every single lesson, as well as supporting their child with practice at home. Some parents receive 'initial parent education' before starting the lessons, and all of this has shown very positive results in terms of children's attainment and motivation (Einarson et al., 2022). Parental support is deemed to be significant in a young musician's journey; however, there are often different power dynamics between the teacher, the parent, and the student that might have a greater impact on the student, and not all parental involvement is beneficial for the student.

Creech (2010) conducted a study with 337 parent-pupil-teachers trios in individual violin lessons and identified different patterns of parent-teacher-student relationships: the most successful were those where parents, teachers, and students worked together with good communication

and balanced involvement, or where parents took an active and supportive role alongside the teacher. The least successful were relationships marked by poor communication and little parental support, while situations with only partial involvement fell somewhere in between. The best type of interaction - 'a harmonious trio' was that where students would have the right balance between support and autonomy: 'parents should neither become involved in their children's learning in the name of the agency, nor disempower their children in the name of the communion' (29).

During the 2020 pandemic, parents had the chance to be more involved in their child's online lessons and as a result, they 'developed a better understanding of the value of music lessons and are now better able to support learners when they are practising their instrument' (ABRSM, 2021, p. 40). Some teachers have found that parents have become more engaged in their child's learning and are better able to support learners between lessons, with teachers developing better relationships with parents as a result (ABRSM, 2021, p. 40; Joseph and Lennox, 2021). Li (2021, p. 2) also advocates the importance of parental involvement, remarking that the 'self-control and willpower of children are relatively weak, so the role of parents in their piano practice cannot be overemphasised. This makes parental companionship important throughout the course'. Papatzikis (2021, p. 3) also concludes that online early-years music lessons should strengthen the parent-child dyad and support the parent rather than the child as a guide. Papatzikis (2021, p. 3) adds that 'after all, the parents should be the major catalysts in the educational and developmental process in the early years, be it either online or offline. Parents might even need to guide professional practitioners to more efficient and reliable communication techniques in this demanding context.'

In a more recent study with Hungarian music teachers (Váradi et al., 2024), it was noted that parental support was crucial for young beginner students; however, there were mixed views on the outcomes of parental involvement. Joseph and Merrick's (2021) survey, conducted with music teachers during the pandemic, noted that parental support was minimal during synchronous online lessons. Martínez-Hernández (2022), in a survey with a wide range of music teachers from Spain, also noted that younger students (infant and primary age) obtained lower performance levels according to the teachers, as they had to be supported by their parents. However, the amount of support or whether they did support with anything other than the technological setup had not been reported in this study.

Nevertheless, Cheng and Lam's (2021) study has reported the opposite outcome of parent involvement – when parents added extra pressure on teachers' general well-being:

the shift in all formal lessons from face-to-face to online has made it possible for parents to monitor teaching content and assess teachers' performance. The complete disclosure of classroom dynamics has increased transparency and accountability, resulting in an extra burden for teachers, who must also meet parents' expectations and answer for their advices. (p. 220)

Parental involvement, depending on teacher-parent-student dynamics, may not always be beneficial in online learning. However, parents may be the only ones who can effectively support students and their teachers in online lesson settings. The topic of the level of parental involvement in online music lessons should be further explored, whether it plays an important role in lessons with younger students who have lower levels of independence, as well as what patterns of communication and collaboration need to develop between the teacher, the parent, and the student in order for all parties to be satisfied with the online setting.

2.4 Pedagogical approaches in online teaching

Teachers were the most frequently surveyed and interviewed participants in research on online music education. Understanding their experiences and perspectives is therefore crucial. What resources did they seek out, and who or what did they rely on during the pandemic, when online education was far less established? Did they maintain their usual teaching approaches, or did they adapt—or even innovate—to meet their students' needs? In addition, a growing body of research has begun to explore what makes an effective online music teacher, and which abilities and characteristics are associated with successful teaching and positive learning outcomes.

2.4.1 Online teaching approaches

Although some researchers recognise that online teaching must be adapted to its context (Biasutti et al., 2021), Pike (2017) explains that technology can and should be combined with traditional teaching methods. Pike (2017, p. 111) also reported that the intern teachers (i.e., trainee teachers) in her project, when faced with difficulties in online instrumental teaching,

‘incorrectly attributed the lack of understanding [of online teaching methods] to the online environment’ and through the observation of peers, feedback, and guided self-reflection they ‘acknowledged that the problems had less to do with the technology and the online platform than with inadequate teaching techniques’. A few specific teaching approaches presented by Pike (2015, p. 15) include the careful monitoring of visual and aural cues, adjusting the camera angle, and providing ample back-and-forth demonstration of music between the student and the teacher, so that students develop a greater level of independence and aural skills. Pike (2015, p. 15) also suggests ‘empowering the student to move their hand into position or locate a spot on the score’ as opposed to the teacher moving the student’s hand or pointing at the score in face-to-face lessons.

Pike (2017, p. 113) also reflects on the development of pre-service teachers during the course and the adaptation of teaching methods. She reports that interns initially ‘spoke too much and were imprecise with their explanations’. As the project progressed, the interns achieved greater success with online lessons as they learned to focus on ‘smaller chunks of materials, offered more precise and concise explanations, and used musical demonstrations’. The interns also recognised the benefit of empowering their students to learn independently, which increased their self-confidence and independence (p. 113). This shows that an introductory course and training on online aspects of their profession is essential for teachers.

A number of authors observed that during the pandemic, teachers were exploring the effectiveness of technology resources, adapting and modifying their teaching style, and utilising dialogue and demonstration (de Bruin, 2021; Hernandez, 2021; Rucsanda et al., 2021). Interestingly, in Okay’s (2021, p. 218) study, instrument educators lowered their expectations regarding musical goals due to the issues caused by slow connection speeds and the lack of suitable software. Similarly, Riley (2009) and Yilimaz (2020) reported that teachers were unable to cover as much material as in face-to-face teaching. If the evaluation criteria are considered a parameter for assessing the development of the process in instrument training, lowering the evaluation criteria means that the instrument training is negatively impacted by this process. This is supported by an instrumental teacher in Daugvilaite’s (2021, p. 186) study, who ended up ‘reducing the level of the exercise quite a bit for the majority of the students’ so that they would achieve a better result in sight-reading.

Several studies have pointed out that one of the key teaching strategies often used in instrumental lessons—the tactile approach (Section 2.3.2)—was not possible in an online environment (Biasutti et al., 2021; Dumlavwalla, 2017; Martínez-Hernández, 2022; Okay, 2021; Ünlü, 2022; Vaizman, 2022). Teachers responded to this challenge by relying more heavily on clear verbal explanations and demonstrations. But when it comes to young beginner students, it is worth questioning whether such solutions are sufficient for correcting hand position or improving playing technique. This remains an open question in the current literature. Alongside this, Biasutti et al. (2021, pp. 12–13) offer several additional recommendations for effective online instrumental teaching: not interrupting students while they play, waiting until the end of the piece before offering feedback, giving concise and clear explanations, and modelling through examples, including asynchronous activities like listening to recordings. When it comes to providing feedback, shorter and less frequent messages, delivered at a slower pace, appear to be more effective for instrumental learners (p. 13).

However, during the lockdown, some teachers abandoned teaching some important aspects of instrumental performance due to the difficulty of teaching them online, such as ‘pitch, resonance, pedal use, fingering, embouchure, and timing’ (Vaizman, 2022, p. 161). This raises a few questions: Are there any approaches that teachers should use to teach these aspects of playing in the long term, or have the teachers postponed such issues temporarily, hoping to resolve them once they are allowed to return to face-to-face teaching? Moreover, if teachers were to continue teaching online in the long term, how should they address such challenges?

Sadly, two surveys with instrumental teachers in Spain concluded that even though the teachers had a great opportunity to transform their teaching practices during the lockdown, a majority of them either taught in the same way as in the face-to-face setting or even simplified their methods, sticking to the master-apprentice or teacher-centred teaching model (Pozo et al., 2021, 2022). The only group of teachers who were innovative and used more complex ICT (information and communication technology) techniques were those who had been teaching online prior to the pandemic (Pozo et al., 2022). Thus, teaching resources and experience play an important role in delivering successful online music lessons.

This section demonstrates that successful online teaching often depends on rethinking rather

than replicating face-to-face methods. While some teachers initially blamed the format for poor outcomes, studies show that with clearer explanations, chunking material, and student-led tasks, teaching can be effective online. However, not all teachers adjusted—some lowered expectations or stuck to teacher-led approaches. These findings highlight the need for training that prepares teachers to adapt their methods to online environments rather than rely solely on traditional ones.

2.4.2 Adaptation and innovations

For many teachers, moving from a face-to-face to an online setting not only presented certain challenges but also offered opportunities to invent and explore new teaching approaches. Most conservatoire instrumental teachers studied by Biasutti et al. (2021, p. 10) concluded that they had to adapt and redesign their offered curricula in a way that would stimulate participation. Some have created video materials that demonstrate posture and other aspects of playing, encouraging conservatoire students to learn pieces independently. Interestingly, participants in Biasutti et al.'s (2021, p. 10) project highlighted that they shifted their teaching from nonverbal modelling and demonstration to verbal teaching approaches that require careful explanations and descriptions of every aspect of playing. Similarly, de Bruin (2021, p. 4) reported that teachers' focus shifted to different ways of engaging and connecting with students by using a dialogic approach or utilising several cameras for demonstration. Pike (2021) in a study with 80 precollege and college-level music teachers revealed several teaching approaches that teachers developed during the pandemic, including sending manipulatives (tools to support a multisensory approach) to their students by mail to encourage engagement and technique, creating movement activities, online games, applied theory lessons, and producing teacher-created tutorials and worksheets.

Consequently, as some opportunities, such as playing together, were halted during the lockdown, alternative forms of teaching emerged, including asynchronous methods, which led to teachers and students recording themselves, learning repertoire more effectively, and performing without stage fright (Rucsanda et al., 2021; Aaberg, 2023). A participant in Schiavio et al.'s (2021) study agreed that remote lessons might be more comfortable for those who have stage fright; however, they object that for students who 'require adrenaline that the stage provides', performing online might feel demotivating (p. 173).

A majority of the teachers complained that it is not possible online to count or clap in time, nor to accompany or play together with students. However, in a few studies, these challenges were overcome by students using a metronome (Pike & Shoemaker, 2013) or in a group lesson setting, where students counted for each other (King et al., 2019b). However, some teachers overcame the obstacle of not being able to play together, and in their research (Merrick & Johnson, 2024) with HE students taking secondary instrument (woodwind and guitar) in dual-mode (online and face-to-face) setting, they came up with 'muted duet' – the student who is online has the speakers and the microphone on, while the student in the face-to-face lesson has only speakers on – this way the students in the classroom can hear the person online playing together with the person in classroom, but unfortunately, the online person cannot hear the person in the classroom.

Despite the limitations of online formats, collaborative tasks like group composition and improvisation have still been shown to work effectively. Three Italian rock band musicians in Biasutti's (2018) project concluded that it is possible to compose, improvise, arrange, and construct a music piece online together with other band members by using synchronous and asynchronous approaches. Biasutti (2018, pp. 488–489) also suggests that the experimenting, listening, and evaluating, as well as constructing, these musicians demonstrated in this project could be applied to formal music education as well, which would result in a strengthening of critical thinking and metacognition strategies among students.

In terms of teacher adaptation to online teaching, Joseph and Merrick's (2021) survey with Australian music teachers concluded that teachers created new approaches and rethought their practices, which allowed them to support their students and build their autonomy. The same teachers reported an increase in confidence using technology during the pandemic lockdowns. Not only teachers' adaptability to online teaching, but also their confidence in using technology warrants further investigation. Merrick and Joseph (2023) concluded that teacher confidence in using the technology has increased following the pandemic, as well as competence and application of Information and Communication Technology (ICT): 'the more confident teachers became, the more routinely they shifted between technology devices, using various software to sustain student engagement and connection' (p. 203). This demonstrates that teachers' ability and confidence in using technology might affect the teaching and learning outcome in online music education.

In a more recent study that also reflects on the instrumental teaching online, it is concluded that about half of the respondents adapted their teaching strategies to better suit online platforms, and more than half of them said that they became more creative while teaching online, as well as became more comfortable with virtual teaching (Aaberg, 2023). However, even though the respondents claimed that they had adapted their teaching, more than half of them (65.36%) reported that it was a difficult process to adapt to online teaching (Aaberg, 2023). Regarding the integration of technology into teaching, teachers viewed it very positively and claimed that they would utilise some technologies in their face-to-face lessons (Aaberg, 2023).

In summary, findings are mixed regarding whether factors such as teachers' experience or confidence reliably predict their ability to adapt to online music education. What is clear, however, is that many teachers developed new approaches, experimented with innovative strategies (for example, video demonstrations, 'muted duets', multisensory tools, or dialogic methods), and discovered new ways to engage their students. Although a significant proportion of teachers reported that adapting to online teaching was a difficult process, many also described becoming more creative and increasingly confident in using technology—changes that, in some cases, have continued to influence their face-to-face teaching practice.

2.4.3 Use of video recordings in asynchronous teaching

Asynchronous learning has been considered as a solution to latency issues experienced during synchronous lessons (Koutsoupidou, 2013; Shoemaker & van Stam, 2010). During the pandemic, asynchronous teaching became a lifeline to many teachers who decided to record either tutorial videos or backing tracks to help their students learn offline or to replace their teacher's live accompaniment (e.g., Martínez-Hernández, 2022; Joseph & Lennox, 2021; Váradi et al., 2023; Ververis & Apostolis, 2021). Such videos can not only be recorded prior to the lesson, but the whole lesson could be recorded via videoconferencing software for students to re-watch it later (Hernandez, 2021, p. 190). Videos recorded by the teachers have been used to explain a specific technique or for accompaniment purposes, while videos and tutorials of other performers are used to complement the learning process (Hernandez, 2021, p. 191). A very interesting perspective in Rucsanda et al.'s study (2021) posits that

These practices of individual recording, subsequent overlapping of recordings and their

simultaneous rendering have brought benefits such as: the opportunity to participate from everywhere, the students' possibility to show their personalities and to work more on their individual parts, to perform without stage fright, but we cannot deny the obvious disadvantages in terms of lack of collective musical activity. (p. 7)

Ververis and Apostolis (2020) reported that 70.1% of surveyed instrumental teachers in Greece used a combination of synchronous and asynchronous teaching practices due to technical problems during video calls. Joseph and Lennox (2021, pp. 247–248) reported pre-recording material and providing instructional videos and YouTube clips due to lack of resources in students' homes and technical glitches during the lessons; thus, providing instruction videos and pre-recoding work increased students' ability to prepare lessons. However, only 20% of music teachers in Aaberg's (2023) survey on string teaching during the pandemic reported using some form of asynchronous teaching.

Students were also encouraged to record themselves (Aaberg, 2023; Calderón-Garrido & Gustems-Carnicer, 2021; Hernandez, 2021; Nugroho & Biasutti, 2024). According to Váradi et al. (2024), this made a significant difference in detecting students' mistakes in playing by the teacher. A teacher in Daugvilaite's (2021, p. 9) study also mentioned introducing video messaging through WhatsApp, asking students to record and send videos of their progress, which made them practice more since they started hearing themselves through the recording. Blackburn (2017, p. 65) also discusses videos recorded by students themselves and what impact they can have: 'it gives them the responsibility for preparing their own performances, sharing either full presentations or excerpts of the preparation stages, receiving feedback from others rather than one instructor, and then reflecting on what they have produced.' Shoemaker and van Stam (2010) claim that

the process of creating a video has been a worthwhile endeavour for both student and teacher. In addition to gaining practical technical skills over the course of recording and posting the video, the student has also developed valuable skills for practice and performance, as multiple "takes" are often required in preparing a video of the highest quality. (p. 3)

Unfortunately, in other cases, such as Schiavio et al. (2021, p. 174), some students were left with only videos as a substitute for synchronous online lessons during the first lockdown. This approach had positive results, including convenience for the students and the ability to re-watch the videos, but it also had disadvantages, including a lack of feedback and an unnatural-feeling lesson. Another type of asynchronous learning that supports self-regulated learning has been reported by Merrick and Johnson (2024) in a dual-model (a part of students attending online, and a part – face-to-face) setting, where they would be encouraged to share a three-minute weekly journaling in student discussion forums as well as teachers were providing 3-5 minute video response/feedback as a part of formative assessment.

In summary, a balance between synchronous and asynchronous methods appears to lead to more positive outcomes in online music education, although, as reported, not all teachers make use of asynchronous approaches. Furthermore, further research could explore the significance of asynchronous teaching methods in post-pandemic online education, with particular attention to young beginner students, a group frequently underrepresented in existing studies.

2.4.4 Teacher competencies and characteristics

Biasutti et al. (2021) rightly point out that ‘delivering online lessons does not mean simply delivering face-to-face classes on camera; rather, it could involve a qualitative change in approach and educational strategies’ (El-Deghaidy & Nouby, 2008 cited in Biasutti et al., 2021, p. 3). Johnson et al. (2018, p. 259) also recognise that success in online music teaching is a result of teachers’ professional development (e.g., workshops, seminars, coaching, and mentoring) and that support systems should address both technological aspects and discipline-specific approaches. Additionally, Johnson et al. (2018) advocate that teachers who teach online should be effective communicators, resilient, and adaptable to new technologies and approaches. Merrick and Johnson (2024) highlight in a study of dual-mode lessons (online and face-to-face) that teachers need to be adaptive and solutions-oriented when synchronous instruction is involved.

A study by Pike (2021) with precollege and college level music teachers from US who responded to a regional survey and later one a smaller sample was interviewed, demonstrated a divide amongst the teachers: those who managed to adapt to online teaching during the pandemic, who

invested into their equipment to have a better video or sound quality, and those who were unable or unwilling to make changes and returned to face-to-face teaching as soon as it was allowed. Pike (2021) explains that regardless of a teacher's age, some teachers have a growth mindset, and others have a fixed mindset who are unwilling to change. It comes as no surprise that teachers with a fixed mindset in her study were more frustrated with the online medium, deeming online platforms unsuccessful or less effective. Pike (2021) noticed, that when technological issues arose, they did not invest in equipment or did not ask their students to send recordings of themselves. Pike questions whether teachers who have advanced music training are less flexible, and those whose teaching philosophy is more student-centred have more success transitioning online (see section 2.3.2 on teaching styles and approaches).

Another phenomenon was observed by Váradi et al. (2024), who noted that some respondents in their survey were so negative towards online music education that when asked about the potential benefits of online instruction, they continued listing the negatives. This again highlights the close-mindedness of some teachers, particularly those who prefer face-to-face lessons over online ones. Other studies also reported participants' firm preferences for face-to-face lessons after the lockdowns (e.g., Aaberg, 2023; Martínez-Hernández, 2022; Ünlü, 2022; Váradi et al., 2024). This tendency may reflect teachers' reluctance to adapt, insufficient training in online pedagogies, or a mindset shaped by extensive classical training that emphasises traditional, in-person instruction.

Most studies conclude that more resources and training in online music pedagogy are necessary (e.g., Onderdijk et al., 2021; Pozo et al., 2022; Rucsanda et al., 2021). Johnson et al. (2017, p. 259) emphasise that institutions should support teachers through structured professional development. However, for those teaching privately, the availability of such information remains uncertain, and many may rely on a trial-and-error approach or draw on their previous face-to-face teaching experiences (Johnson, 2017, p. 447). Furthermore, Johnson (2018), Joseph and Merrick (2021), and Pike (2021) argue that both current and future teachers should receive education on online teaching, recommending that training in online pedagogy be integrated into teaching diplomas and degrees, alongside ongoing professional development opportunities for those already in the field.

2.5 Interpersonal aspects of teaching

The teaching experiences and approaches discussed in the previous sections are not the only aspects of online instrumental music teaching worth investigating – factors such as teacher and student behaviour or interpersonal relationships are just as important. Some of these mechanisms, such as verbal or non-verbal communication, happen subconsciously in a lesson, thus contributing to the feeling of a teachers' presence in the lesson. On the other hand, sometimes the lesson dynamic depends on the student-teacher dyad being aware of the pitfalls, which might contribute to a better lesson experience. While behaviour and communication online do not differ much from what is provided by face-to-face lesson delivery (King et al., 2019), it has been concluded that students, especially younger ones, are affected by the physical absence of the teacher in an online setting (Daugvilaite, 2021; Dumlavwalla, 2017).

2.5.1 Teacher and student behaviour and communication

Student and teacher behaviour and communication during the lesson have been widely researched in the general literature. Behaviour in a music lesson includes clapping, singing, demonstrations, instruction, asking questions, responding to technical difficulties, and talking. Furthermore, non-verbal communication during the lesson (Simones et al., 2015) and teaching gestures (Bremmer & Nijs, 2020) are equally important. Bremmer and Nijs (2020) examined the existing literature on the types of body gestures that teachers use to complement their lessons or to communicate a specific aspect of teaching, such as for action demonstration and physical modelling. Non-verbal cues that might affect the fluency of an online lesson, observed by Duffy and Healey (2017, p. 12) in a face-to-face instrumental lesson, are the 'tutor stepping forward towards the music, raising their pencil or instrument [...] moving back from the music stand to allow the student a longer extract'. Thus, verbal communication is considered the primary tool for explaining concepts and techniques of playing, building rapport with students, and stimulating their presence online (e.g., Dumlavwalla, 2017, King et al., 2019).

In online music research, King et al. (2019a) measured the frequency of certain behaviours in online lessons such as modelling, demonstrating, accompanying, talking, or listening and observing. It was concluded that there was a marginal difference between face-to-face and online lessons in terms of student-teacher interaction, demonstration, or listening/observing.

The main difference found was that the frequency of accompanying in an online setting was lower due to latency issues. King et al. (2019a, p. 206) also reported that, although teachers felt they spent longer talking, the calculations did not reveal a significant difference in the levels of teacher talk, modelling, or demonstration between digital and face-to-face lessons.

The dialogic approach was preferred by the 15 instrumental teachers in de Bruin's (2021, p. 6) study who concluded that instead of relying solely on demonstration, rote modelling, and copying, 'teachers and students engaged in thoughtful learning by allowing each other to be active and dialogic participants in the learning process, which resulted in a nurturing student-teacher relationship built on trust and reciprocity', meaning that personal connection that includes teacher recognition, insight, and promotes connection between teacher-student dyad regardless of the teaching approaches being used. Dye (2016, p. 168) also concluded that lessons in the study were successful due to 'intrapersonal dialogue between teacher and student' that mediated and facilitated the learning. Additionally, Dumlavwalla (2017, p. 18) also noticed that while teaching online, she strengthened her verbal explanations and diagnostic skills.

Another behavioural element is non-verbal communication, which is more difficult to notice and respond to in an online setting due to the inability to look at the screen while playing (Healey & Duffy, 2017, pp. 16–17). Healey & Duffy (2017) also identified that in a normal lesson setting, sheet music is often used as a reference point, with the student responding to non-verbal gestures as to whether to continue playing, stop, or add a dynamic element, while in videoconferencing lessons, the score is no longer a focal point (Healey & Duffy, 2017, pp. 18–20). Therefore, the absence of immediate non-verbal communication can negatively impact online lessons (Dammers, 2009; Duffy & Healey, 2017; Lee, 2021; Rucsanda et al., 2021; Schiavo et al., 2019). Duffy and Healey (2017, pp. 18–20) propose a solution to improve online lessons – an interactive digital score that could be used simultaneously by student and teacher, with annotations made in real-time for both parties. However, it has yet to be tested.

Hernandez (2021, pp. 189–190) highlights the importance of communication in any instrumental lesson setting: 'One-to-one tuition is irreplaceable for its ability to respond to the individual necessities and for its pedagogical effectiveness'. Hernandez (2021, pp. 189–190) also explains

that the communication can be disturbed or distorted while having the lessons online, and she proposes that teachers work on shorter music segments and give feedback only once the student is finished, rather than while they play. Biasutti et al. (2021, p. 10) also confirm the dominance of dialogic pedagogy, although they raise a few concerns regarding student focus, noting that predominantly verbal teaching requires students to remain concentrated for a prolonged period.

Studies reported negative experiences when it comes to the lack of eye contact (Biasutti et al., 2021; Dammers, 2009; Duffy & Healey, 2017; Johnson, 2017; Maki, 2001; Onderdijk et al., 2021; Paptzikis, 2021; Riley, 2009; Rucsanda et al., 2021). On the contrary, Pike and Shoemaker (2013, p. 155) reported that students and teachers make more eye contact online than face-to-face, since the latter situation usually entails the student and teacher sitting parallel to each other and facing the score. It can be concluded that teachers' and students' behaviour and communication are important factors in an online lesson; however, it has not been explored in any studies with young beginner music students.

2.5.2 Interpersonal interactions and relationships

The broader literature in music education highlights the importance of interpersonal interaction and the relationship between teacher and student. Creech and Hallam (2010) found that students who felt supported, listened to, and encouraged by their teacher were more likely to progress, enjoy their lessons, and feel motivated to practise. Similarly, Gaunt (2010) interviewed instrumental and vocal teachers in conservatoires and found that one-to-one tuition was much more than just transferring knowledge—it relied heavily on mutual trust, rapport, and the ability to respond to each student as an individual. The teachers described a delicate balance between offering authority and giving students autonomy, and noted that the quality of the relationship had a direct impact on learning outcomes. Students described their teacher's role as friendly, parental, collaboratively curious, and that of a doctor and patient. These studies show that in music education, particularly in individual lessons, the personal dynamic between teacher and student cannot be separated from the teaching process itself.

It is not an exception in online lessons, where interpersonal interactions and relationships might feel even more important due to the distance between the pupil and the teacher. De Bruin (2021, p. 1) observed that music teaching approaches which prioritised connection, empathy, and the

development of strong teacher-student relationships—particularly those that encouraged a slower, more learner-centred pace—helped promote meaningful engagement and deeper musical exploration, even in an online setting. The online student in the Pike and Shoemaker (2015) study concludes that, due to the use of Disklavier pianos, it feels like the teacher is in the same room. Even though the student had not met the teacher prior to commencing online lessons, she felt as if she and the teacher knew each other well, since ‘she personalizes my lessons and knows what’s going on in my life’ (p. 14). The teacher explains:

Isabelle and I have never occupied a common space or sat at one piano together. Yet, I know about her sense of humour, her natural inquisitiveness and her willingness to try new things. She knows about my propensity to get really excited when we are on the cusp of mastering a new concept and when she has given a particularly musical performance during her lesson. I know when she has had a difficult day at school or if her energy level is low. Even though we live 1,000 miles apart, in all of the ways that matter she is still just inches away from me during the lesson. She may be on a screen, but I can make her piano play a beautiful two-note slur and she can touch me through her contagious energy and spirited performances. [...] If we observe each other closely and are truly present during synchronous online lessons, the interpersonal cues that help us to communicate effectively with one another and develop rapport still exist.

However, not all teachers managed to establish successful connections with their students online (Dammers, 2009; Dumlavwalla, 2017), or they were missing human interaction, especially during the pandemic lockdowns (Aaberg, 2023). A lack of personal contact was concluded in Váradi et al.’s (2024) survey with Hungarian primary to tertiary-level music teachers. Kruse et al. (2013, p. 54) confirm that if the relationship between a student and a teacher has not been established prior to commencing online lessons, it might be difficult to cultivate ‘comfort, understanding and productivity’ during the lessons. They note, too, that having a previous relationship made communication easier. Therefore, the interpersonal relationships between student and teacher must be considered in any investigation of the reasons behind a successful online instrumental lesson.

2.5.3 Impact of teacher's physical absence

Ever since online education has been considered a suitable way of delivering lessons, the importance of a teacher's physical presence in the lesson has been a matter of increasing academic concern. In the broader context of music education research, the teacher's presence encompasses several key elements, including body language, nonverbal communication, physical touch (e.g., adjusting playing technique), and eye contact (Bremmer and Nijs, 2020; Simones et al., 2015). The absence of these teaching elements, particularly when students could not see the teacher's non-verbal gestures in an online setting, may have contributed to the students' sense that something was missing. Beating the pulse or conducting style gestures while the student is playing are not possible during online learning, and only the teacher's demonstration, while the student is not playing, can compensate for them. Simones et al. (2015) found that 'piano teachers guided and supported learners in a Pre-grade 1 and Grade 1 group through 'touch''. This may explain why the teaching of young beginners online can be challenging, as they often require physical support while playing (in conjunction with the teacher's preferred pedagogical approach, cultural context and legal obligations (Musicians' Union, 2023).

One might argue that it is possible to create social, cognitive, and teaching presence in an online environment (Akyol & Garrison, 2008; Johnson, 2017). However, both studies were based on HEI music education programs, with a majority of the lessons being theory-based, rather than practice-based. Johnson (2017, p. 450) concluded that students were present in a cognitive way by commenting on and interacting with their peers' work online. She notes that the students in her study were socially present due to the combination of synchronous videoconferencing lessons and asynchronous discussion forums. However, the questions that arise from replacing a teacher's physical presence in online lessons with younger students have not been adequately addressed.

Teachers' physical absence and a lack of emotional connection were found to be drawbacks in online music lesson settings (Dammers, 2009; Daugvilaite, 2021; Dove, 2006; Dumlavwalla, 2017; Jorgensen, 2014; Salvador et al., 2021; Schiavio et al., 2021). Dammers (2009, p. 9) noted that something as basic as eye contact was difficult to maintain through a screen, which he found unsettling and not conducive to building a comfortable rapport with the student. What complicates this further is that much of traditional instrumental pedagogy has relied on the

tactile approach—something many teachers are forced to abandon in online settings (Section 2.3.2). In Vaizman’s (2022) study, some teachers suspected that students had discontinued their lessons specifically due to the loss of physical support. Others tried to compensate with clearer verbal instructions (Dumlavwalla, 2017), but this raises the question of whether verbal corrections alone are sufficient—especially for younger learners who may struggle to act on these instructions without guided physical intervention.

The issue is not limited to instrumental technique. In early years music sessions, Papatzikis (2021, p. 2) reported that some caregivers were unsure about how to support their children without the live, physical presence of a music facilitator. Similar concerns emerge in Okay’s (2021, p. 217) findings: even routine technique corrections, which would normally be resolved in a few face-to-face lessons, took significantly longer online. For young learners, the absence of physical prompts and modelling can be more than a mere inconvenience—it can change the whole shape of how musical concepts are introduced and embodied.

This is where Siegel’s theory of interpersonal neurobiology (2012, 2020) offers some insight. Siegel suggests that learning and emotional regulation are deeply rooted in interpersonal attunement—the way two minds connect through shared attention, empathy, and body-based cues. In face-to-face teaching, this kind of attunement happens constantly: through gesture, tone of voice, mirroring, and simple proximity. When this is removed, as in online teaching, the neural mechanisms that support trust, regulation, and learning may be disrupted. This can be particularly challenging for children, whose ability to self-regulate and stay focused often relies on the teacher’s embodied presence.

Not being able to help physically can also have a knock-on effect on the teacher’s own sense of confidence. Papatzikis (2021, p. 2) mentioned that ‘music educators might start feeling that they do not convey “the message” properly.’ Duffy and Healey (2017, p. 22) also suggested that less experienced students might need more physical guidance, which can be difficult to provide in an online setting. And yet, even subtle cues such as where a teacher looks or how they position themselves on camera matter: Pike (2017, p. 112) observed that trainee teachers would often sit at an angle to the monitor, looking down at notes or music scores, while their students were actively trying to engage with them on screen.

Some teachers described needing to reinvent how they communicated entirely. One participant in Biasutti et al.'s (2021, p. 13) study remarked that 'you can show it, but you can't touch the person', and that even small physical tensions had to be noticed and corrected by the students themselves. This put more pressure on teachers to describe the problem with precision, and on students to become more aware of their own bodily engagement with the instrument. For many, this led to increased stress and a sense of cognitive overload. As the same study notes, the lack of nonverbal communication often requires teachers to concentrate more intensely, redesign their lessons in more individualised ways, and work harder to bridge the interpersonal gap.

Taken together, these findings highlight that the physical absence of the teacher in an online lesson is not just about missing the ability to make corrections—it can impact rapport, student motivation, learning pace, and the teacher's own confidence. These challenges warrant further investigation, particularly when working with young beginners for whom physical modelling and immediate feedback play such a central role in early musical development.

2.6 Student learning and motivation

One question that has been echoed in many studies is whether going online affects students' motivation and engagement levels. The learning process depends on several factors, including self-determination, motivation, engagement, autonomy levels, predetermined skills, and character, to name a few. It has been noticed that students often become more independent as a result of having online music lessons (e.g., Daugvilaite, 2021; Dumlavwalla, 2017; Pike & Shoemaker, 2013). However, the question remains whether the pre-existing levels of students' self-determination, independence, autonomy and competence determine how (especially younger) students respond to online lessons. While these questions have not been fully addressed in the literature—and as some relevant theories and findings have not been thoroughly explored within online music education research—this section draws on existing work related to student engagement, motivation, independence, and autonomy in both face-to-face and online contexts.

2.6.1 Student engagement

Research shows that student engagement differs when learning online or in person. Though

students are widely thought to become disengaged during online lessons (Daugvilaite, 2021; Papatzikis, 2021; Salvador et al., 2021), Joseph and Lennox (2021, p. 247) concluded that, on the contrary, 'working from home opened doors for the more reserved student' and the 'rather shy student' to share and perform in class. Moreover, Pike and Shoemaker (2013, 2015) reported higher student engagement levels as a result of online lessons. However, in a more recent study, Pike (2017, p. 113) noted a student losing focus while the teacher spent too long explaining a concept without demonstrating it. This suggests that long verbal explanations, especially without musical examples, may not be effective—particularly in online settings where it's harder to keep students engaged.

The Associated Board of Royal Schools of Music (ABRSM) (2021, p. 40) and Music Education Partnership Group found that, according to teachers' self-reports, 7-8 out of every 10 students' engagement levels were higher when delivering online lessons during the COVID-19 lockdown. Teachers reported that students were generally more engaged, there were fewer distractions, and most significantly, students were generally considered to be making better progress. On the contrary, other researchers have concluded that students disengage while learning online (Daugvilaite, 2021; Papatzikis, 2021; Salvador et al., 2021). In Daugvilaite's (2021, pp. 8–9) study, teachers reported that younger students would disengage more quickly, and therefore, the teacher would need to change the activities more frequently to maintain their attention. In a more recent survey by Martínez-Hernández (2022) involving a wide range of music teachers from Spain, it was also noted that it is more challenging for younger students at the infant and primary ages to maintain concentration.

Student engagement levels may also differ according to the teaching style (Kupers et al. 2014, p. 25). Reeve et al. (2004) examined the effect that autonomy-supportive behaviour by teachers has on student engagement. They found that when the teacher was autonomy-supportive at one moment, their students displayed higher levels of engagement at the next. Other studies (e.g. Sierens et al., 2009) show that, on average, students with autonomy-supportive teachers who also provide sufficient structure tend to display higher levels of engagement.

There is growing evidence that adopting a student-centred teaching approach can significantly increase student engagement and motivation in music education. Research into informal

learning methods—such as those promoted by the Musical Futures initiative—suggests that when students are given the opportunity to work collaboratively, choose repertoire, and learn by ear rather than through traditional notation, their enjoyment, confidence, and musical understanding tend to increase (Hallam, Creech & McQueen, 2017). When students were given space to choose how they worked and what they played, they appeared more involved in the lesson. Rather than following a fixed path set by the teacher, students were participating more directly in shaping their own learning. Engagement needs to be examined more closely with young beginner students in online music lessons, particularly in relation to their shorter attention spans, teachers' teaching approach and style and the strategies teachers can use to sustain their engagement throughout the lesson.

2.6.2 Student motivation

While many researchers agree that the key element in learning an instrument is intrinsic motivation and self-regulated learning (Comeau et al., 2019; McPherson & Zimmerman, 2011; Uptis et al., 2017), Lee (2021, p. 1359) accurately advises that:

‘...in contrast with the traditional physical class, distance learning requires a stronger motivation from the learner... Thus, the instructor has to be sensitive to influential factors such as intelligence, personality, and culture of the student for an insight to develop one’s learning interest to a greater extent.’

Okay (2021) also suggests that the teacher should be equipped to motivate the students by providing an extensive list of ways they should do it, by:

blocking excuses, evaluating video recording with the student, making students compose and perform with their instrument, using the instrument, organizing online concerts, following online concerts, having future goals, taking care of/talking to the student, giving responsibility, giving homework, staying in touch with the student. (p. 212)

Dumlavwalla (2017, p. 17) also stresses the importance of intrinsic motivation, noting that one of her students gradually lost motivation to practise due to the loss of the strong emotional

connection they had formed in face-to-face lessons. This is in line with de Bruin's (2021) conclusions that motivation is closely related to emotional support. However, students' motivational levels might have been different, especially during the lockdown, as they had to stay home, study exclusively online, and not socialise with their friends. Therefore, the studies conducted under such circumstances should have considered such factors.

It appears that in studies conducted during the pandemic, whenever student motivation was one of the factors investigated, it had negative connotations, with some teachers reporting increased motivation due to new stimuli or having more time on their hands (Daugvilaite, 2021, Vaizman, 2022), while others reported a decrease (Váradi et al., 2024). Several other studies reported lower intrinsic motivation among music students during the COVID-19 pandemic, likely due to factors beyond online instruction, such as isolation, uncertainty, and fewer performance opportunities (Antonini Philippe et al., 2020; Spiro et al., 2021; Wieser & Müller, 2022). According to Nugroho and Biasutti (2024), in interviews with instrumental teachers conducted after the pandemic, students became more passive and less motivated to practise, yet more cooperative during the pandemic.

On the other hand, in the broader context of music education research, if students are intrinsically motivated to learn an instrument, the circumstances or medium should not alter their determination (Ryan & Deci, 2000). Moreover, Uptis et al. (2017) conclude that motivation to learn an instrument depends on other variables, such as the type of practice, with self-regulated or deliberate (Hallam et al., 2012) being the most effective. However, in the most recent literature on lessons conducted online, it appears that motivation has not been explored in detail; the common assumption is that students were motivated to practice because they had more free time during the pandemic (Daugvilaite, 2021; Vaizman, 2022). Therefore, a new study must be conducted in our post-pandemic world, where everyone is allowed to socialise and not compelled to work or study from home if they so choose, in order to compare student levels of motivation and self-determination while learning online in different circumstances.

2.6.3 Independence and autonomy

A significant number of researchers recognised the benefit of students becoming more independent after having lessons online for a while. The teachers in Pike's study (2017, pp. 113–

114) ‘recognized the benefit of empowering students to learn on their own’, prompting a shift from teacher-centred to student-centred methods. Cheng and Lam (2021, p. 221) also support the idea that ‘younger students are having to learn how to handle self-directed learning in the virtual environment, and music teachers are realising that they need to transform themselves from instructors into facilitators of students’ learning’. Independence was recognised in Dumlavwalla’s (2017), Daugvilaite’s (2021) and Ivanova et al.’s (2025) studies, although Daugvilaite raises the question of how best to teach young students who are not yet independent.

Dumlavwalla (2017, p. 12) noticed other aspects of teaching that made her students more independent: annotating their scores correctly by themselves with the help of the teacher’s instructions, reading skills increasing due to the teacher not being able to physically point at the notes in the score, and re-watching the recordings of the lessons. Pike and Shoemaker (2015, p. 14), in a study with a piano student using a high-quality digital piano and Internet MIDI software, also conclude that students become more independent in online lessons as they ‘more readily critique their own playing, listen to themselves more intentionally and more accurately assess their skills’.

In a more recent study with Hungarian music teachers (Váradi et al., 2024), it was concluded that only the older students became more autonomous as a result of online music lessons during the pandemic. However, most literature on online teaching and learning concludes that students became more independent as a result of simply having the lessons online instead of face-to-face (Daugvilaite, 2021; Dumlavwalla, 2017; Pike & Shoemaker, 2015). The causes of and exceptions to this general pattern are not explored. Are teachers using approaches that help students learn and perform tasks more independently, or is it perhaps, on the contrary, a lack of support and deprivation that pushes the students to greater self-reliance? Moreover, do students’ independence and autonomy outside the lessons influence the success of the lessons themselves?

In the literature on student independence in face-to-face teaching, Roesler’s (2017) study of five internationally renowned teachers and 48 students identified withholding instruction and encouraging learners to find answers for themselves as the most effective strategy. However, it may require a few additional steps before withholding instruction while teaching very young

students, as noted in research by Kupers et al. (2015, 2017), which was conducted with students aged between 3 years 11 months and 11 years old. Kupers et al. (2017) found that in order to build student autonomy in acquiring skills, teachers would provide a scaffolding that ‘develops in the lesson itself depending on the teacher’s and student’s previous actions’ (p. 135). According to de Pol, Volman & Beishuizen’s (2010, p. 4) contingency theory, teachers adapt the level of support to the student’s needs and gradually decrease it by giving more responsibility.

However, the topics of the student’s independence, problem-solving, and autonomy have not been fully explored in the literature that focuses on online lesson instruction. The studies, such as Daugvilaite (2021), Dumlavwalla (2017), and Pike and Shoemaker (2015), show that students become more independent as a result of having lessons online; no other contradictory cases have been considered. Moreover, there is a need for a detailed exploration of what makes a student independent and how to support those who are not. Although some studies in traditional face-to-face settings sought to explore teacher behaviours that might influence student independence (Roesler, 2017), some claimed that student independence depends not only on the teaching but on the teacher-student dyad (Kupers et al., 2015, 2017).

It can be concluded that, according to the studies discussed, teachers who utilise a more open and autonomy-supportive approach achieve better results and higher levels of engagement and motivation in face-to-face settings. The broader range of literature on face-to-face music lessons also explains why it is important to foster students' autonomy skills and offers ways this might be implemented. However, what, if anything, changes when lessons are moved online? Also it is worth investigating if there are other factors that affect students’ development of independence while learning online.

2.7 Current developments in online education

There is a growing body of literature demonstrating how online music education can be effectively integrated into post-pandemic teaching practices. For example, Schaivio and Nijs (2022) described group clarinet lessons for adult beginners that combined asynchronous activities, collaborative methods, and breakout rooms; participants reported that the experience was highly satisfying and effective.

Recent studies also indicate that students are expanding their learning beyond live online lessons by utilising digital tools in their own practice. For example, Lei (2023) reported that students who supplemented their regular piano lessons with apps such as Skoove and Simply Piano achieved higher scores than those who relied only on traditional tuition. Similarly, Li and Wang (2024) integrated AI-powered chatbots into piano tuition with 98 students aged 14–17, reporting an overall 15% increase in academic performance. This suggests that teachers can recommend these apps as valuable supplements to synchronous lessons.

Other researchers have explored how specific software can be integrated into regular teaching. Zhang and Gao (2024) measured the progress of beginner students before and after incorporating the Flowkey application into their learning and found that 83% of them reached a higher level of knowledge after its use. Cao (2023) compared two groups of students—one receiving face-to-face piano lessons and the other learning online using Simply Piano—and found no significant differences in achievement, with a slight improvement for the online group that used the app. These findings support the view that online teaching can be as effective as in-person lessons and that carefully chosen apps can enhance students' independent practice and outcomes.

The role of AI tools in online learning is also becoming more evident. Pan and Wu (2024) reported on 215 second-year university students in China who learned through the Xiaoyezi AI Piano Tutor platform, which provides theoretical explanations, identifies errors in real-time, and offers feedback through timbre recognition. Their results showed a marked improvement in student achievement between semesters (for example, strong achievement levels rose from 56% to 82%). However, as the authors noted, the study lacked a control group, so the gains cannot be attributed solely to the AI platform.

New models of classroom delivery that emerged during the pandemic continue to be relevant today. Blended learning (Beirnes & Randles, 2023) and dual-mode teaching (Merrick & Johnson, 2024) enable some students to attend in person, while others participate online, and both studies reported high levels of satisfaction despite differences in technology and setup. Merrick and Joseph (2023) observed that the move to online teaching during the pandemic prompted many music teachers to make fuller use of technology, helping to cultivate an ongoing habit of professional learning. They, together with Johnson (2018) and Pike (2021), emphasised that the

lessons learned since the pandemic should inform policy and teacher-training initiatives so that online music education is not seen as a temporary solution but as an integral part of future practice.

2.8 Feasibility and satisfaction

Nearly every study on online music education seems to return to a similar underlying question: are online music lessons feasible? Are they comparable to face-to-face lessons, and how do they differ in terms of experience, teaching, learning, and satisfaction? Do teachers, students, or parents feel content with this format—or do they simply tolerate it under certain conditions?

Studies carried out before the pandemic generally present a more optimistic view of online lessons than those published during the COVID-19 period. For instance, Damon and Rockinson-Szapkiw (2018, p. 21) concluded that ‘online voice training is as effective as traditional face-to-face voice training pertaining to pitch accuracy instruction’. Similarly, Kruse et al. (2013, p. 54) noted that piano students in higher education reported a natural feel to Skype lessons. Pike and Shoemaker’s (2013, p. 158) study also revealed that parents did not comment on the online format at all—suggesting that the delivery mode was not a primary concern, and that the focus remained on the lesson content.

Other pre-pandemic studies recognised that while videoconferencing can work, it is still not a full substitute for face-to-face teaching. Dammers (2009), Dumlavwalla (2017), Dye (2016), and King et al. (2019a, 2019b) all concluded that ‘videoconferencing is functional but not equivalent to face-to-face instruction’ Dammers (2009, p. 9). Students in Dumlavwalla’s (2017, p. 13) study, for example, stated that they preferred face-to-face lessons but would continue online if it meant keeping the same teacher.

During the pandemic, the context shifted. Many studies reflected the challenges of being forced into online formats, under high stress and with little preparation. In these cases, online teaching was often seen not as a replacement for in-person instruction but as one temporary part of a blended or hybrid approach. For example, Ververis and Apostolis (2020, p. 8) concluded that

This does not mean that distance music teaching can replace the value of teaching with physical contact and face-to-face communication between student and teacher, at least according to existing technological achievements. Nevertheless, practices of asynchronous learning can significantly enrich a music instrumental lesson, even when it is done in the ‘traditional’ face-to-face way.

Likewise, participants in Daugvilaite’s (2021) study expressed a desire to continue teaching online only if they could occasionally meet their students in person. Rucsanda et al. (2021), Salvador et al. (2021), and Ververis and Apostolis (2020) also questioned whether online music education is feasible in the long term, particularly if delivered exclusively. As Rucsanda et al. (2021, p. 2) note, ‘the effects of both exclusive and imposed long-term use [of online music lessons] have not been evaluated,’ which makes it difficult to draw firm conclusions at this point. It is likely that studies conducted after the pandemic, in more stable teaching environments, may arrive at different outcomes.

Satisfaction with online lessons is another reoccurring theme in the literature, although studies often focus on just one group (teachers, parents, or students) and rarely offer a full picture. For example, Rucsanda et al. (2021, pp. 5–6) found that over half of higher education students were satisfied with online instruction and saw benefits for their professional development. At the same time, these students reported that shifting individual and group performance lessons online compromised key elements of music-making such as interaction, ensemble performance, and spontaneous exchange (Rucsanda et al., 2021, p. 7).

Teacher satisfaction appears to vary according to their professional experience. A study by Martínez-Hernández (2022) found that both older and newly qualified teachers (with under five years of experience) were more dissatisfied with online formats than mid-career teachers. Hernandez (2021) also observed that while online formats offer flexibility and convenience, they pose challenges for communication, musical expression, and technical stability—all of which can affect the overall experience. Parents have also expressed mixed views. In the study by Salvador et al. (2021), parents appreciated that lessons continued at all, but many did not feel that the experience matched the quality of in-person instruction. Some even admitted that they

had not realised how much they valued the physical presence of the teacher until it was gone (p. 206).

To conclude, the existing literature does not offer a clear answer as to whether online music lessons are feasible in the long term or whether those involved are satisfied with them. The opinions differ depending on the context of the study—some conducted before the pandemic, some during, some comparing online with face-to-face formats, and some not making this comparison at all. While many studies raise important issues such as teacher preparation, student independence, and teaching strategies, there is little agreement on which of these factors matter most when it comes to satisfaction. At present, no single study appears to bring all of these elements together. This lack of a comprehensive view highlights the need for research—such as the current study—that investigates how satisfaction is constructed across different groups and in relation to other key factors.

2.9 Summary and implications

It is apparent that one category or age group of students can take better advantage of such lessons than others. In Schiavio et al.'s (2021) study, despite the challenges that the conservatoire students faced, such as a lack of teacher and peer interaction, it seems that older and more mature students managed to adapt and thrive in online music education settings, learning how to manage and utilise their time better as they were not required to commute. However, only a small number of researchers have acknowledged that age and ability can impact learning outcomes in an online setting. Studies conducted by Joseph and Lennox (2021), Koutsoupidou (2014), and King et al. (2019a) suggest that online education may not be suitable for everyone, especially younger children, as it 'requires a certain level of maturity and discipline' for efficient learning (Koutsoupidou, 2014, p. 251). Additionally, several studies have highlighted issues with younger beginner students having online lessons due to their 'lack of foundational knowledge' (Salvador et al., 2021, p. 206). Additionally, according to Aaberg's (2023) study, music teachers considered the youngest students the most challenging to teach online.

Age clearly matters, but other things might affect how well students do in online music lessons too—such as how independent they are, how confident they feel, or how much support they have. Some studies say students became more independent after having online lessons for a while, but

it has not been determined whether they were already fairly independent before (Dumlavwalla, 2017; Daugvilaite, 2021; Pike & Shoemaker, 2013). From this review, the key recurring factors include: student independence, skill acquisition, parental involvement, motivation, access to technology, previous experience with online lessons, the use of asynchronous tools (such as video exchanges), and teacher confidence in using digital platforms. However, no study to date has explored which of these factors are most strongly linked to satisfaction with online music or instrumental lessons from the perspective of all three stakeholders—teachers, parents, and students.

There is also a clear need for research that considers not only experiences during the pandemic but also the current reality of online lessons, now that many families and teachers can choose whether to have the lessons online or face-to-face. Young beginner students, in particular, are underrepresented in this area of research. Given the increasing role of digital education, it is likely that children of all ages will continue to encounter online formats in the future. A study focused on how young beginners experience online music education, particularly piano lessons—and how teachers can best support them—would offer important insights into the kinds of strategies, tools, and environments that promote meaningful learning at this early stage.

Chapter 3 Methodology and Project Design

3.1 Introduction

This chapter outlines the overall design of the project, including its theoretical foundation, methodological approach, and ethical considerations. It begins with a discussion of the theoretical framework that shaped its design and influenced the research (Section 3.2). The chapter proceeds to present the guiding research questions (Section 3.3), followed by a review of existing literature that used similar methodological approaches in music education research (Section 3.4). Section 3.5 introduces the epistemological stance adopted in this project and explains how it informed the choice of methods, as well as the decision to employ an explanatory mixed-methods design (Section 3.6). Section 3.7 describes the ethical steps taken prior to data collection, including approval from the Royal College of Music Ethics Committee. Section 3.8 describes the steps taken to recruit participants in both phases, and Section 3.9 explains the researcher's reflexivity and potential bias in this project.

3.2 Theoretical framework

The theoretical framework for this study is grounded in constructivist and socio-cultural theories of learning, with a particular emphasis on how these perspectives can help explain the experiences of young beginner students in online instrumental lessons. One of the key ideas that helps make sense of the data in this study is Vygotsky's (1978) concept of the zone of proximal development (ZPD). This theory emphasises the need for adult guidance when children are engaging in tasks that they cannot yet do independently. In the case of online lessons, where the teacher is not physically present, the ZPD helps explain why many younger children need support from a parent or carer just to stay focused or follow instructions. These children are still developing basic cognitive and communication skills, and without someone there to help, the lesson often becomes too challenging. Another perspective is offered by Piaget (1970), which he claimed that knowledge is not conveyed in a straightforward way but is constructed by the learner through experience of the world. In instrumental lessons, this might be in the form of experimenting, working out problems, and becoming increasingly independent stage by stage, with the teacher available to assist in guiding the way.

This socio-cultural approach is extended through Siegel's (1999, 2020) work on interpersonal neurobiology, which looks at how human connection affects a child's ability to think, feel, and stay emotionally regulated. In face-to-face music lessons, a teacher's non-verbal cues—such as tone of voice, gestures, and facial expressions—help regulate the student's emotional state through what Siegel describes as limbic resonance. In online settings, the absence of these cues can make it harder for younger children to stay focused or emotionally regulated, particularly when an adult is not next to them. Some of the participants in this study mentioned that children were more focused and responsive when someone was physically present during the lesson—either the teacher in person or a parent nearby. This kind of support seems to make a real difference, especially for younger learners.

At the same time, ideas like independence and self-regulation help explain how children actually manage in an online setting—how they deal with instructions on their own, whether they can keep going without constant prompting, and what kind of help they still need. This also ties into wider educational thinking—particularly constructivist approaches—where learning happens not by simply receiving information, but by gradually piecing things together through experience, trying things out, and being supported by others along the way. Roesler (2017), for example, defines independence in music education as the ability to solve problems and make musical decisions without direct teacher input. Within a constructivist lens, independence is understood as a developmental process, not a fixed trait—and one that must be actively scaffolded by the teacher.

Self-regulation, as described by McPherson and Zimmerman (2011), adds a further dimension to this. They argue that learning an instrument—especially in the early stages—requires learners to be metacognitively and behaviourally engaged in their own progress. This becomes even more crucial in online settings, where the absence of physical presence demands greater initiative from the student. From this perspective, the online lesson becomes a test of how well the student has internalised strategies for focus, practice, and motivation. While the initial plan was to frame this project using Self-Determination Theory (Ryan & Deci, 1985, 2000), its emphasis on autonomy did not align closely with the data collection tools used in this study. However, the underlying ideas—especially around motivation and autonomy-supportive teaching—continue to inform the interpretation of the findings.

Finally, the framework draws on Technological Pedagogical Content Knowledge (TPACK) theory (Mishra & Koehler, 2006) to understand how teachers adapt to online teaching environments. The idea behind TPACK is that using technology in teaching is not just about knowing the tools—it is about how that technology works alongside a teacher’s subject knowledge and teaching approach. Together, these theoretical perspectives offer a cohesive framework for interpreting the experiences of students, parents, and teachers in online piano lessons. Rather than being separate codes or isolated findings, they provide the conceptual grounding for understanding how learning, connection, and adaptability operate in a digital teaching context—particularly for younger children at the earliest stages of music education.

3.3 Research questions

The following section introduces the research questions that guided this project. These questions came from practical experiences with online piano lessons during the pandemic and were refined through a review of existing research. While online instrumental instruction has been explored in several studies, a lack of research remains in focusing specifically on young beginner students, particularly in terms of what supports or hinders their progress in remote online learning contexts. Thus, this study focuses on young beginner pianists aged 5–9. As outlined earlier (Section 2.2.3), this age range in particular is both underrepresented in existing research and presents particular challenges for online instrumental teaching, including limited concentration, developing literacy and motor skills, and lower levels of independence. These features make it important to investigate how online lessons work for this group specifically, and which factors contribute to more or less successful experiences for teachers, parents, and students. It is also important to note that this study concentrates exclusively on piano teaching, since including other instruments would have risked diluting the depth of insight into instrument-specific issues. To explore these gaps, the following research questions have been developed:

1. To what extent do student independence, skill acquisition, parental support, and student motivation predict satisfaction with online lessons as perceived by teachers and parents?

This question aims to explore whether and how these interrelated factors, which emerged from the literature, influence the perceived success or limitations of online piano learning for young (5-9) beginners.

2. What additional factors influence the online piano lesson experience for young beginner students as perceived by teachers and parents?

This question aims to explore other emerging factors that participants in this study consider important.

3. Which practices do teachers and parents perceive as the most effective in online piano lessons for young beginner students?

Here, the focus is on practical strategies that teachers have found useful and that parents have observed to be effective—such as breaking down tasks, involving parents in the lesson, or using specific digital tools.

4. What are the main motives for choosing online piano lessons nowadays, from the perspectives of teachers and parents?

Although the pandemic initially forced the shift online, this question seeks to understand what drives teachers and parents to continue with online lessons voluntarily now that in-person teaching is available again.

This project aims to identify the factors that contribute to both successful and challenging experiences in online piano education for young beginners. In doing so, it will explore teaching strategies, parental roles, and contextual influences to provide a better understanding of what makes online piano lessons work—or not—for this specific age group. The findings may also offer practical guidance for teachers seeking to develop more effective approaches to online instruction.

3.4 Analysis of methodologies and methods used in relevant literature

Studies conducted prior to 2020 examining the impact of moving instrumental lessons online often involved small participant numbers in their observations, diaries, and questionnaires distributed to pupils and their parents or video-ethnography and video analysis tools with one student (Duffy & Healey, 2017; Dumlavwalla, 2017; Pike & Shoemaker, 2013; Pike, 2017; Dye, 2016). In contrast, studies conducted during or after the pandemic mostly employed semi-structured online interviews or quantitative methods, such as surveys, with large numbers of university students and teachers (e.g., Biasutti et al., 2021; de Bruin, 2021; Okay, 2021; Vaizman, 2022). The increased number of participants experiencing online music education resulted in more diverse opinions about it than before.

Several studies during the pandemic used a survey as a method of inquiry. Onderdijk et al. (2021) sought to understand how musicians interacted and created music together at the beginning of lockdown. The student's view was the focal point of Rucsanda et al.'s (2021) survey of student satisfaction and other issues related to online courses provided during the pandemic. Teachers' experiences were also captured in a few surveys conducted during the pandemic: Ververis and Apostolis (2020) studied instrumental teachers' preferences for online lesson delivery (synchronous, asynchronous, or blended learning) as well as the pros and cons of each approach, Calderon-Garrido and Gustmes-Carnicer (2021) focussed on primary and secondary music classroom teachers' experiences while teaching during the lockdown. Salvador et al. (2021) surveyed adult students, minor students, parents, teachers, and administrators in two music schools, soliciting their perceptions and experiences of online music education during the 2020 lockdown.

A particularly relevant study is that of Wieser and Müller (2022), who explored music students' motivation during online learning through a quantitative design grounded in self-determination theory. Their participants were drawn from two Austrian music schools, and they adapted several existing survey questions while also creating their own statements tailored to the context of pandemic-related distance learning. Their research aimed to test whether intrinsic and identified regulation decreased—and extrinsic and introjected regulation increased—during online learning and whether students perceived a drop in their basic psychological need satisfaction

and their teachers' enthusiasm. They used multiple regression analysis to assess the relationships between these variables, making their study one of the few in music education to apply this method in relation to online teaching. Although their participants were older than those in the current study, Wieser and Müller's approach is valuable for this study in terms of both design and statistical tools, particularly in highlighting how broader psychological factors can shape students' engagement with music learning online.

Mixed-methods approaches have been frequently employed in music education research studies; however, their use in studies exploring online music education is relatively limited. Some of the most significant studies in this field, conducted by Salvador et al. (2021) and Kupers et al. (2022), who have employed a sequential explanatory mixed-methods approach, utilising surveys followed by interviews, to provide a more in-depth and comprehensive understanding of participants' experiences. Moreover, Cohen et al. (2017) have argued that a mixed-methods approach can offer a robust and nuanced understanding of the research questions. Given the potential of mixed-methods research to provide rich and diverse insights into data, this project will employ an explanatory mixed-methods approach, using a survey as the quantitative data collection method in the first phase, followed by interviews in the second, qualitative phase of the study (Section 3.6).

To summarise, surveys are effective in capturing the experiences and attitudes of a large number of participants at a particular moment in time (Cohen et al., 2017), while interviews provide a more in-depth understanding of participants' experiences qualitatively. By employing a mixed-methods approach, this study aims to provide a comprehensive view of teachers' everyday practices and methods that are most effective for teaching young students online, as well as the experiences and perceptions of parents whose children have taken online piano lessons and students themselves. It is equally important to capture responses and reflections after the pandemic for several reasons: several years have now passed since teachers first experienced online teaching, allowing them to look back on those early experiences as well as their current practice; moreover, some teachers have continued teaching online and may have developed long-term approaches that work for them. Furthermore, a handful of researchers claim that we are looking into a hybrid or 'blended' future (Daugvilaite, 2021; Ververis & Apostolis, 2020). This being the case, understanding the factors that influence specific experiences while learning

online, as well as employing effective teaching methods, is not only beneficial but also crucial for the future of music education.

3.5 Epistemology and methodology

A mixed-methods explanatory design was chosen for this project as mentioned in the previous section. As Watkins and Gioia (2015, pp. 10–11) note, mixed-methods research is both ‘rigorous and epistemologically sound’, drawing on the strengths of both inductive and deductive reasoning. It rests on the assumption that no complex research question can be fully addressed using a single method alone. Similarly, Baur et al. (2017, p. 111) highlight that mixed-methods research enables the comparison of multiple perspectives and helps determine ‘what works for whom’ by capturing the nuances of a phenomenon from more than one angle. However, Creswell (2015, p. 3) cautions that mixed methods are not merely about combining quantitative and qualitative tools but about integrating them in a purposeful and complementary way. In this project, the mixed-methods design allows for a fuller, more layered exploration of teacher, parent, and student experiences with online piano lessons, combining measurable trends with contextual depth.

Williamon et al. (2021) also recommend mixed-methods (or multistrategy) approaches, particularly when the research problem cannot be fully explored through a single methodology, such as a case study or interview series. For instance, qualitative methods such as interviews may only reflect a limited sample—often based on who chooses to participate—and thus may skew the findings if taken alone. Although surveys provide access to a broader range of participants, they often leave out the feelings and emotions behind the answers. Using both methods in this study helped to fill those gaps and build a more rounded understanding.

This study takes a pragmatic stance, prioritising practical solutions and aiming to answer ‘what works best’ in the real-world context of synchronous online music education (De Cuir-Gunby & Schutz, 2014, p. 69). Pragmatism supports the idea that both inductive and deductive reasoning are necessary to understand a phenomenon from multiple viewpoints (Cohen et al., 2017, p. 34). It also assumes that knowledge is situated and context-bound, especially relevant when exploring lived experiences such as teaching and learning online. Williamon et al. (2021, p. 19)

describe pragmatism as a philosophy ‘aimed at understanding real-life situations’, which aligns with this study’s goal of identifying the most significant factors that influence teachers, parents and student satisfaction with OPL as well as workable, realistic strategies to support young beginners in online piano lessons.

This project follows an explanatory sequential design, where the quantitative phase is conducted first, and the findings are then used to shape the qualitative phase. As Grinnell and Unrau (2014, in Watkins & Gioia, 2015, p. 33) explain, this approach allows the researcher to explore relationships between variables in the first phase and then dig deeper into those findings in the second. In this study, the survey conducted with teachers and parents served as the foundation. Once analysed, the survey results directly informed the qualitative phase: interview questions were adapted based on the earlier findings, allowing the interviews to probe these themes in greater detail.

The sequential design also enhanced validity. Starting with interviews could have limited the scope, making it harder to see how individual experiences relate to the broader group. Basing the interview selection on survey results made it possible to include both more common and more unusual perspectives. As Williamon et al. (2021, p. 48) note, this approach enhances generalisability ‘while also facilitating a deeper engagement with the research problem by using a more idiosyncratic, qualitative approach at the second stage’.

It is also important to note that both phases of the study were designed to address all four research questions. The survey, while primarily focused on the first two questions, also included open-ended items that allowed participants to reflect on issues related to the remaining two research questions. The second phase—the semi-structured interviews—not only served to triangulate the data and confirm or challenge the survey findings, particularly in relation to the first two questions, but also naturally lent itself to a deeper exploration of the last two research questions, which focused on teaching practices and the current state of online music education.

3.6 Overview of the research design and analysis

Following the explanatory mixed-methods research design, this project began with a survey and was followed by semi-structured interviews (as outlined in Section 3.5). Table 3.1 demonstrates the design of this project by phases and types of analysis. The research questions are not listed here, as each phase contributed to answering all of them and played a role in the overall data triangulation.

Table 3.1 Research design.

Phase	Method	Analysis	Participants
Phase I	Survey – quantitative questions	Regression analysis and descriptive statistics	Teachers and parents
Phase I	Survey – open-ended questions	Content analysis	Teachers and parents
Phase II	Semi-structured interviews	Thematic analysis	Teachers, parents and students

The primary aim of the survey was to collect responses from a broad sample of participants before examining their experiences in more depth. The survey adopted quantitative methods, including multiple regression analysis, to investigate patterns related to Research Question 1 (though not limited to that question alone). An additional set of multiple regression analyses incorporated further variables aligned with Research Question 2. Descriptive statistics were used to examine participant demographics, as well as the prevalence of specific videoconferencing platforms and other technologies used in online piano lessons (OPL) (Section 4.5.2).

Open-ended questions embedded in the survey were analysed qualitatively using content analysis (Section 4.5.3). Although thematic analysis was initially planned for the open-ended survey responses, the brevity of the answers made this approach unsuitable. Content analysis was therefore adopted as a pragmatic alternative, while all other analyses proceeded as initially designed. The purpose of open-ended questions was to triangulate the pre-determined variables by assessing whether participants referred to these as significant factors (RQ1) and whether they introduced additional considerations not captured through the closed questions (RQ2). Some open-ended responses also touched briefly on Research Questions 3 and 4, although these were explored more fully in the second phase of the study.

The second phase comprised semi-structured interviews with participants drawn from the survey, with the intention of selecting individuals whose responses would help illuminate the earlier findings. The aim of conducting the interviews was to explain the findings from the survey as well as to dive deeper into participants' experiences. In addition, at the end of the parent survey, participants were given the option to volunteer their child for an interview, which formed the basis for student recruitment in this phase. All interviews were analysed using thematic analysis in order to explore participants' views and teaching practices in more detail (section 4.8.1).

As both phases contributed to all four research questions—albeit from different angles—the integration of the findings (data) is presented in the final chapters of the thesis (Chapter 8). This allowed for a more comprehensive comparison between data sources and participant groups while also illustrating where findings aligned or diverged across methods.

A combination of convenience and snowball sampling was used to recruit piano teachers, parents, and students from various international contexts. Survey participants were invited to volunteer for interviews, and a purposive sampling strategy was then applied to ensure variation in teaching experience, student age, and online lesson exposure. A detailed account of participant recruitment, inclusion criteria, and sampling limitations is provided in section 3.8.

It is important to note that students were not included in the first phase of the survey for several reasons. First, the survey aimed to gather adult perspectives and experiences. Second, there were ethical considerations, as all students who first experienced online piano lessons between the ages of 5 and 9 during the pandemic were expected to still be under 18 at the time of data collection. Third, there was concern that if children completed the survey with parental assistance, their responses might simply reflect their parents' views. For these reasons, it was decided to include children only in the interview phase, where the format is more flexible and allows them to ask for clarification if they do not understand a question and where parents would not interrupt or alter their responses (Section 4.6.1).

3.7 Research Ethics

This study was conducted in accordance with the research ethics guidelines of the Royal College of Music and The British Psychological Society (2010), with careful attention paid to confidentiality, anonymity, and participant wellbeing at all stages of the project. Ethical considerations were embedded throughout the research process and informed the design, implementation, and dissemination of the study.

The project received ethical approval from the Royal College of Music Research Ethics Committee in two stages. The timeline of submissions and approvals is outlined below, and the relevant certificates are included in the Appendices:

- 06/12/2023 – Certificate received following minor amendments (Reference number: 230502OMA, Appendix 1.1)
- 10/04/2024 – Certificate received for the second phase after further amendments (Reference number: 240301, Appendix 1.2).

The second application was required due to revisions made in the interview phase of the study. The second phase was updated to include children (piano students) as participants. This decision reflected the project's aim to represent the perspectives of all three groups involved in online piano education—teachers, parents, and students. A mosaic approach was adopted to ensure the interviews with children were age-appropriate and sensitive to their developmental stage (Section 4.6.1).

As Cohen et al. (2017, p. 337) remind us, 'electronic and internet-based surveys raise confidentiality, anonymity, privacy and non-traceability issues, [...] even when security steps are taken.' In line with this, all collected data were stored securely on a password-protected device accessible only to the researcher. No identifying information was linked to participants' responses in any published or shared material.

All participants were fully informed about the purpose of the study and their rights as participants. Informed consent was obtained at the beginning of the survey and again prior to the interviews

with each participant. Those taking part in interviews were given the option to consent to audio recordings, with clear information about how those recordings would be stored, transcribed, and used in the research. Participation in both phases of the study was entirely voluntary, and participants were reminded of their right to withdraw at any stage without giving a reason.

This study was conducted in accordance with the General Data Protection Regulation (GDPR) and the Royal College of Music's Research Ethics Policy. All consent forms were stored securely on a password-protected device. Contact details (e.g. email addresses and interview preferences) provided in the surveys were stored in a separate, encrypted file and were only accessed during the second phase of recruitment. Survey data were fully anonymised, and if any identifying details were included in open-ended responses—such as names of children, teachers' names, or institutions—these were removed during the transcription and analysis process to ensure confidentiality.

Interview recordings were transcribed using Otter.ai and stored on a secure, encrypted account affiliated with the Royal College of Music. Audio files will be destroyed within two years of collection, and all transcriptions and related materials will be permanently deleted after ten years from collection. No personal data will be reused without explicit participant permission, and no identifiable information has been included in the thesis or any publications arising from this research. Anonymity was maintained throughout, and pseudonyms were used where necessary to protect participants' identities.

3.8 Recruitment

Baur et al. (2017, p. 135) state that sampling is as important as research questions and other phases of research because if 'sampling design is inappropriate, then any subsequent interpretations will lack legitimation (e.g., trustworthiness, authenticity, credibility, transferability, dependability, confirmability)'. Moreover, the size of the quantitative phase sample depends on the number of variables, and many researchers suggest a minimum of thirty cases per variable (the same thirty cases may apply across several variables) (Cohen et al., 2017, p. 203). At the same time, 'if a phenomenon contains much potential variability, then this will increase the sample size' (Gorard, 2003, cited in Cohen, 2017, p. 204). This implies that the

number of pre-determined variables informs the sample size needed for valid analysis. In this project, there were three main variables tested in the multiple-regression analysis.

Convenience sampling was used in the quantitative phase, seeking information from ‘any members of the target population who are willing and available to participate’ (Williamon et al., 2021, p. 52). The link to an online survey was posted on closed Facebook groups and forums for piano teachers, which were only accessible to professionals in the field (e.g., ‘Piano Teacher Central’ or ‘Piano Network UK’). Attempts were also made to contact professional organisations such as the Musicians’ Union, the Incorporated Society of Musicians (ISM), the European Piano Teachers Association (EPTA-UK), and the Associated Board of the Royal Schools of Music (ABRSM). While none of these organisations agreed to distribute the survey, recruitment was carried out via social media and personal contacts.

Parental perspectives on online music education were equally important in this study. A combination of convenience and snowball sampling was used. For snowball sampling, teachers who completed the survey were asked to share the link with other teachers or parents. For convenience sampling, parents were reached through relevant social media forums that focused on parenting or music lessons from parents’ perspective (e.g., ‘Piano Parent’), personal contacts, and by contacting several music education organisations. These included music hubs such as Lambeth and Tri-borough, youth programmes like Junior Trinity and the Royal College of Music Junior Department, and Eduardas Balsys Gymnasium of Arts in Lithuania via professional connections. For the latter, participants were guided via email to use Google Translate to view the survey in their native language and were encouraged to respond in Lithuanian to open-ended questions. These responses were later translated into English using professional translation services - Amberscript.

The target population for the first phase included:

- a) Piano teachers and parents of children who received piano lessons;
- b) Individuals from any age group, noting that some studies found less experienced teachers adapted more easily to technology (Biasutti et al., 2021; Vaizman, 2022);
- c) Any gender;

- d) Participants from any country, provided they could understand English (to avoid the limitations of surveying only one region, as in Pozo et al., 2021);
- e) Teachers who had experience teaching young beginner students in their studio and parents whose child was aged 5–9 when taking online piano lessons;
- f) Teachers engaged in one-to-one lessons, as the study does not focus on classroom or higher education settings;
- g) Individuals with experience of online teaching before, during, or after the COVID-19 pandemic.

Recruiting teachers for the survey was relatively straightforward ($n = 104$), but reaching parents proved much more difficult, and the final number of parent responses was lower ($n = 45$). Parents are often described in the literature as a group that is hard to engage because of work, childcare commitments, and the extra time required to take part in voluntary research (Hornby & Lafaele, 2011; Bonevski et al., 2014). Survey methodology texts also note that caregivers often have lower response rates than professionals when participation relies on their own time and initiative (Dillman et al., 2014). The very low parent return rate reported in the music education context by Uptis et al. (2017)—54 responses from 900 distributed paper surveys, making it a 6% response rate—illustrates how common this issue is. Placing this study within this wider context, the difficulties faced with parent recruitment are less surprising. It also suggests that future studies might need more targeted approaches—such as working with schools or organisations, keeping surveys very short, or sending reminders at times that fit around parents' schedules.

Participants in the second phase were recruited from the survey pool, provided they had indicated a willingness to be contacted for interviews and observations. Purposive sampling was intended to be used at this stage, where participants were selected based on 'particular characteristics that are important to the purpose of the study' (Williamon et al., 2021, p. 51). However, since not all selected participants replied to the invitation to participate in interviews, convenience sampling was applied, and all those who indicated a willingness to be contacted were invited. Students who experienced OPL when they were between ages of 5-9 were also included in this phase.

3.9 Reflexivity of the researcher

It is the responsibility of the researcher to remain critically aware of how their professional background may influence the interpretation of data. As the researcher was a practising piano teacher, the project benefited from an in-depth understanding of piano pedagogy and the specific challenges associated with online music instruction. As Creswell (2009) notes, qualitative researchers inevitably interpret findings through the lens of their own prior knowledge and experiences, which highlights the importance of reflexivity and transparency throughout the research process.

In this study, the researcher was known to several participants involved in the second phase, particularly some of the parents and students interviewed. There were both strengths and limitations to the existing relationship between the researcher and some of the students interviewed. Those who already knew the researcher generally seemed more relaxed and willing to speak during the interviews. Being familiar with the researcher may have made some participants feel at ease and more talkative. Nevertheless, this same familiarity could raise difficulties, such as the possibility that they felt obliged to join in or that their answers were shaped by what they assumed the researcher wanted to hear. To mitigate this, clear information was given about voluntary participation, anonymity, and the right to withdraw at any point, and it was emphasised that their decision to participate—or the views they expressed—would not affect their lessons in any way.

As others have noted, the researcher's position is never neutral, and there is an ongoing debate about the benefits and drawbacks of insider and outsider roles (Merriam et al., 2001; Dwyer & Buckle, 2009; Berger, 2015). Knowing participants can make it easier to build rapport and reduce formality; however, it also raises questions of bias, power, and ethical responsibility. Approaching the interviews reflexively meant acknowledging these tensions and being careful that familiarity did not overshadow participants' own voices in the analysis.

During the analysis, attention was given to working with the data as carefully and neutrally as possible. The researcher's background as a piano teacher brought insider knowledge of the everyday realities of piano teaching, particularly in online settings. According to Kacen and

Chaitin (2006) and Dwyer and Buckle (2009), sharing a professional background with participants can be helpful because it allows for empathy and deeper insight. Yet this same familiarity can also create problems in analysis, since it is easy to lean more heavily on experiences that seem close to one's own. To reduce this risk, parts of the coding and interpretation were discussed with external reviewers, providing an additional perspective and a check against over-identification with particular viewpoints. While this cannot remove subjectivity altogether, it helped to keep the analysis anchored in participants' accounts rather than in the researcher's assumptions.

Chapter 4 Research Methods

4.1 Introduction

This chapter sets out the practical steps taken in the study. It follows on from the discussion in Chapter 3 by describing how the project was carried out in both phases, and how the chosen procedures made it possible to address the research questions. Section 4.2 describes the design of the survey, followed by the demographic profile of survey participants (Section 4.3). Section 4.4 outlines the preparation of survey data for quantitative analyses. Section 4.5 explains the analysis methods applied to both the quantitative data and the qualitative responses to open-ended survey questions. Section 4.6 details the development of the interview protocols used in the second phase of the study, while Section 4.7 describes participants who took part in the interviews. Section 4.8 describes the coding procedures employed to analyse qualitative interview data. Finally, Section 4.9 explains how the findings from these three processes, across two phases of data collection, were integrated in order to address the research questions. These methods and procedures show how the research design was applied in practice and how the stages of data collection and analysis connected with the mixed-methods approach introduced earlier.

4.2 Phase I: Data collection methods

4.2.1 Survey design

A single data collection method was employed in the first phase of this research: a survey. As Cohen et al. (2017, p. 334) explain, ‘Surveys gather data at a particular point in time with the intention of describing the nature of existing conditions or identifying standards against which existing conditions can be compared or determining the relationships that exist between specific events’. Given that numerous surveys on online music education were conducted during the pandemic in 2020 and 2021, a post-pandemic survey might have captured different experiences and evaluations, particularly from those who continued teaching and learning online.

An extensive review of the literature revealed that no existing validated survey instruments fully addressed the research aims of this study. In particular, there were no tools that explored the full

range of relevant variables, including student independence and motivation, the technicalities of piano teaching, the use of technology, and the lived experiences of both teachers and parents in online piano lessons. While some existing surveys touched on individual aspects, they were either too limited in scope, too lengthy to be practical for this context, or relied on student self-reports, which could not be obtained from participants under 18. Following Wieser and Müller (2022), who developed their instrument by combining statements from multiple sources, this study took a similar approach and designed a bespoke survey using original statements rather than adapting existing ones. The Qualtrics platform was used for the survey. The survey consisted of 32 questions for teachers and 27 questions for parents (excluding a screening question and consent questions), and it took between 8 and 15 minutes to complete each survey.

To enhance content validity and usability, the survey was piloted with a small group of teachers and parents prior to its official launch. The pilot served to test the clarity, structure, and relevance of the survey items (Williamon et al., 2021), but the responses were not included in the final dataset.

The survey is divided into five main sections:

1) Participant teaching and/or lesson experience. These were mainly screening questions to identify if respondents are right for this study. For teachers, questions such as how many young students they have taught online or how many years they have been teaching. For parents, it is questions such as describing the level of their child's playing or age. This is continuous ratio data where participants were asked about age, number of students or years of experience teaching online. It has been decided to have these questions as continuous data (limiting their responses to two digits) instead of categorical data, as it allows flexibility in participants' responses and it collects richer data. (Teachers Q111¹-Q11, Parents Q113-Q167, Appendix 2).

¹ In both surveys, the question numbers shown (e.g., Q111) reflect the internal numbering in Qualtrics. Because questions were moved, deleted, or re-created during the design process, these numbers do not correspond to the sequential order in which the questions appeared to participants.

2) **The timing of online lessons.** Finding out when the participants experienced OPL and more details about the students' age and level of those who had piano lessons online. This section consisted of ordinal, nominal and continuous data. There was also one non-compulsory open-ended question inviting to share their experiences of having OPL during the COVID-19 pandemic. Teachers still offering OPL were encouraged to compare their teaching experiences during the COVID-19 pandemic and after. All the questions in this section were analysed descriptively, and the open-ended question was analysed qualitatively by using content analysis. (Teachers Q12-Q153, Parents Q52-Q154, Appendix 2).

3) **Student independence, skill acquisition, parental involvement, and motivation in relation to teachers' and parents' satisfaction with online piano lessons.** This section of the survey includes Likert-type scale questions, which were analysed using non-parametric tests, one unipolar scale question, one categorical yes/no question, and three open-ended questions. Each Likert-type question corresponded to one of the aforementioned variables, and the satisfaction variable consisted of additional questions to triangulate the variable itself (Section 4.4.3). (Teachers Q44-Q171, Parents Q146-Q171, Appendix 2).

4) **Technologies used.** This section consisted of three items generating nominal data related to the technology used, and two items generating ordinal data to assess whether participants experienced connectivity issues or whether teachers created video recordings. Teachers were asked an additional question about their confidence in using technology. These questions indirectly relate to the second research question, determining why participants are satisfied or dissatisfied with OPL. Most of the questions have been analysed descriptively, with questions about connectivity, video recordings, and confidence in using technology added to the regression analysis as factors. (Teachers Q37-Q41, Parents Q170-Q81, Appendix 2).

5) **Demographics.** Participants' age, gender, country of residence, education, and occupation were recorded. While age was collected as ratio data, all other variables were nominal, except for education, which was ordinal. Furthermore, even though it is advisable to have a demographics section at the start of the survey (Williamon et al. 2021, 186), it was chosen to place it at the end as the first three sections were more important in answering the research questions than describing the population (in case of participant dropout). (Both surveys Q98-Q6, Appendix 2).

At the end of the survey, participants were asked if they would like to participate in the interview phase. They have also been encouraged to share the survey with other teachers and parents, a snowball sampling approach approved by the Royal College of Music Ethics Committee.

4.2.2 Survey flow

First of all, two surveys were created – one addressed to piano teachers and one to parents whose child(ren) had online piano lessons. The questions in both surveys were kept the same, with a few adjustments addressing the specific group of respondents (see Appendix 2). To determine which survey should be directed to each respondent, the screening question was created (Are you a piano teacher/ a parent / both / none of the above), which directed each respondent to an appropriate survey. Respondents who identified as ‘both’ were initially directed to the teacher’s survey.

However, starting from March 21, 2024, this category of respondents was redirected to the parent survey due to the low response rate from parents. Participants who identified as both, as described in section 3.8, were considered equally representative of both groups, and were therefore directed to the ‘teacher’ survey (n=7) following an initial assumption that this would be the smaller population and more difficult sample to recruit. When it became apparent that it was the ‘parent’ survey that was not meeting recruitment quotas, it was determined that any remaining participants identifying as both would instead be directed to the ‘parent’ survey (n=3) over the final period of data collection. As participants were directed to distinct surveys, it is impossible to reclassify their grouping after the fact, nor to create a third survey covering both areas, due to the total sample of those identified as both (n=10) being too small for robust analysis as a third group. There is no evidence that these participants (totalling 10 out of 152) were outliers in their respective samples, nor that this approach introduced any adverse implications on data analysis or interpretation.

Additionally, there were two more instances where respondents were directed to additional questions according to their responses: 1. If they have experienced OPL during the COVID-19 pandemic (both teachers and parents), then they were shown an open-ended question where they can elaborate on their experiences. 2. Teachers who answered that they did have at least

one student who struggled while having OPL were then given an additional open-ended question to explain the reasons and if (or how) they managed to overcome this situation. This open-ended question indirectly answers the third research question, which seeks to find teaching approaches and adaptations in OPL.

Overall, the surveys were designed so that the respondents would initially answer straightforward questions about themselves, such as how many years they have been teaching. Then, they would be directed to think about when they experienced OPL with one open-ended question, allowing them to express their experiences. The most important part of the survey is right in the middle – the Likert-type scale because each question forms a variable used in multiple-regression analysis. In this section, they are also given two more opportunities (teachers are given three) to include in their own words what has not been included in the questions they have been asked. Finally, the survey ends on an easy note – asking them about technologies they used and their demographics.

4.3 Participants

Demographic questions were collected to describe the population of teachers and parents who participated in the survey. While demographic variables such as teacher age and experience were tested in exploratory analyses, they did not yield significant results in relation to satisfaction or experiences of OPL, and were therefore not included in the main analyses. Their primary use was descriptive, providing context for the sample. The tables in Appendix 6 comprehensively describe the respondent population who participated in the survey. It is important to note that the demographic questions were placed at the end of the survey, so not everyone answered them. However, those who did not answer demographics questions were still included in the regression analysis.

Teachers' survey

Most piano teachers are female (n=84, making up 84.0%), males constitute 12.0% (n=12), one count represents non-binary or third-gender respondents and thus makes up 1.0%, while those who preferred not to reveal their gender accounted for 3.0% (n=3) (Fig. 4.1). The distribution

highlights a significant predominance of female participants in the survey, which is consistent with research conducted in the private instrumental teaching sector (Bennett, 2008; Welch et al., 2008).

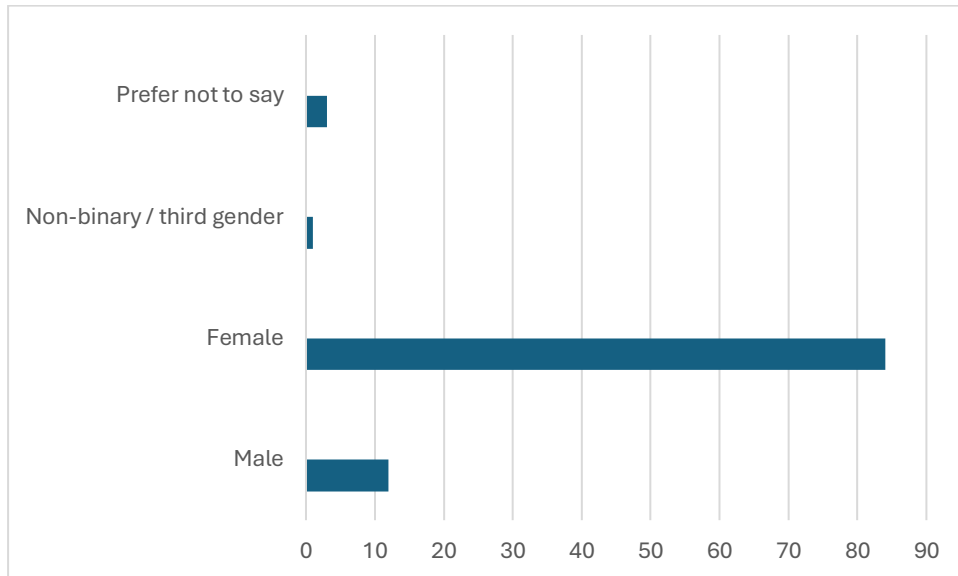


Figure 4.1 Teachers' demographics.

The educational levels of the respondents show a fabulous academic profile (Fig. 4.2). The majority, 58 participants, or 58.0%, hold advanced degrees such as MA, MS, MBA, PhD, MD, or DDS. University bachelor's degree holders constitute 31.0% of the total, with 31 teachers, which is consistent with other research showing increasing importance of higher education credentials in music teaching careers (Mills, 2004; Gaunt, 2017). Vocational or similar qualifications are held by 4.0% of the respondents, represented by four respondents—those with some university education but no degree make up 1.0% with one count. Lastly, participants who selected 'Other' account for 6.0% with six respondents, further indicating the high level of education among the respondents.

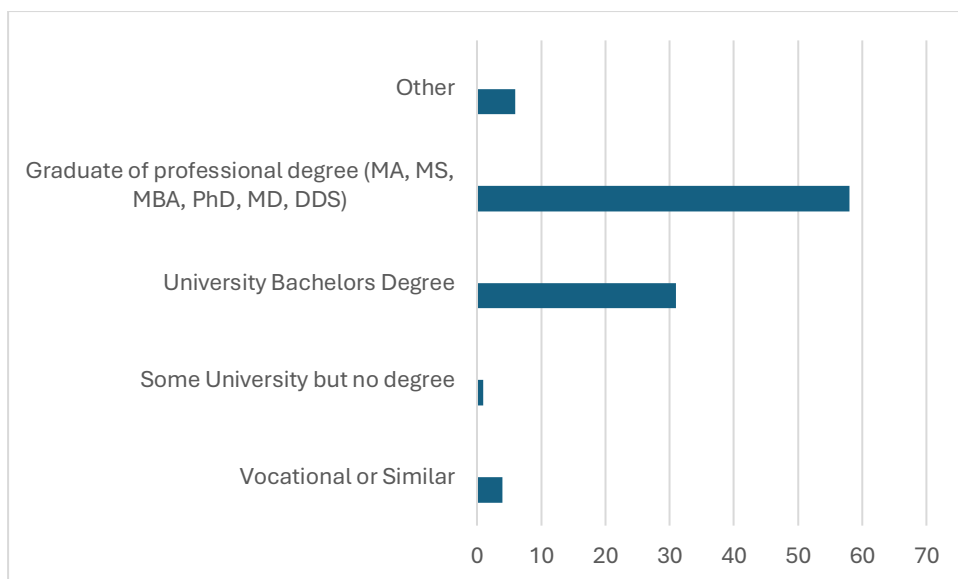


Figure 4.2 Teachers' educational level.

The descriptive statistics for the age of participants in the dataset provide a comprehensive overview of the age distribution among respondents—the total number of valid responses $n=92$, with 12 missing values. The age range of the participants is from a minimum of 22 years to a maximum of 80 years, which is indicative of considerable variability in the respondents' ages. A wide range such as this may indicate that the survey reached people well spread over most of the adult life span, from young adults to older people.²

Employment status shows that most respondents are full-time; 55 constitute 55.0% (Fig. 4.3). Those in part-time employment come next, with 38.0%, for a total of 38 respondents. Homemakers or stay-at-home parents, students, retired people, and people who selected 'Other' cumulatively form 1.0%, with one each. This distribution shows that most respondents are active in the workforce, more so in full-time employment. It is also important to note that the majority of teachers (68%) were teaching privately, which indicates that piano teaching, particularly with younger students, usually takes place in private settings (Fig. 4.4).

² Participants' ages were collected as continuous data; accordingly, this variable is summarised in the text rather than presented in a separate demographic table.

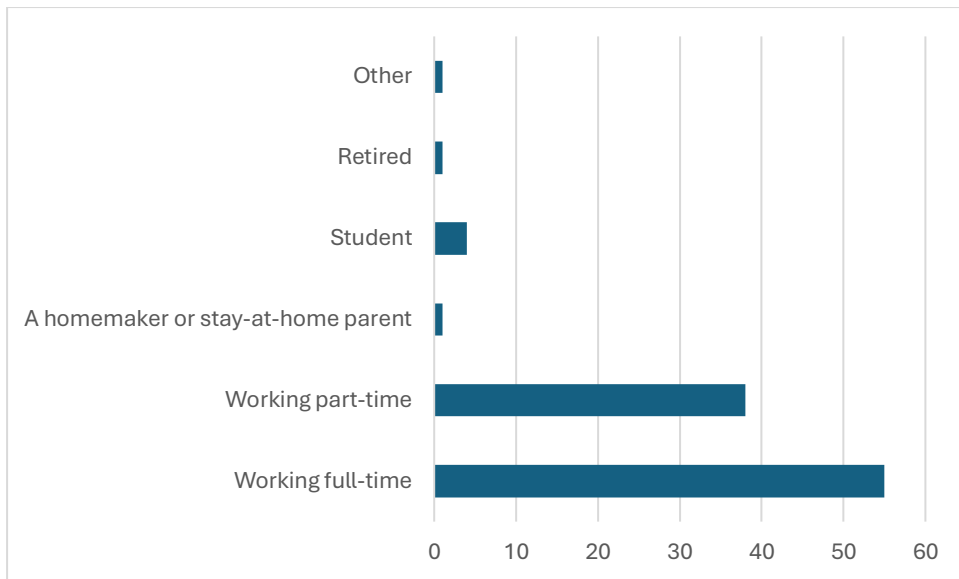


Figure 4.3 Teachers' employment status.

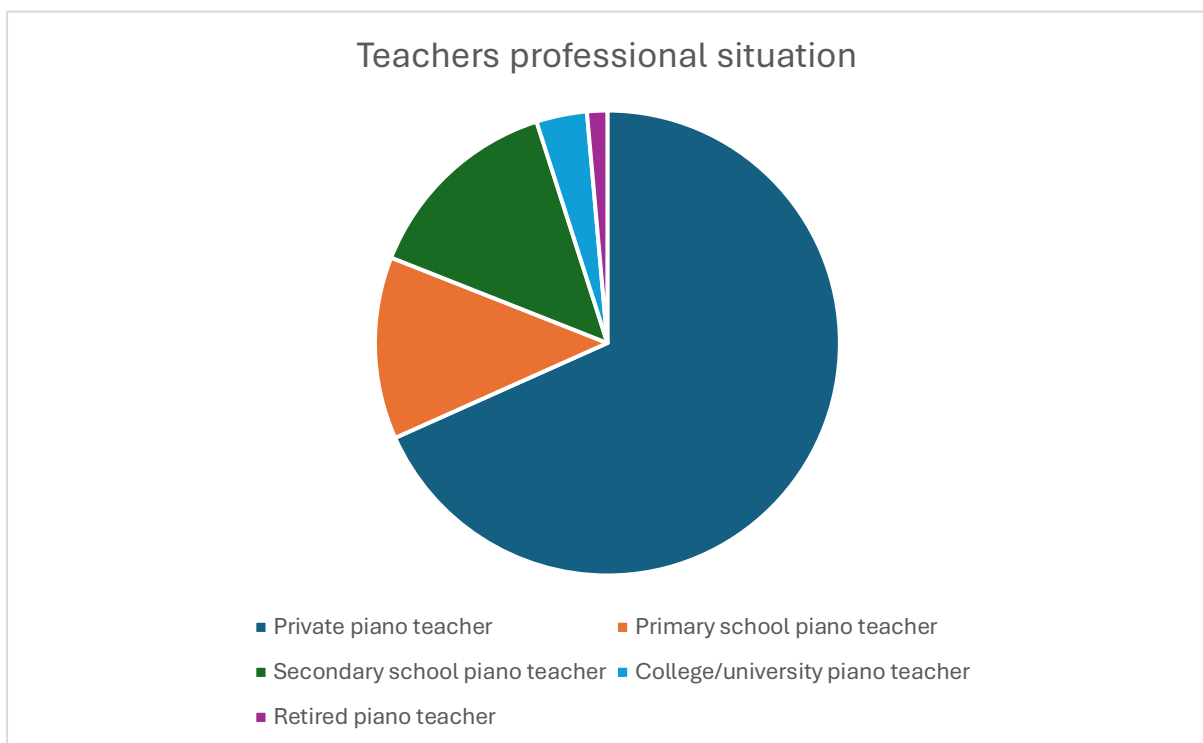


Figure 4.4 Teachers' professional situation.

The majority of participants were based in the United Kingdom (53.1%), followed by the United States (15.3%), with small numbers from countries including Canada, Lithuania, Ireland, Germany, Australia, and others (Table 4.1³). Although the data is clearly UK-heavy, the broad country spread—including 17 different countries—supports classifying this sample as international, albeit with limitations.

Table 4.1 Demographics, teachers' country of residence.

Frequencies of Country

Country	Counts	% of Total
Afghanistan	1	1.0 %
Albania	1	1.0 %
Australia	1	1.0 %
Bahrain	1	1.0 %
Bulgaria	1	1.0 %
Canada	6	6.1 %
Croatia	1	1.0 %
Germany	2	2.0 %
India	2	2.0 %
Indonesia	1	1.0 %
Ireland	3	3.1 %
Lithuania	6	6.1 %
Malaysia	1	1.0 %
Mexico	1	1.0 %
Singapore	1	1.0 %
Switzerland	2	2.0 %
United Kingdom	52	53.1 %
United States of America	15	15.3 %

Parents' Survey

N=45 participants' responses were analysed using regression analysis and descriptive statistics. However, not everyone provided their details in the demographics section. N=40 provided their

³ This data is not represented as a figure due to the number and spread of responses.

gender, n=41 provided their education and employment status, n=37 provided their age, and n=41 provided their country of residence.

The frequency distribution of gender shows that the female gender is dominant in the data, as it constitutes 85.0% of the total, with 34 parents (Fig. 4.5). Males have a share of 12.5%, with 5 respondents. The number of respondents who preferred not to disclose their gender is only one, which shows 2.5% of the respondents. This is evidence of the great female majority among the respondents.

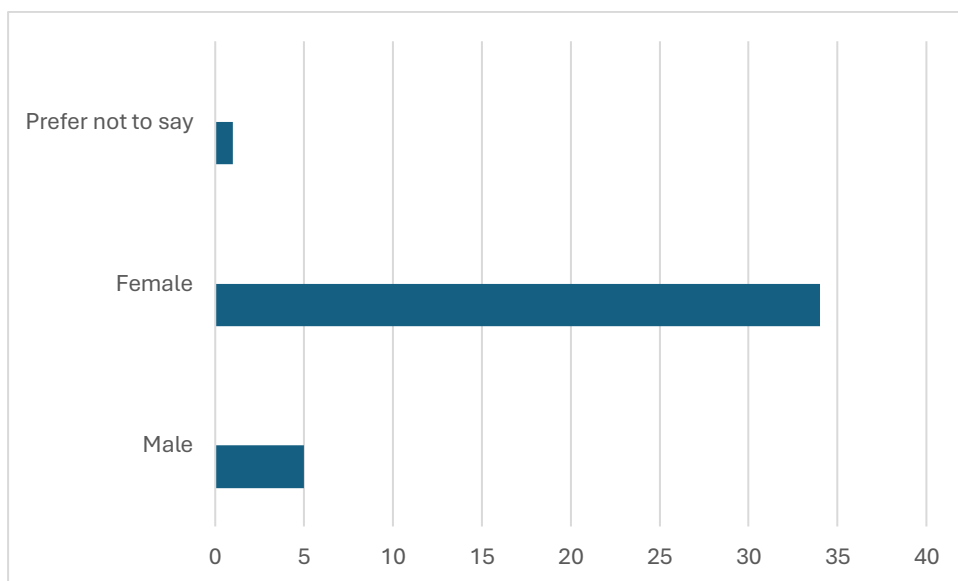


Figure 4.5 Parents' gender.

The age range of the respondents spans from a minimum of 33 years to a maximum of 58 years. Since the survey was focused on 5-9-year-old students, it is possible that some grandparents participated in it and answered questions about their grandchildren. This distribution suggests a relatively homogeneous age group within the dataset, with most participants clustered around the mid-forties.⁴

⁴ Participants' ages were collected as continuous data; accordingly, this variable is summarised in the text rather than presented in a separate demographic table.

Examining the frequency distribution of education levels, the data indicates a highly educated participant pool (Fig. 4.6). The majority, 58.5%, hold a graduate or professional degree (MA, MS, MBA, PhD, MD, DDS), with 24 respondents. Those with bachelor's degrees make up 31.7%, with 13 respondents. Other educational levels are minimally represented, with each category—completed secondary school, vocational or similar, and some university but no degree—each accounting for 2.4% with 1 count each. Additionally, one respondent (2.4%) preferred not to disclose their education level.

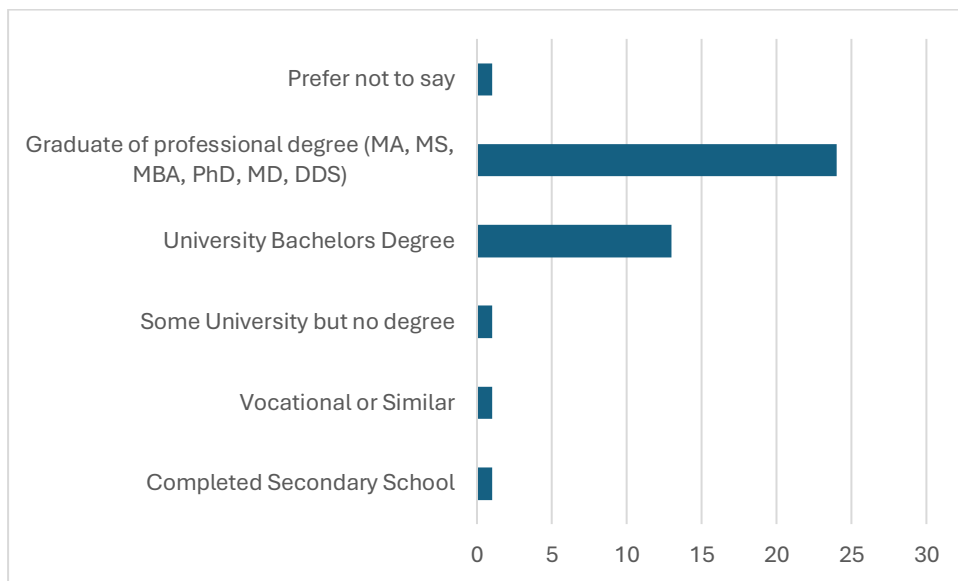


Figure 4.6 Parents' educational level.

The frequency distribution of employment status shows that more than half of the participants, 56.1%, are working full-time, with 23 respondents (Fig. 4.7). Part-time workers constitute 26.8% of the total, with 11 respondents. Homemakers or stay-at-home parents represent 4.9% with 2 respondents, while those categorised as 'Other' make up 12.2% with 5 respondents.

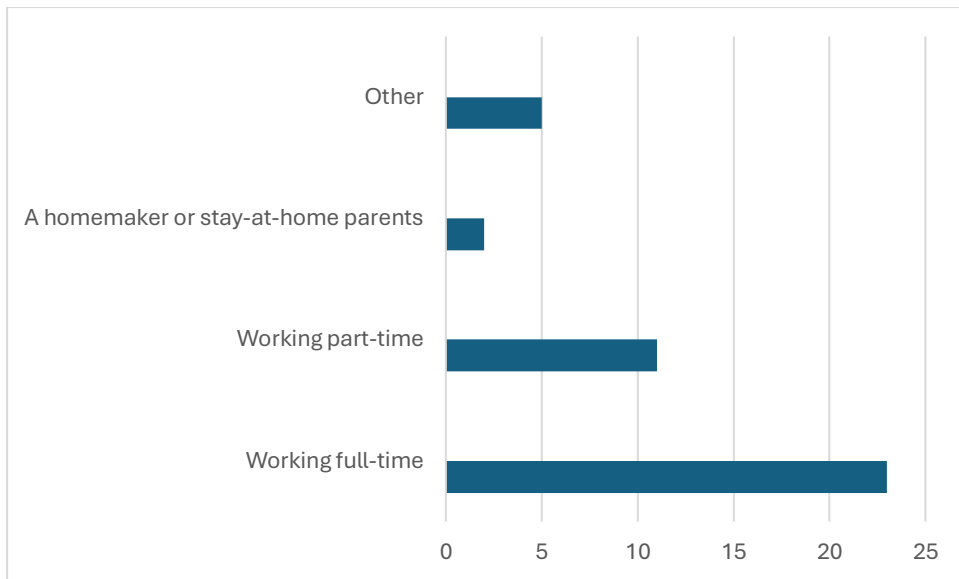


Figure 4.7 Parents' employment status.

The survey data from parents reflected moderate international reach (Fig. 4.8). A majority of parent participants were based in the United Kingdom (n = 28; 68.3%), followed by Lithuania (n = 9; 22.0%), Australia (n = 3; 7.3%), and Pakistan (n = 1; 2.4%). Most parent responses were from the United Kingdom, but a few participants from Lithuania, Australia, and Pakistan also took part. While limited, this adds a small degree of international perspective to the dataset.

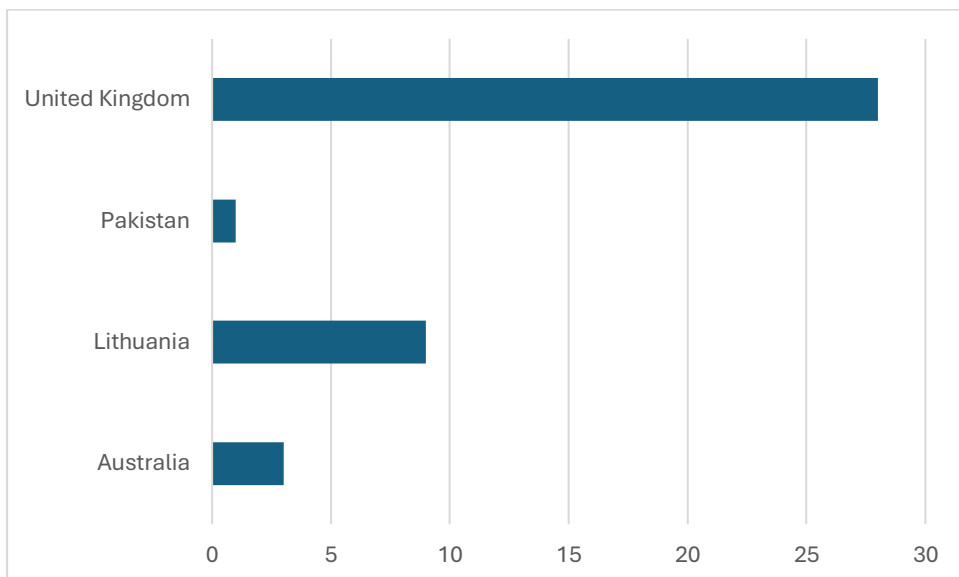


Figure 4.8 Parents' country of residence.

Finally, according to question 113 (Appendix 2.2), which was initially supposed to be just a filtering question to make the parent participants understand that they should answer the questions about only one child, the youngest one who took online piano lessons, this question becomes essential later on in the thematic analysis. The frequency distribution of the number of children per family in the sample shows that 47.5% of families have one child, and another 47.5% have two children, making these the most common family size and 5% of families have three children (Fig. 4.9). This indicates that nearly all families (95%) have one or two children, with larger families with 3 children being rare in this sample.

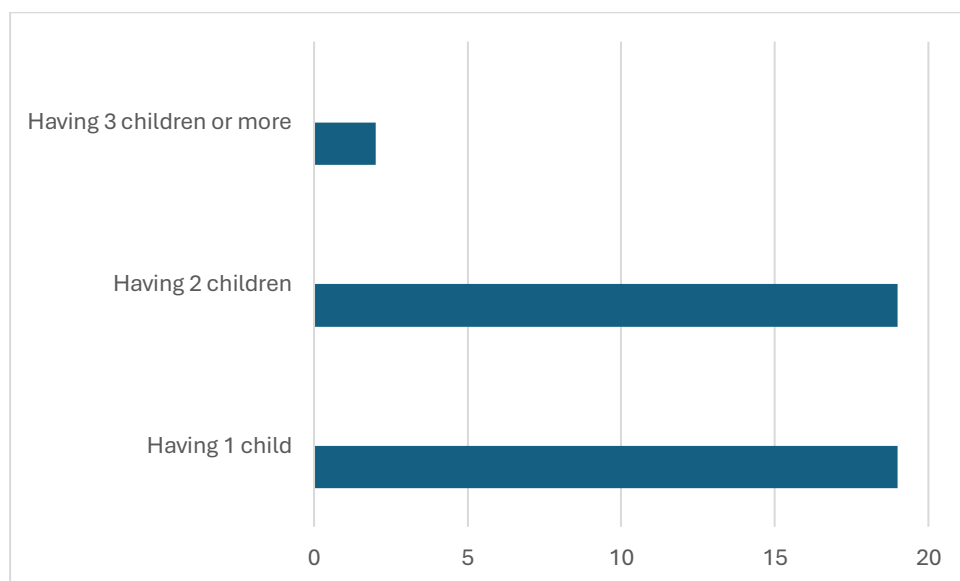


Figure 4.9 The number of children in a family.

4.4 Data Preparation for analyses

4.4.1 Preparing data for quantitative data analysis

The survey generated 355 responses, 226 from teachers, 88 from parents and 22 who identified as both. Of all responses, after deleting incomplete responses ($n=206$), the final dataset included responses from 104 teachers and 45 parents. The criteria for the responses which were deleted and which were used in the analysis are described in section 3.8. An Additional 3 responses from teachers and 1 from a parent were used for thematic analysis only, as they answered a few open-ended questions but did not answer all the questions needed to conduct regression analysis.

When manually removing incomplete responses, those with less than 82% completion were deleted. Responses with 82% or greater completion were retained, as the remaining 18% consisted of questions related to technology, which are not part of the primary analysis—multiple regression analysis. In four cases, responses were not entirely deleted, as the participants provided valuable insights in the open-ended questions. However, since they either did not respond to the Likert-type scale questions or left them incomplete, their data were excluded from the multiple regression analysis.

After downloading the survey results from Qualtrics and choosing numeric values instead of text, all answers were presented as numbers in an Excel file. For example, in question 146, if the respondent chose ‘Strongly agree’, it would be recorded as 1 and ‘Somewhat agree’ as number 2. However, the scales have been transformed for the analysis and instead of going from 1 to 5, i.e. from ‘Strongly agree’ to ‘Strongly disagree’, it was reversed, so that ‘Strongly agree’ would be 5, meaning that stronger emotions, such as satisfaction with the lesson, would have a higher number and dissatisfaction would be a lower number. Table 4.2 shows a Likert-type scale question which forms one latent variable – Teacher’s Satisfaction. This table demonstrates in what case the scale values has been reversed. Highlighted numbers are the transformed scale values. For example, if the participant strongly agrees with the first statement, they score 5 points in terms of their satisfaction with online piano lessons. The scale values for the last two statements are not reversed as they represent the opposite statements, i.e. if the participant selects ‘Strongly disagree’ for the statement ‘I feel burnout from teaching young students online’ that means the participant scores 5 points in terms of their satisfaction with online piano lessons.

Table 4.2 Transformed scale values.

Q44 Thinking of typical 5-9 year old piano students who you have taught online, please indicate on a scale ranging from 1 (strongly agree) to 5 (strongly disagree) the extent to which each of the statements below is true to you.					
	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I enjoy teaching young students online.	1	2	3	4	5
	5	4	3	2	1
I am satisfied with their progress.	1	2	3	4	5
	5	4	3	2	1

I would like to teach young students online long-term.	1	2	3	4	5
	5	4	3	2	1
I feel burnout from teaching young students online.	1	2	3	4	5
I believe that online lessons are not as valuable as face-to-face lessons for young students.	1	2	3	4	5

Questions 44, 146 and 59, Likert-type scale questions, are constructed so there is at least one negative statement. This ensures that respondents pay attention and flag if they answer without reading (if the answers are the same for positive and negative questions). Regarding analysis, the opposite (negative) statements had to be reversed, meaning if ‘strongly agree’ was 5, in the opposing question, ‘strongly agree’ was 1. Further examples are demonstrated in section 4.4.3.

Additionally, Q143 is about students’ skill acquisition, but it is presented in a way that would measure the teacher’s support, meaning if the teacher needs to support the student more, the student’s skill acquisition levels are low, etc. In this case, the answer ‘a great deal’ equals 1, meaning that the student is very dependent, and ‘none at all’ equals 5 – the student is independent and therefore enjoys the lessons more. Q72, Q59 and Q145, where ‘Always’ should be transferred as 5 points and ‘Never’ – 1 point, as more points would be higher initiative and parental involvement. All questions are ‘positive’, and none need to be reversed.

For questions regarding motivation (Q151), even though the first two statements refer to intrinsic motivation, the rest of the questions refer to other motivational factors such as guilt, introjection, deadlines, and friends. The score value was made the same for all statements because ultimately, this Likert-type scale shows how much the students were motivated and not what the motivators (factors) are. Therefore, ‘strongly agree’ for all statements is scored at 5 points, which means high motivational levels. It is also backed up by Cronbach’s alpha reliability test, explained in section 4.4.4.

4.4.2 Missing data

To reinforce the multiple regression analysis, any missing responses from Likert-type scale questions were replaced with the mean value calculated from the respondents' data. Williamon et al. (2021) conclude that inserting missing data 'does not provide any new information and can minimise the variety in the data' (p. 265). However, in this survey, since each Likert-type scale question consisted of similar statements that referred to a specific variable, it was not expected that each statement within the same question would add variety or provide new information. Instead, it was the overall average that mattered.

The missing values occurred mostly in two Likert-type scale questions—Q143 in the teachers' survey and Q145 in the parents' survey—where respondents had the option not to answer. Since the statements within each Likert-type scale referred to the same concept, the mean value from the participant's other responses within the same Likert-type scale question were used to fill in the missing data. This approach ensured that the multiple regression analyses included all responses and maintained the integrity of the data.

Furthermore, when analysing the data using Jamovi software, only integer values could be used due to the Likert-type scale ranging from 1 to 5. Consequently, any calculated mean that resulted in a decimal was rounded to the nearest whole number (e.g., 2.25 was rounded down to 2, while values at or above .5 were rounded up to the next digit). In other instances, such as with Q111 and questions regarding technology and demographics, the missing data was not replaced or substituted. These questions were analysed descriptively, and the absence of data did not affect the overall analysis.

According to Williamon et al. (2021, 264), the missing data in a survey may occur due to poor design or not easily readable questions. In this survey, the participants were given a 'I am not sure' option, which created missing values. Interestingly, teaching pedalling was the most common question teachers chose not to answer; this might mean that they did not teach pedalling online or that music for beginner students does not include much of the pedalling instruction.

4.4.3 Latent variables

Identifying dependent and independent variables is essential for running multiple regression analysis. A variable can represent one question or a group of questions. A substantial part of the survey consists of Likert-type questions, grouped into sections; each section represents a variable, for example, question 44 (Appendix 2.1). Due to the Likert-type scale questions, many variables are latent, meaning ‘the relationships clusters of variables representing each factor’ (Williamon et al. 2021, 381). In this survey, each variable is made out of 4-5 Likert-type statements.

The latent variables in this survey are as follows:

1. Student Independence (both surveys) – The student’s independence statements were formed according to self-regulation theory (McPherson & Zimmerman 2011), such as paying attention during the lesson or identifying mistakes, research on music students’ autonomy by Kupers et al. (2014) and Roesler (2017) such as asking questions or responding to teacher’s feedback, and self-determination theory (SDT) (Ryan & Deci 2000) when behaviours such as making suggestions during the lesson by the student are being observed. Since none of these statements determines autonomy or self-regulation exclusively, they have been grouped as students’ independence, combining them all. Factor analysis was used to ensure that these indicators formed a coherent construct.
2. Skill Acquisition (teachers’ survey only) – Determined by the extent to which teachers feel they need to support their youngest students in technical aspects such as sight-reading, rhythm, pulse, posture, or pedalling.
3. Parental Involvement (both surveys) – Defined by responses on how and how often parents were involved in online piano lessons, i.e., whether they sat in on lessons, took notes, or communicated with the teacher via text/email between lessons. Items were adapted from prior studies on parental involvement in education.

4. Student Motivation (parents' survey only) – Addressed to parents as they are best positioned to observe whether their child is motivated due to a love of music, deadlines, or peer influence. This variable does not distinguish between intrinsic and extrinsic motivation (Comeau et al., 2019; Ryan, 2023; Wieser & Müller, 2022), focusing instead on the overall level of motivation. Validated questionnaires in terms of SDT (Comeau et al., 2019; Ryan & Deci, 2000) were not incorporated into this survey because most SDT questionnaires are based on self-reports, meaning that students themselves should answer the questions about motivation. However, since the students were not included in this part of the study, their parents were asked questions about their child's motivation.

5. Satisfaction (both surveys) – In this study, satisfaction refers to teachers' and parents' overall evaluation of online piano lessons for young beginners, including their enjoyment of the format, perceived student progress, willingness to continue long-term, and views on the value and emotional demands of online teaching compared to face-to-face lessons. This is a dependent variable which was derived from a combination of Likert-scale questions with a slider or scale question, where respondents indicated their satisfaction with online piano lessons on a scale from 0 to 10. In the parents' survey, additional items explored student experiences, such as whether they looked forward to lessons or complained about them, which only parents could reliably report.

Appendices 3.1 and 3.2 demonstrate all latent variables used in multiple-regression analysis and whether the score values were transformed. Additionally, Appendix 3.3 includes an explanation of the Parents' Satisfaction variable. Parents' Satisfaction consists of the same 5 Likert-type statements as in the teacher's survey (Q146) and a slider bar (Q163). However, there were an additional 3 statements over two Likert-type scales, which asked about the child's satisfaction, such as looking forward to the lesson or complaining about the online lesson. These three additional statements were added to the Parents' Satisfaction variable. Another variable – Student Independence was kept the same as in the teacher's survey, just the statements were scattered between two questions – Q59 and Q145.

In multiple regression analysis, the predictor variables determine the relationship and strength in relation to the dependent (outcome) variable (Williamon et al. 2021, p. 367), which in this case is

satisfaction with online piano lessons. Since the two surveys addressed to teachers or parents are not identical, two latent variables were kept the same between the surveys: independence and parental involvement. Additionally, the teachers' survey included the skill acquisition variable (something that parents would not be able to determine, as the questions involve specificity in piano playing). The parents' survey included the motivation - something teachers could not advocate for due to not knowing if parents reward their children for practising or having lessons or if they are motivated because of other external factors. As mentioned before, Parent's Satisfaction variable had additional 3 statements.

Dependent (outcome) variable

The dependent variable in a multiple regression analysis is a single variable that is influenced by multiple predictor (or explanatory) variables (Williamon et al. 2021, 367). In both surveys, the dependent variable is 'Satisfaction', which is a latent variable made out of a Likert-type scale latent variable (Teachers' survey question 44, Parents' survey question 146) and a slider or scale question where respondents slide the bar to indicate their satisfaction levels of online piano lessons (Teachers' survey question 162, Parents' survey question 163).

Additionally, the unipolar scale (or slider/sliding bar) was used, where 0 represents none and 10 represents high, a format often used to measure enjoyment or frequency (Williamon et al., 2021, p. 168). In this case, participants were asked to rate their level of satisfaction with OPL. However, the slider is scaled with 11 points (zero being one of the points), and the Likert-type scale produced only 5-point scales. Therefore, in Appendix 3.4, the formula used to make an 11-point scale into a 5-point scale is included. Once the 11-point scale is transformed into a 5-point scale, both variables are added together, and the mean value of both variables is used as the primary dependent variable – satisfaction. Additionally, the Parents' Satisfaction dependent variable consists of three items: the mean value from Likert-type question 146, the slider question 163 transformed into a 5-point scale, and the mean value of the three statements from question 59.

The mean value of the 5 Likert-type questions and the number of the slider usually correlate; see the example in Appendix 3.5. Here, 'Satisfaction Likert-type' is the mean value from the five questions. Satisfaction2 is the slider respondents had a chance to use to evaluate their

satisfaction. 'Satisfaction 0-10 transformed' is a transformed variable using the abovementioned formula, where 0 is 1 and 10 is 5. The mean value and the slider correlate very well, for example, in the first row, 2.6 and 1.4, or 3.0 and 3.8. And when adding 'Satisfaction Likert-type' and 'Satisfaction 1-10 transformed', the mean value is the overall satisfaction used in multiple-regression analysis.

4.4.4 Validity tests

Cronbach's alpha

Cronbach's alpha was used to assess the internal consistency and reliability of each variable, ensuring that the Likert-type scale items measured a single underlying construct (Williamon et al., 2021, p. 376). In this measurement, 1 represents perfect correlation and 0 indicates no correlation. Generally, values of 0.7 to 0.8 are considered strong indicators of internal consistency (Williamon et al., 2021, p. 376). A Cronbach's alpha of 0.900 suggests that the scale exhibits excellent internal consistency.

The results indicate a strong correlation between items within each variable, with most items contributing positively to the overall reliability of the scale (Appendix 4.1 and 4.2). According to Cohen et al. (2017, p. 774), $\alpha > 0.90$ is considered very highly reliable, while $\alpha < 0.60$ is deemed unacceptably low. All Cronbach's alpha tests conducted in both surveys fall within these two thresholds, with Teacher Satisfaction having the highest reliability ($\alpha = 0.90$) and Student Motivation the lowest ($\alpha = 0.603$).

Confirmatory Factor Analysis

Factor Analysis is used to 'identify clusters of variables strongly related to each other', and Confirmatory Factor Analysis in particular (CFA) is used when the factors have already been identified and to test 'how well the data collected fit the model' (Williamon et al. 2021, pp. 380-382). According to Cohen et al. (2017, p. 818), CFA 'derives from pre-established theory which informs the generation of the model, and the CFA tests a theory of the latent process and relationships'. According to the literature review and how the questions were designed, it was

clear which questions should be clustered as variables. Confirmatory factor analysis was chosen as a suitable reliability test.

Teachers' survey

The confirmatory factor analysis showed that all indicators loaded significantly ($p < .001$) onto their respective latent variables (Appendix 4.3). For the Satisfaction factor, all five items had strong standardised loadings, ranging from 0.933 to 0.642, suggesting that the selected indicators were closely related to how satisfaction was experienced or reported by participants. Similarly, all six items for Skill Acquisition loaded significantly, with standardised estimates between 0.807 and 0.576, indicating consistent alignment with the underlying construct. The Independence factor included seven indicators, all significant, but with a wider range of loadings—from 0.830 down to 0.446—showing that some items were more strongly associated with the factor than others. For Parental Involvement, five indicators were tested, with two of them (C and E) showing noticeably weaker loadings (0.340 and 0.335).

Parents' survey

The CFA results for the parents' survey (Appendix 4.4) revealed that most indicators loaded significantly onto their respective factors, although the strength of these loadings varied. For Satisfaction, all five items reached significance, though the standardised loading for item E was noticeably weaker than the others. Likewise, all items under Independence reached statistical significance, although item B had the weakest association with the factor. A similar pattern was seen in the Student Satisfaction construct, where all items were significant, but item C stood out with a noticeably lower loading.

Parental Involvement showed more variability. Most items under Parental Involvement were statistically significant, except for item E ($p = 0.353$), which did not show a meaningful contribution to the factor. A similar pattern was observed in the teachers' dataset, where a few items in this category also showed weaker associations. In contrast, Motivation showed more problematic results: only items A and B loaded significantly and positively, while the remaining

items (C to F) did not. Some even showed negative estimates, suggesting that either the construct was not well-defined in this sample or that these items were not functioning reliably.

Taken together, the findings suggest that while some constructs (e.g., Satisfaction, Independence, Student Satisfaction) were measured reliably in the parents' survey, others—particularly Motivation and Parental Involvement—may require rethinking in terms of item design or conceptual clarity. The smaller sample size likely affected the stability of the estimates, making some results less reliable. Still, the analysis gives a useful indication of how these factors were viewed by parents and suggests where improvements could be made in future studies.

Correlation Matrix

As explained in section 4.4.3 as well as in Appendices 3.1 – 3.3, the two variables in the parents' survey -Independence and Satisfaction-have been divided between two separate questions. An additional Correlation Matrix was run to confirm the variable's reliability in the parents' survey (Appendix 4.5).

Most indicators of student independence were positively and significantly interrelated, with particularly strong correlations between Independence C and D ($r = .630, p < .001$), D and G ($r = .682, p < .001$), and E and F ($r = .548, p < .001$). Only a small number of relationships, such as Independence B with A, C, and G, did not reach significance. Overall, the pattern indicates a largely coherent construct of independence, though some items contributed less consistently than others.

Most satisfaction indicators were positively and significantly correlated, with the strongest associations between Satisfaction A and B ($r = .713, p < .001$), Satisfaction A and C ($r = .678, p < .001$), and Student's satisfaction A and B ($r = .783, p < .001$). Other correlations were moderate but significant (e.g., Satisfaction B and C, $r = .482, p < .001$), while a small number were weak or non-significant (e.g., Satisfaction E with A and B; Student's satisfaction C with Satisfaction A and C). Overall, the findings suggest a broadly coherent construct of satisfaction, with some items contributing more strongly than others. The high p-values might be the effect of the small sample size ($n=45$), which determines statistical power.

4.5 Data Analysis

4.5.1 Multiple regression analysis

To address the first two research questions—concerning students’ independence, skill acquisition, parental involvement, and motivation—multiple regression analysis was identified as the most appropriate statistical method. Multiple regression allows researchers to examine the relationship between several predictor variables and a single outcome variable and to determine the extent to which each predictor contributes to the outcome while accounting for the influence of others (Cohen et al., 2017, p. 805; Williamon et al., 2021, p. 367). The analysis was conducted using Jamovi software.

In this study, the outcome (dependent) variable was participant satisfaction with online piano lessons, measured as a composite mean score derived from relevant Likert-scale items and a slider-bar question. The first set of regression models focused on the following predictor variables:

- Students’ independence
- Skill acquisition (teachers only)
- Motivation (parents only)
- Parental involvement

These variables were selected based on prior research and theoretical frameworks around student engagement and learning in online environments. To include more variables into the analysis, a second set of regression models introduced additional predictors:

For teachers:

- Experience teaching online before the COVID-19 pandemic
- Confidence using technology
- Connectivity issues during lessons

For parents:

- Whether their child had online lessons before the pandemic
- Connectivity issues
- Receipt of video recordings of lessons

Parents were chosen for the video recording analysis, as they were the recipients of such materials and thus better positioned to evaluate their impact on lesson satisfaction.

Studies such as Wieser and Müller (2022) have applied multiple regression to investigate how motivation relates to students' satisfaction of basic psychological needs in online learning. Their work is similar in scope but narrower in focus. In contrast, the present study extends this approach by including additional variables specific to both teacher and parent perspectives, reflecting how experiences of online piano lessons may have evolved in the period following the pandemic.

4.5.2 Descriptive statistics

Descriptive statistics (using Excel and Jamovi software) were used to analyse all survey questions that were not included in the multiple regression analysis (Sections 5.4-5.6). These covered a range of areas, from demographic information to the number of teachers who had encountered students struggling with online learning. They also helped identify the types of piano lesson settings participants experienced before, during, and after the pandemic (which indirectly answered the fourth research question), as well as the videoconferencing platforms and technological tools used for online piano teaching. While these findings were primarily descriptive, some of them—particularly those related to technology—partially informed the second research question, which explores additional factors that may influence satisfaction with online piano lessons, including the tools and formats used.

4.5.3 Content analysis

There were four open-ended questions in the teachers' survey and three open-ended questions in the parents' survey (Appendix 2). Although it was originally planned to use thematic analysis to analyse open-ended questions, most responses were very short—often just keywords or brief phrases—and lacked sufficient depth to support that approach. Content analysis was therefore adopted as a pragmatic choice, as it enabled working with the data in a way that suited its length and structure. In line with how content analysis is in the literature, it involves quantifying the occurrences of words or content to identify patterns and trends. While similar to thematic analysis in its use of coding, content analysis focuses on measuring the frequency of codes to systematically interpret the data (Williamon et al. 2021, p. 252). All answers (data) were transferred to MAXQDA analysis software:

'MAXQDA is a so-called QDA software (Qualitative Data Analysis Software), which provides functions for analysing qualitative data and various functions for processing mixed methods data. The software allows the open-ended and closed-ended questions to be analysed separately in one software; for example, the answers to open-ended questions can be thematically coded, and frequency tables and statistical characteristics can be calculated for the standardised answers (Creswell and Plano Clark 2018, pp. 227–232; cited in Guetterman, Creswell, & Kuckartz 2015).

In more recent research, MAXQDA software has been widely adopted for analysing open-ended survey responses through content analysis, enabling researchers to systematically code data and generate tables that display the frequency and distribution of emerging themes (Váradi et al., 2024). This method makes the analytic process clearer for other researchers and helps combine code frequencies with qualitative interpretation, which is especially useful in mixed-methods studies like the present one.

4.5.4 Coding procedures in content analysis

The text underwent two rounds of coding: 1) inductive, meaning creating new codes from the text, and 2) deductive – making sure that the coded segments were consistent (similar segments assigned to the same code):

‘The creation of the category system [code system] can follow either a concept-driven (deductive) or a data-driven (inductive) approach. Kuckartz et al. (2009, 78–79) provide indications as to when which method is suitable: the concept-driven approach is suitable if information on the topic is already available or if concrete questions and assumptions, such as those that have emerged during data exploration, are to be checked. The data-driven approach, on the other hand, would be appropriate if the spectrum of possible answers is unknown and no preliminary categorization is to be made’ (Radiker & Kuckartz 2020, p. 14).

Between the first and the second round of coding, codes were grouped into bigger themes, or some codes were redundant if they were too similar to other codes. 3 layers of codes were created: 1) a parent code, such as negatives or positives which generalises the theme; 2) the first subcode which is more specific, e.g. there might be many negatives when it comes to online piano lessons, it could be something to do with teaching approach, student’s behaviour, student-teacher relationship or some teaching aspects; 3) the second subcode stemming from the first subcode to make it even more specific, e.g. in the ‘Negatives’ - parent code, the first subcode is ‘teaching approach’, i.e. there is something that teachers cannot do or are not happy about while teaching online and the second subcode will be very specific (usually several categories): inability to point at the score, inability to play together, tactile approach/physical demonstration, lack of movement activities. This approach enables a more nuanced and detailed analysis by allowing specific aspects of each theme to be explored comprehensively.

Due to the nature of the text (open-ended questions in an online survey, meaning the answers might be brief or concise as participants had to type, instead of a recorded interview, when participants can elaborate more), respondents would often mention many different things in just 1 or 2 sentences. In terms of coding, this means that sometimes just one or two words, such as ‘latency issues’ mentioned in the sentence, would be coded and not the whole sentence. This

approach allows for more accurate tracking of how many segments are assigned to each code and facilitates a clearer analysis by focusing on keywords rather than full sentences.

While coding parents' survey it was generally straightforward to assign one code to one segment, however, when analysing teachers' survey, there have been plenty of cases when 2 or sometimes 3 codes had to be assigned to the same segment, for example Teacher 71 said: 'Teaching the reading of music to complete beginners was much harder to do online.' – two codes were assigned – 'Teaching notation' ('Negatives' parent code) and 'Age as a factor' ('Students' behaviour, age, capabilities' parent code). Due to this approach, it is more beneficial to use the 'Code Relations Browser' (CRB) in MAXQDA, which displays the co-occurrence of two codes within the same segment or document (Appendices 9.1, 9.2, and Supplementary Material). This way, it is easier to make connections between codes, for example, those who said that students lack focus were also talking about young students specifically ('Age as a factor' code). Additional CRB tables were used to see how all participants as a whole answered the open-ended questions and which codes were the most prominent (Appendices 9.3 and 9.4).

Furthermore, it has been decided that if a parent code has a subcode, or if the first-level subcode has the second-level subcodes, then only the smaller subcode will be coded, leaving the higher-level code without any segments. This avoids double-coding, meaning that the same segment can be assigned to a code and a subcode. MAXQDA software not only allows coding the text, but it has many other features that are helpful in qualitative analysis; one of them is showing how many times a particular code has been coded within the entire text, thus showing the frequency of the codes. The higher the frequency, the more prominent or significant the theme. Figures 6.1 and 6.13 demonstrate only the first-level codes (parent codes), which show the main themes in the teachers' and parents' surveys' content analyses.

4.6 Phase II: Data collection methods

The second phase of this research consisted of semi-structured interviews with parents and teachers who took part in the first phase of this research – the survey. It also included interviews with parents' children, that is, students who experienced online piano lessons between the ages of 5 and 9 (either in the past or currently). The interviews took place between June and July in 2024, as most teachers and parents were assumed to be on holiday in August. The interviews

with teachers lasted between 16 and 35 minutes, with parents between 8 and 16 minutes and with children between 3 and 7 minutes. The interview questions reflected the first phase's findings, which elaborated more on specific topics such as the positives and negatives of online piano lessons, parental involvement, and the use of technology. Additionally, some broad questions were included, expanding the search for the factors that determine satisfaction with online piano lessons (OPL).

4.6.1 Interview questions

Since this research is of an explanatory mixed-methods nature, the interview questions were designed with the main themes and findings coming out from the first phase of the research—the survey. According to Creswell and Plano Clark (2018, p. 223), an explanatory sequential mixed-methods design is suitable for expanding upon or clarifying quantitative results through more detailed qualitative exploration of participants' perspectives. This allows the survey findings to provide a foundational starting point from which targeted and meaningful data can be collected during the qualitative phase. Guest, MacQueen, and Namey (2012) stated that mixed-methods research especially benefits from an iterative approach, where preliminary findings refine subsequent data collection. This will help ensure that the interviews will focus on providing deeper insight into key findings from the first phase while allowing participants to introduce new perspectives.

The questions for all three participant groups (teachers, parents, and students) were slightly adjusted to keep them relevant to each participant's role and experience. For example, teachers were asked about their teaching strategies, while parents were asked about their involvement in online piano lessons. Due to the semi-structured interview design, each interview differed slightly; however, teachers were given at least 10 questions, parents – 10 and children – between 10 and 11 (Appendix 5).

Questions addressed to participants who were under the age of 18 years were designed using the mosaic approach. According to Clark (2017), this method combines 'visual, verbal and interactive techniques to elicit rich children's responses' (p. 145). The mosaic approach is one in which the interviewing process is integrated with action-based elements that will make the

interview interactive and child-friendly. To put this into practice, printed pictures of online piano lessons were shown to the students with questions that would prompt reflection on the experience. The younger participants found it easier to verbalise their thoughts, and interviews were developmentally appropriate and engaging. Nevertheless, children's responses might have been influenced by many factors, such as children wanting to give answers they think the interviewer wants to hear, they want to please their parents or the parent who is present in the room might make them tense, and they could not express what they honestly think. Therefore, their responses had to be taken with caution.

By integrating findings from survey data with specially designed interviews, this project followed the principles of explanatory mixed-methods research, where the qualitative phase enhanced the interpretation of trends found in the quantitative phase. As Plano Clark and Ivankova (2016) emphasise, linking data collection and analysis across phases is important to create coherent and rigorous mixed-methods studies.

4.7 Participants

The number of participants who took part in the survey resembled the number of participants recruited for the interviews, i.e. as there were more teachers (n=104) than parents (n=45) who took part in the survey, proportionally more teachers (n=9) than parents (n=5) were interviewed. Convenience sampling was employed, and everyone who agreed to participate in the interview phase was invited. Out of 60 teachers contacted, 9 agreed to take part in the interview, and of the 9 parents who agreed to be contacted regarding the interview, 5 agreed to be interviewed, and 4 agreed for their children to take part as well. In one case, only the child was interviewed, not the parent. In two cases, two children from the same family were interviewed, making a total of 7 children being interviewed.

4.7.1 Teacher profiles

In this analysis, it is essential to understand the teachers' backgrounds and what they talked about in semi-structured interviews. Table 4.3 demonstrates their teaching experience and current teaching mode. It is important to note that all participants have more than 20 years of

teaching experience, and the majority are still offering online piano lessons. The profile tables – ‘Document Maps’ (Appendix 12), also support the table and give further insight into the themes they focused on during the interview, giving a better understanding of their experiences. For instance, Appendix 12.1 shows that Teacher 1 and Teacher 8 are positioned further apart from the rest of the participants, indicating that their responses differed in thematic focus compared with the majority.

Table 4.3 Teacher profiles.

Teacher's ID	Teaching speciality/training if other than piano teaching	Online prior to COVID-19	Online after Covid-19	Years of teaching
Teacher 1	Dalcrose Eurhythmics	No	No	22
Teacher 2	Improvisation, composition	No	Yes, exclusively	34
Teacher 3	Adhd, hypermobility, theory and composition	Occasionally	Yes, exclusively	23
Teacher 4	Suzuki	Occasionally	Yes, as well as face-to-face	45
Teacher 5		Occasionally	Yes, as well as face-to-face	20
Teacher 6	Violin, accompanist	No	Yes, as well as face-to-face	48
Teacher 7		No	Only 1 student 1, others – face-to-face	20
Teacher 8		No	Yes, as well as face-to-face	20
Teacher 9		Occasionally	Yes, as well as face-to-face	30

4.7.1 Parent profiles

A short Table 4.4 has been created to demonstrate when the participants experienced online piano lessons, how many children they had, as in some cases, there were two children from the same family interviewed. It is important to note that two out of five parents' children were taught online by the researcher during or after the pandemic; one parent's children are being taught by the researcher currently in a face-to-face setting, however, they received online tuition from a different teacher, and two parents were unknown to the researcher.

Table 4.4 Parent profiles.

Parent ID	Online before Covid-19?	How are the lessons being held now?	Number of children who had been interviewed	Child's age at the time of taking OPL
Parent 1	No	The teacher visits us	1	6-7
Parent 2	No	Music school	0	7-8
Parent 3	No	The teacher visits us	2	Child 1: 7-8, Child 2: 9-10
Parent 4	No	Exclusively online	1	5-7 (present)
Parent 5	No	The teacher visits us, with a few online lessons due to illness	2	Child 1: 5-6, Child 2: 9-10

According to the parents' Document Map (Appendix 12.2), their responses differed significantly from one another. Hence, they are far apart from each other, which shows the difference in their experiences with OPL.

4.7.1 Student profiles

Since, in some cases, two children from the same family have been interviewed (Table 4.5). It is important to note that four out of seven students were taught online by the researcher, the researcher is currently teaching two students in a face-to-face setting, but they have never been taught online by the researcher, and one student was unknown to the researcher. One out of seven students is currently having OPL.

Table 4.5 Student profiles.

Student ID	Online before Covid-19?	How are the lessons being held now?	How old were they when they first experienced online piano lessons, and approximately how old were they at the time?
Student 1	No	The teacher visits us	9-10
Student 2	No	The teacher visits us	6-7
Student 3	No	The teacher visits us	7-8
Student 4	No	The teacher visits us	9-10
Student 5	No	The teacher visits us	9-10
Student 6	No	The teacher visits us	5-6
Student 7	No	Exclusively online	5-7 (present)

According to the students' Document Map (Appendix 12.3), most students are clustered together, mainly because they mentioned more negatives than positives, with two outsiders – student 1, who mentioned positives and negatives equally and student 3, who saw a few benefits of OPL, such as learning 'musical geography'.

4.8 Data analysis

All interviews were audio-recorded and initially transcribed using Otter.ai software. Each transcript was then manually checked and edited, as some recordings—conducted online—contained occasional audio issues that affected clarity and made it difficult for the software to accurately recognise certain words. One of the interviews was conducted in Lithuanian and transcribed using Amberscript, which was also used to generate an English translation of the interview.

4.8.1 Thematic analysis

Thematic analysis was used to examine the semi-structured interview data, as it allowed for ‘organising the data into themes and drawing out the overarching themes’ (Williamon et al., 2021, p. 236). This approach made it possible to distil large portions of text into manageable patterns of meaning, helping to identify both commonalities and contrasts across participants. A top-down approach, as well as a bottom-up approach, was used in the first round of coding, guided by the research questions. This was followed by a second round of coding to ensure that unexpected insights were not overlooked (see Section 4.8.2). The analysis was carried out using MAXQDA, a software tool that supported the organisation of themes and produced visual outputs.

4.8.2 Coding procedures in thematic analysis

Initially, the same codes from the open-ended questions content analysis (see Chapter 6 and Appendix 11) were used to start the coding process of teachers’ and parents’ interviews. According to Williamon et al. (2021) and Cohen et al. (2017), some research designs allow starting the coding process with pre-determined codes (as is the case with the explanatory nature of this research). Williamon et al. (2021, p. 239) also add that ‘even with predetermined codes, researchers allow new insights to emerge from [...] the data’, which was also the case in this project, hence the use of a bottom-up approach as well. New codes were created during the first round of analysis, as some of the themes were new or different compared to the analysis of the open-ended questions, such as when teachers talked about qualities and characteristics that students should have to get the best out of OPL or their comparisons with teaching during Covid-19, which was not that apparent in open-ended questions.

Nonetheless, most of the codes used in open-ended question analysis were mentioned by the teachers and parents, which shows a positive triangulation between the two phases and that selected participants represented the majority of the respondents to the survey. In the teachers’ interview analysis, some new codes were added, which were more focused on the third research question, which explores teaching approaches and suggestions for online piano lessons and expanded the codes about what the capabilities and characteristics that students need to

possess in order to have more positive experiences while learning piano online, as well as other positives which reflect more on students taking OPL after the Covid-19.

Code Matrix Browser (CMB) (Appendix 10) has been used to show *qualitative strength* of findings by 'listing how many participants contributed to each overarching theme, sub-theme, or code' (Williamon et al., 2021, p. 243). In this case, the CMB table shows the distribution of the codes according to each participant. In teachers interview analysis (Appendix 10.1), since the number of participants is 9, this table is more accurate rather than looking at code frequencies alone, the analysis approach which was used for open-ended questions, because it shows how each participant's answer was coded and how many participants mentioned the same 'code' (or theme). For example, code 'Teaching approach does not work online' has 6 segments and it appears to be one of the most frequent codes. However, this code was only used by one participant, which means this code is specific to only one participant. On the other hand, code 'Latency' has the same 6 segments attached to the code. However, 4 participants mentioned latency, which shows that this theme is more common among a broader range of participants and is not specific to one participant only.

Additionally, Code Relations Browser (CRB) (Appendix 11), which shows relationships and co-occurrences between codes, has also been used several times in teachers' and students' analyses, as there were a few overlapping themes, and the number of respondents was sufficient for this analysis. However, it was not used for the analysis with parents due to the small number of participants.

4.9 Integration of findings

As this study followed a mixed-methods design, the analyses were planned not only as separate strands (quantitative and qualitative) but also with the intention of integrating them at the interpretation stage. While Chapters 5–7 present the results of each phase separately, the findings are brought together in Chapter 8, where they are integrated in relation to the research questions.

Integration of findings is considered central to mixed-methods research (Creswell & Plano Clark, 2015; 2018). As Fetters, Curry, and Creswell (2013) note, the value of mixed-methods lies in the dialogue between different strands of data rather than in their parallel presentation. This process of integration makes it possible to identify where quantitative and qualitative results converge, where they complement one another, and where they may appear to diverge. Greene (2007) has described these purposes as triangulation, complementarity, and expansion, each of which adds to the strength and depth of interpretation.

In this study, data integration meant looking across the phases to see how survey results, open-ended responses, and interview data informed each other. Quantitative analyses identified factors that predicted satisfaction, while the qualitative data added depth by showing how these factors were experienced in practice by teachers, parents, and students. At times, the results reinforced one another, with qualitative accounts supporting patterns seen in the survey. In other cases, they provided different perspectives: for example, where statistical relationships were weak, interview data helped explain why certain variables did not play out as consistently in practice. This process of bringing all analyses together is not without challenges, as it requires the researcher to move beyond the boundaries of each method and consider the weight given to different forms of evidence. Integrating the findings provided a more complete understanding of online piano lessons for young beginners than either quantitative or qualitative analysis could have achieved alone (Tashakkori & Teddlie, 2010).

4.10 Summary of research methods

This chapter outlined the procedures for data collection and analysis across both phases of the study, including survey design, interview protocols, preparation of quantitative data for analysis, and the approaches used to analyse qualitative data. The data collection methods were selected to align with the mixed-methods design described in Chapter 3, ensuring both breadth and depth of evidence could be obtained. Data analysis techniques were applied according to the nature of the data: content analysis was used for larger numbers of participants providing short, direct responses, while thematic analysis was employed to explore themes in greater depth within participants' narratives. To draw conclusions from all quantitative and qualitative analyses, data

integration was performed and organised according to the research questions. The following chapter presents the results of the quantitative analyses.

Chapter 5 Results: Understanding Teacher and Parent Satisfaction in Online Piano Lessons – A Quantitative Analysis

5.1 Introduction

This chapter presents the quantitative results from the first phase of the study. As mentioned in section 3.6, students were not included in this stage, as the survey focused on gathering adult perspectives that could provide evaluative insight into the online piano lesson experience before exploring children's views in more depth. The respondents were piano teachers with experience teaching young beginners online, and parents whose children had taken online piano lessons between the ages of 5 and 9, before, during or after the pandemic.

The survey contained both closed- and open-ended questions. The closed questions generated quantitative data for statistical analysis, while the open responses were analysed qualitatively and are reported separately in Chapter 6. As noted earlier, all analyses address the research questions either directly or indirectly; the findings from both phases are integrated and discussed collectively in Chapter 8.

5.2 Factors affecting teachers' and parents' satisfaction with online piano lessons

The survey focused on factors (variables) affecting teachers' and parents' satisfaction with online piano lessons most significantly. The first regression analyses used pre-determined variables such as Student Independence, Skill Acquisition, Parental Involvement and Student Motivation as independent variables to measure the significance level of the dependent – outcome variable – teachers' or parents' satisfaction with online piano lessons. These regression analyses are supported by additional assumption checks: Cook's distance, Collinearity Statistics and Q-Q Plot. Additional analyses were run to test whether other variables impact teachers' or parents'

satisfaction, such as internet connectivity, teachers' confidence in using technology, having had online lessons before the Covid-19 pandemic and students' receiving video recordings to supplement online piano lessons (Section 5.3).

5.2.1 Teachers' survey

The regression analysis shows a strong model fit, as indicated by an R-value of 0.675 and an R^2 value of 0.455 (Table 5.1). This means that approximately 45.5% of the variance in the dependent variable, Teacher's Satisfaction, is explained by the model, which includes three predictors: Student Independence, Skill Acquisition, and Parental Involvement. If the correlation between the variables is below $r=.80$, that means that multicollinearity is not an issue (multicollinearity happens 'when two or more predictor variables are very highly correlated with each other', Williamon et al. 2021, p. 367). The overall model test is statistically significant, with an F-value of 27.5 and a p-value of less than 0.001, suggesting that the model as a whole is a good fit for the data.

Examining the specific results, the intercept is -0.827 with a standard error (SE) of 0.422, and it is marginally significant with a p-value of 0.053. The predictor Skill Acquisition has an estimate of 0.397 with an SE of 0.112, and it is essential with a t-value of 3.54 and a p-value of less than 0.001. Student Independence has an estimate of 0.588 with an SE of 0.118, and it is also highly significant with a t-value of 4.97 and a p-value of less than 0.001. Parental Involvement has an estimate of 0.412 with an SE of 0.102, and it is significant with a t-value of 4.06 and a p-value of less than 0.001. These results indicate that all three predictors significantly contribute to teacher satisfaction, with student independence having the most substantial effect.

Table 5.1 Multiple regression analysis, teachers' survey.

Model Fit Measures						
Model	R	R ²	Overall Model Test			
			F	df1	df2	p
1	0.675	0.455	27.5	3	99	< .001

Model Coefficients - Teacher's Satisfaction					
Predictor	Estimate	SE	t	p	
Intercept	-0.827	0.422	-1.96	0.053	
Skill Acquisition	0.397	0.112	3.54	< .001	
Student's Independence	0.588	0.118	4.97	< .001	
Parental Involvement	0.412	0.102	4.06	< .001	

The Cook's Distance values, range from 3.05e-6 to 0.0866, with a mean of 0.0105 and a median of 0.00443 (Table 5.2). These values are all below the threshold of 1, suggesting that no single data point unduly influences the model and indicating the absence of significant outliers.

Table 5.2 Cook's distance, teachers' survey.

Cook's Distance				
Mean	Median	SD	Range	
			Min	Max
0.0105	0.00443	0.0157	3.05e-6	0.0866

The assumption checks for collinearity show that the Variance Inflation Factor (VIF) values for Student Independence, Skill Acquisition, and Parental Involvement are 1.16, 1.19, and 1.04, respectively (Table 5.3). These VIF values are well below the commonly used threshold of 10, indicating that multicollinearity is not a concern in this model. The tolerance values, which are the reciprocal of VIF, further confirm this with values close to 1, indicating a low degree of multicollinearity.

Table 5.3 Collinearity statistics, teachers' survey.

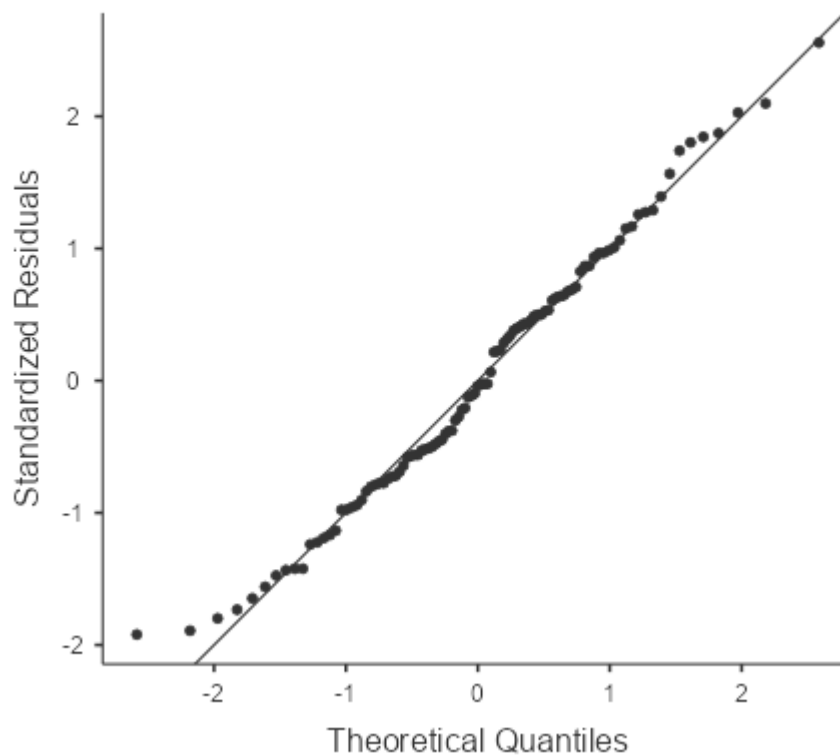
Collinearity Statistics		
	VIF	Tolerance
Skill Acquisition	1.16	0.863
Student's Independence	1.19	0.839
Parental Involvement	1.04	0.961

[3]

The Q-Q plot points closely follow the diagonal line, suggesting that the residuals are approximately normally distributed (Table 5.4). This would imply that assumptions of normality for the residuals in a regression analysis are likely to be satisfied, hence the regression model fits well. The deviations from the line at the ends of the plot are very minimal, which further supports the assumption of normality.

Table 5.4 Q-Q Plot, teachers' survey.

Q-Q Plot



In summary, the regression analysis demonstrates a robust model with significant predictors explaining a substantial portion of Teacher Satisfaction variance. The highest predictor of teacher satisfaction with OPL is Student Independence, with a close second – Parental Involvement and Skill Acquisition coming third. The assumption checks to support the model's reliability, indicating no significant issues with multicollinearity or outliers.

5.2.2 Parents' survey

The regression analysis reveals a moderately strong model fit, with an R-value of 0.679 and an R^2 value of 0.461 (Table 5.5). This indicates that 46.1% of the variance in the dependent variable, Parent Satisfaction, is explained by the model that includes the predictors: Student's Independence, Parental Involvement, and Student's Motivation. The overall model test is statistically significant, with an F-value of 11.7 and a p-value of less than 0.001, suggesting the model fits the data well.

In the model-specific results, the intercept is 1.09327 with a standard error (SE) of 0.452, and it is statistically significant with a t-value of 2.4201 and a p-value of 0.020. This suggests that when all predictors are zero, the baseline level of satisfaction is positive and significant. The predictor Student's Independence has an estimate of 0.50228 with an SE of 0.132, and it is highly significant with a t-value of 3.8058 and a p-value of less than 0.001. This indicates that an increase in Student Independence is associated with a significant increase in satisfaction. On the other hand, Parental Involvement has an estimate of -0.00880 with an SE of 0.100, a t-value of -0.0876, and a p-value of 0.931, suggesting no significant effect on satisfaction in this model. Lastly, Student's Motivation has an estimate of 0.23744 with an SE of 0.163, a t-value of 1.4557, and a p-value of 0.153, indicating it is not a significant predictor of satisfaction at the 0.05 level, though it shows a positive trend.

Table 5.5 Multiple regression analysis, parents' survey.

Model Fit Measures

Model	R	R ²	Overall Model Test			
			F	df1	df2	p
1	0.679	0.461	11.7	3	41	< .001

Model Coefficients - Parent's satisfaction

Predictor	Estimate	SE	t	p
Intercept	1.09327	0.452	2.4201	0.020
Student's Independence	0.50228	0.132	3.8058	< .001
Parental Involvement	-0.00880	0.100	-0.0876	0.931
Student's Motivation	0.23744	0.163	1.4557	0.153

The Cook's Distance values, which help identify influential data points, range from a minimum of $4.33\text{e-}7$ to a maximum of 0.404, with a mean of 0.0322 and a median of 0.00950 (Table 5.6). These values are well below the threshold of 1, indicating that no single data point exerts undue influence on the model, suggesting the absence of significant outliers.

Table 5.6 Cook's distance, parents' survey.

Cook's Distance

Mean	Median	SD	Range	
			Min	Max
0.0322	0.00950	0.0672	$4.33\text{e-}7$	0.404

Assumption checks for collinearity reveal that the Variance Inflation Factor (VIF) values for Student Independence, Parental Involvement, and Student Motivation are 1.52, 1.03, and 1.54, respectively. These VIF values are below the commonly used threshold of 10, indicating that multicollinearity is not an issue in this model. The tolerance values, which are the reciprocal of VIF, confirm this with values close to 1, indicating a low degree of multicollinearity.

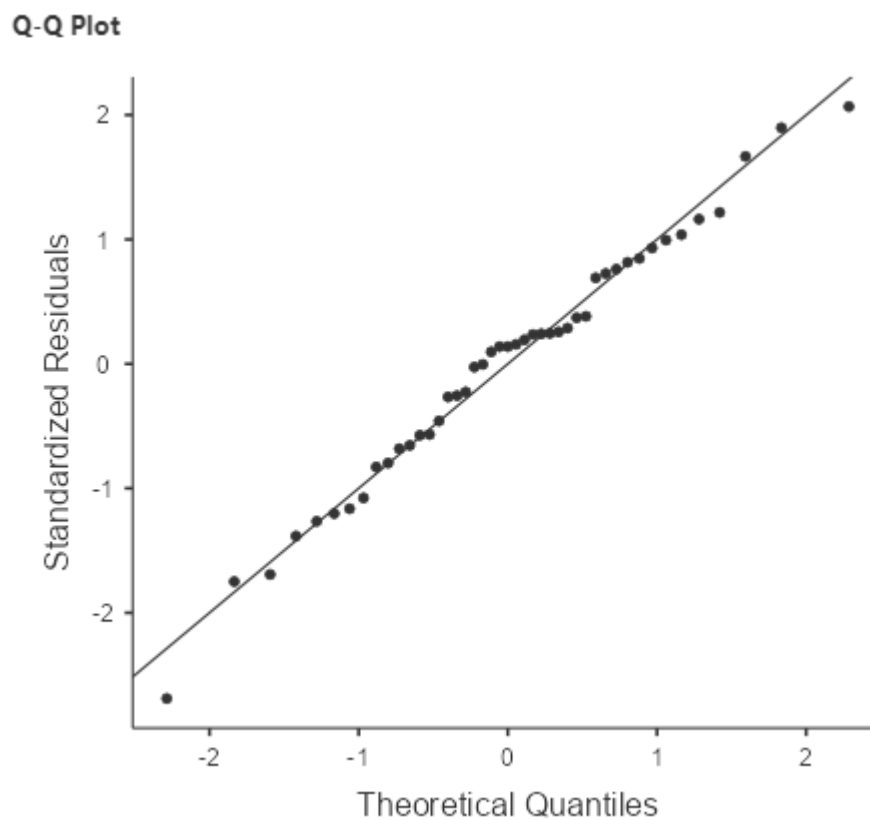
Table 5.7 Collinearity statistics, parents' survey.

Collinearity Statistics		
	VIF	Tolerance
Student's Independence	1.52	0.657
Parental Involvement	1.03	0.975
Student's Motivation	1.54	0.650

[3]

In this Q-Q plot, the points closely follow the diagonal line, indicating that the residuals are approximately normally distributed (Table 5.8). This would mean that the assumptions of normality are likely to be met, and hence, the regression model fits well. Minor deviations are evident, with some minor departures from normality, but overall, the plot supports the normality assumption.

Table 5.8 Q-Q Plot, parents' survey.



In sum, this regression analysis represents a moderately strong model with significant predictors that explained a large amount of variance in Parent Satisfaction. Student Independence is an essential positive predictor, while Parental Involvement and Student Motivation do not significantly contribute to the model. The assumption checks to support the reliability of the model, indicating no significant issues with multicollinearity or outliers.

Both analyses consistently highlight the importance of student independence. Student Independence (such as annotating scores, identifying mistakes, and asking questions) is the first and most significant variable regarding teacher satisfaction with online piano lessons. At the same time, in the parent survey, student independence is the single most important predictor.

According to teachers, skill acquisition (such as knowing the keys and notes, understanding articulation, and maintaining a steady beat) is the third significant predictor of their satisfaction with online lessons. This suggests teachers' value students' ability to work autonomously and demonstrate musical understanding as critical to successful online piano lessons. Parents were not asked about students' skill acquisition as the questions were very technical, and parents who do not play the piano or do not sit in every single lesson would not be able to answer such questions.

The most mixed views concerned parental involvement during online piano lessons. While teachers considered parental involvement and the second most significant factor, the regression analysis of the parents' survey showed no influence on parents' reports on their satisfaction with online lessons regarding parental involvement. This discrepancy points toward divergent perceptions regarding the role of parental involvement in online piano education.

The parents' survey included an additional predictor: student motivation. According to parents, motivation is less significant than independence, but it still plays an important role than parental involvement. This indicates that although motivated students are likely to be more satisfied with their lessons, their independence in actively engaging with the material and the learning process is seen as more critical.

Overall, these analyses highlight the multifaceted nature of satisfaction in online piano lessons, emphasising the crucial roles of student independence and skill acquisition while acknowledging differing perceptions of parental involvement and student motivation between teachers and parents.

5.3 Additional factors that might have an impact on online piano lessons

Several other factors have also been tested using the same regression analysis. Both groups of respondents were asked if they had taught/had online lessons before COVID-19, and if that increased their satisfaction with online lessons. Both groups were also asked if they had problems with connectivity/broadband. Another factor in both analyses was included: in the parents' survey, whether the teacher sent video recordings to the student (as they were the recipients), and in the teachers' survey, whether they felt confident about having piano lessons online.

5.3.1 Teachers' survey

The regression analysis from the teachers' survey (Appendix 7.1) indicated a robust and significant model fit ($F_{3,99}=7.61$, $p < 0.001$, $R=0.748$, $R^2=0.559$), accounting for 55.9% of the variance in Teacher Satisfaction. The model included several significant predictors, with Independence, Skill Acquisition, Parental Involvement, and certain categories of Connectivity Issues ('never – always') standing out. Correlations between the variables were below $r=0.80$, indicating acceptable levels of multicollinearity.

The specific model coefficients highlight the significance of the predictors. The intercept, with a standard error (SE) of 0.846, is not statistically significant ($t = -1.0212$, $p = 0.310$). This suggests that the baseline level of teacher satisfaction is not significantly different from zero when all predictors are at their reference levels. Among the predictors, Skill Acquisition has an estimate of 0.2772 (SE = 0.122), which is significant ($t = 2.2762$, $p = 0.025$), indicating that increased playing independence is positively associated with higher teacher satisfaction. Student Independence has a strong positive effect with an estimate of 0.5409 (SE = 0.128) and is highly significant ($t =$

4.2189, $p < 0.001$). Parental involvement also shows a significant positive effect (estimate = 0.3852, SE = 0.113, $t = 3.4049$, $p = 0.001$).

The analysis also considered connectivity issues and confidence in using technology as predictors. However, none of the connectivity issues categories (often, about half the time, sometimes, never compared to always) showed significant effects on teacher satisfaction, with p -values all above 0.1. This suggests that connectivity issues are not crucial to teacher satisfaction in this model.

Confidence in using technology had some significant effects. Specifically, being somewhat confident compared to being very confident in using technology showed a substantial adverse impact on teacher satisfaction (estimate = -0.5778, SE = 0.278, $t = -2.0784$, $p = 0.041$). Other confidence levels (fairly confident, slightly confident, and not satisfied at all) did not show significant effects.

Regarding the experience of teaching online before COVID-19, none of the categories (mainly taught online, occasionally offered online lessons, never taught online before 2020 compared to exclusively taught online) showed significant effects on teacher satisfaction. This indicates that prior experience with online teaching did not significantly influence the current satisfaction levels.

Overall, the estimated marginal means for connectivity issues, confidence using technology, and online teaching experience before COVID-19 provide additional insights. For connectivity issues, teachers who never experienced connectivity issues reported slightly higher satisfaction, compared to those who always experienced issues. For confidence in using technology, very confident teachers reported the highest satisfaction, while those not satisfied at all reported the lowest. For prior online teaching experience, teachers who mainly taught online before COVID-19 reported the highest satisfaction, though this was not significantly different from other categories.

5.3.2 Parents' survey

The regression analysis from the parents' survey (Appendix 7.2) demonstrated a strong and significant model fit ($F_{3,99}=4.21$, $p < 0.001$, $R=0.804$, $R^2=0.646$), explaining 64.6% of the variance in the parent satisfaction outcome. This high explanatory power suggests a robust relationship between the predictors and the dependent variable.

In the model-specific results, the intercept is 0.3132 with a standard error (SE) of 0.823, which is not statistically significant ($t = 0.381$, $p = 0.706$). This suggests that the baseline level of parent satisfaction is not significantly different from zero when all predictors are at their reference levels. Among the predictors, Student Independence has an estimate of 0.3835 ($SE = 0.154$), which is significant ($t = 2.498$, $p = 0.018$), indicating that increased Student Independence is positively associated with higher satisfaction. Parental involvement has an estimate of -0.0171 ($SE = 0.134$), and it is not significant ($t = -0.128$, $p = 0.899$), suggesting it has no significant effect on satisfaction. Student Motivation has a positive impact with an estimated 0.3416 ($SE = 0.208$). However, it is not statistically significant ($t = 1.645$, $p = 0.111$), indicating a trend towards higher satisfaction but not at a conventional significance level.

The analysis also includes connectivity issues as a predictor. The category 'never – often' significantly positively affects satisfaction (estimate = 0.8596, $SE = 0.364$, $t = 2.359$, $p = 0.025$), indicating that parents and children who never experienced connectivity issues are significantly more satisfied than those who often encountered problems. Other categories of connectivity issues (about half the time – often, sometimes – often) did not show significant effects, with p-values above 0.1.

Regarding the experience with online lessons before COVID-19, none of the categories (a few lessons online, never had online lessons, started learning during or after the pandemic compared to all lessons online) showed significant effects on satisfaction, with all p-values well above 0.1. This suggests that prior experience with online lessons does not significantly influence satisfaction levels.

The inclusion of video recordings as a predictor did not yield significant results. None of the categories (often, about half the time, sometimes, never compared to always) showed significant effects on satisfaction, with all p-values above 0.1. This indicates that the frequency of video recordings does not significantly impact parent satisfaction.

These additional analyses aimed to test if various other factors impact the satisfaction levels of teachers and parents with online piano lessons. The findings indicate that most additional variables—having online lessons before the COVID-19 pandemic, connectivity issues, confidence in using technology (teachers only), and receiving video recordings from teachers (parents survey only)—do not significantly affect their satisfaction levels. However, having no connectivity issues positively influences satisfaction for both teachers and parents. Additionally, the results show that teachers who are more confident in using technology and those who mainly taught online before the pandemic report higher satisfaction with online piano lessons.

5.4 Online Piano Lessons: Before, During, and After COVID-19

Descriptive statistics were used in several questions in the teachers' surveys. All descriptive statistics were performed to relate directly or indirectly to the fourth research question (What are the main motives for choosing online piano lessons nowadays, from the perspectives of teachers and parents?). All respondents were asked when they experienced online piano teaching/learning—before, during the COVID-19 pandemic, or are currently having OPL. The results show an increase in teachers offering more online lessons and parents of piano students choosing them after the pandemic, compared with before. Figures 5.1 and 5.2 illustrate when respondents experienced online teaching, showcasing the trends of teaching online versus face-to-face during the three periods. Terms like 'exclusively' refer to exclusively having online piano lessons, while 'never' refers to never having them online.

The frequency distribution from the teachers' survey (Figure 5.1) reveals that 76.0% of the teachers never taught online before 2020, 18.3% occasionally offered online lessons, and 5.7% taught exclusively online (two measures have been merged together for consistency – exclusively 3.8% and mainly 1.9%). During the COVID-19 pandemic, there was a significant shift towards online teaching, as reflected in 89.4% of respondents who taught exclusively online during the

pandemic, 8.7% occasionally offered online lessons, and a new measure has been introduced showing that 1.9% discontinued teaching or did not teach online. However, after the COVID-19 pandemic, the teaching practices diversified: the majority (56.7%) offered online lessons occasionally, also categorised as hybrid mode, and 23.1% moved exclusively to face-to-face teaching, which is also a new measure compared to measures in the previous two categories as it reflects on the choice that the teachers and the parents had after the lockdowns, 19.2% continued teaching online exclusively, and 1.0% discontinued teaching. This indicates an increase in teachers moving their teaching exclusively online or offering hybrid lessons.

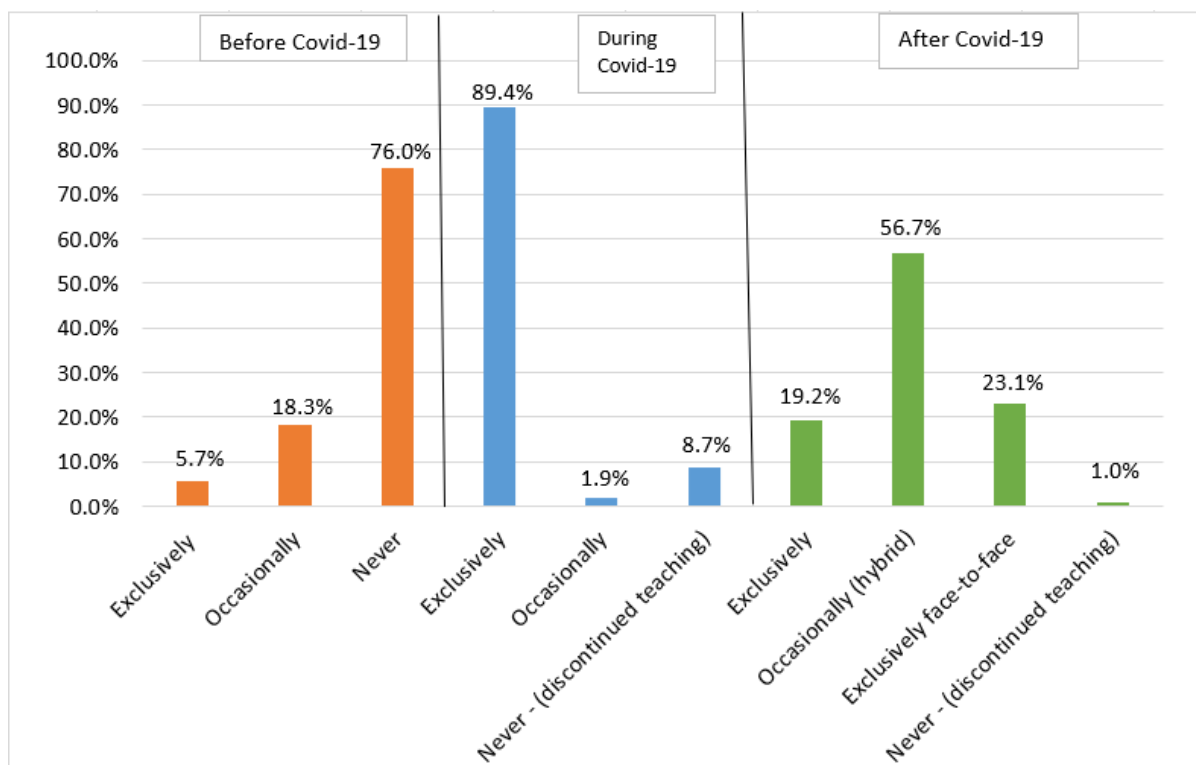


Figure 5.1 Teachers' reported access and use of online teaching modes for lessons.

Parents (Figure 5.2) responded that most (75.6%) had never had their children attend piano lessons online before the pandemic, 13.3% had online lessons occasionally, 4.4% had lessons online exclusively, and 6.7% started learning piano during or after the pandemic (which is an additional measure compared to the teachers' survey). During the COVID-19 pandemic, the

majority, as expected (93.3%), transitioned to online lessons, with only 2.2% not participating in online lessons and 4.4% starting piano lessons after the pandemic began. However, parents were not asked if they had the lessons occasionally during the pandemic. The current lesson settings show that the majority (68.6%) have returned to face-to-face lessons, whether at a music school, the teacher's home, or with the teacher visiting their home. This measure could only be introduced while inquiring about the lessons after the pandemic, as in the teachers' survey. A smaller percentage of parents of piano students (11.8%) continue with online lessons exclusively, while 9.8% have online lessons occasionally, also known as hybrid (a combination of online and in-person), and another 9.8% have discontinued piano lessons altogether, which is also a new measure which has not been assessed in previous timeframes. Notably, there has been an increase in the number of parents of piano students opting for online or hybrid piano lessons since the pandemic.

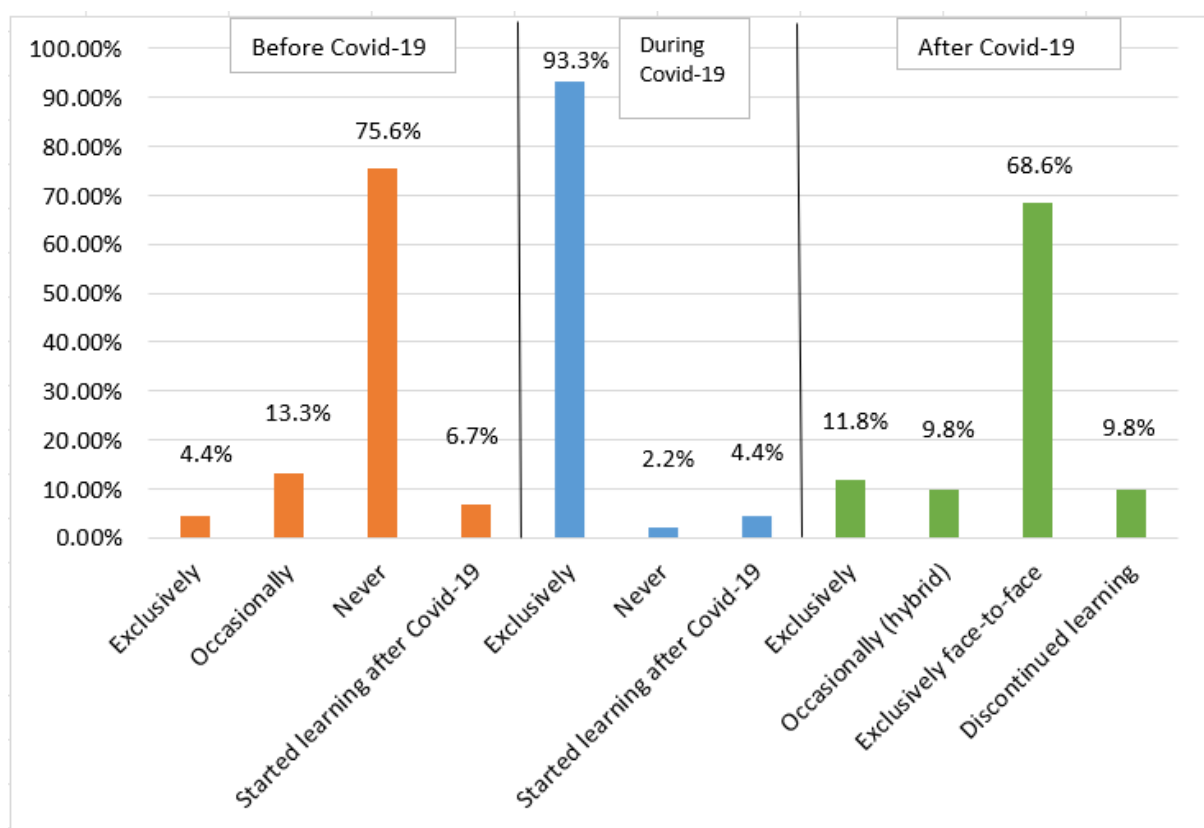


Figure 5.2 Parents' reported access and use of online teaching modes for lessons.

In summary, the data illustrate that after the pandemic, many instructors continued incorporating online teaching into their practices, either exclusively or as part of a hybrid model. However, the majority of students' parents in this sample switched back to face-to-face lessons, which is further explored in content and thematic analyses (Chapters 6 and 7).

5.5 Students who struggled while having online piano lessons

Teachers were asked if they had ever come across a student (5-9 years old) who particularly struggled while having piano lessons online. A significant majority, 76.0% (79 respondents), reported encountering students struggling while having piano lessons online, while 24.0% (25 respondents) reported that none of their students struggled (Fig. 5.3). This suggests that most young (5-9 years old) students encountered difficulties that presumably affect teachers' satisfaction with OPL.

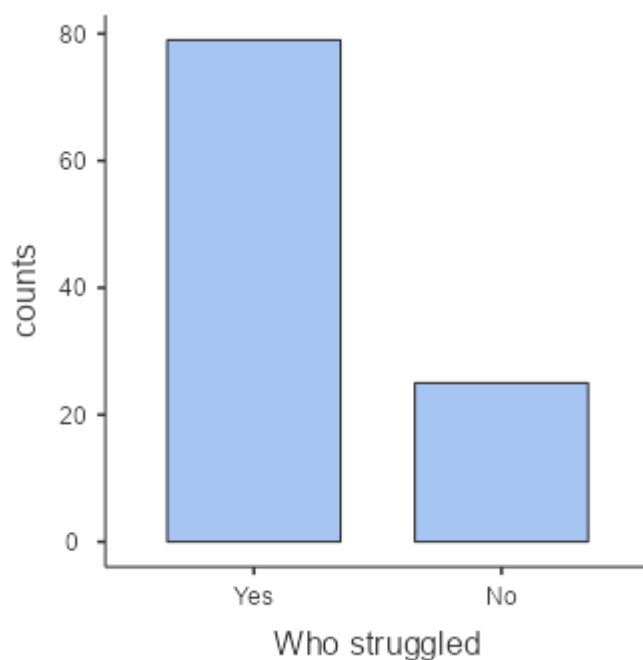


Figure 5.3 Students who struggled with online piano lessons, according to teachers.

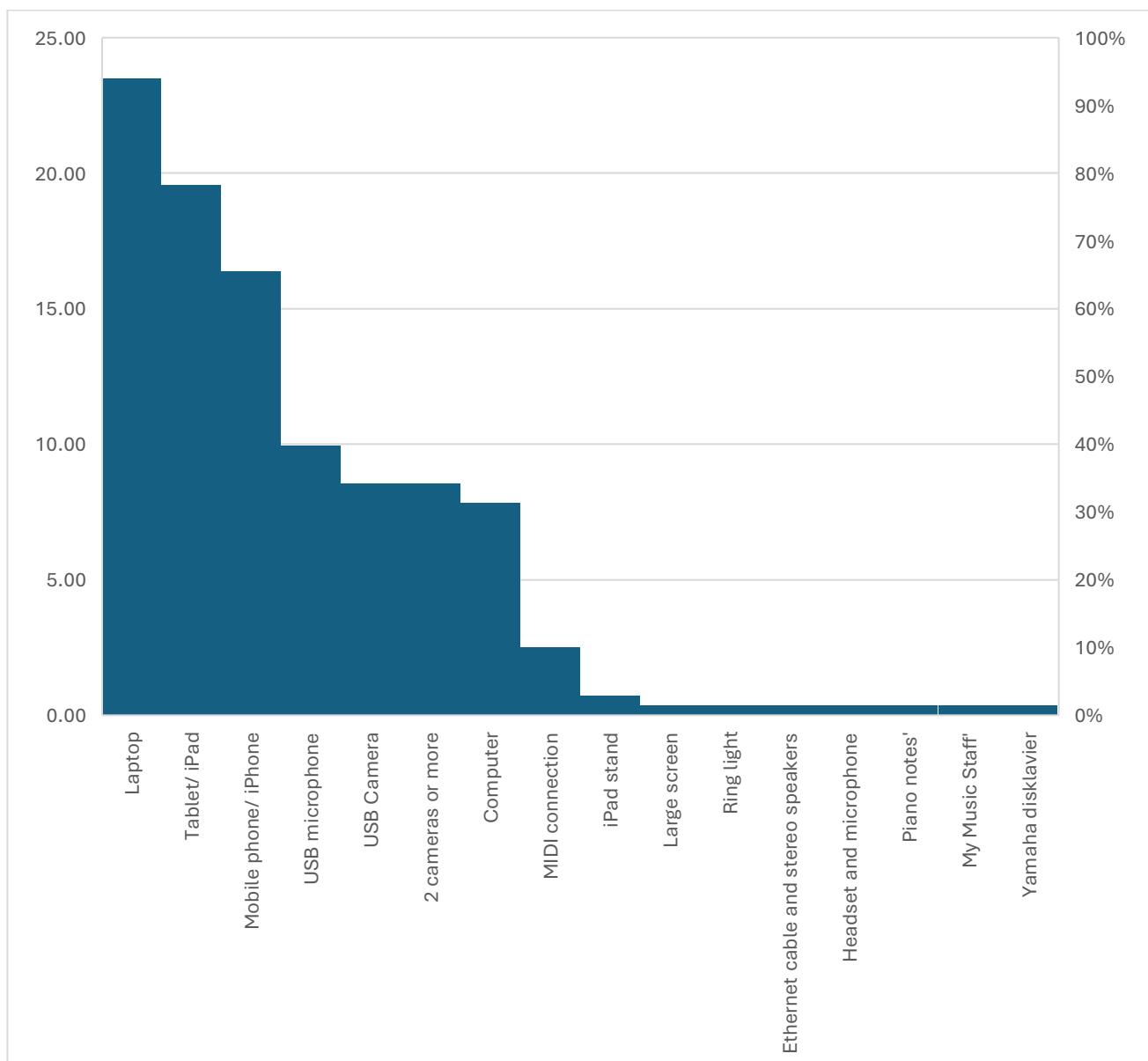
This question served as an introductory question for teachers, leading into an open-ended response where they could identify additional factors influencing their satisfaction, describe their experiences with young beginners who struggled online, and share possible solutions they had developed. Although indirect, the question supported Research Question 2 by eliciting further insights into the factors shaping teacher and parent satisfaction with OPL.

5.6 The use of technology in online piano lessons

This section will answer questions about the use of digital technology, such as: What technological setup did/do the teachers use in their online lessons? What is the most common videoconferencing platform used for OPL? How confident are piano teachers in conducting the lessons online? The following analyses indirectly relate to Research Question 2, indicating other factors (such as the use of technology) influencing teachers' and parents' satisfaction with online piano lessons.

5.6.1 Technological setup

According to the literature review and the qualitative analyses of this study, the videoconferencing platform and the hardware used for online lessons play an important role in online music education. The findings from the survey demonstrated that most teachers use laptops, accounting for 23.49% of the total, followed by tablets/iPads at 19.57% and mobile phones/iPhones at 16.37% (Fig. 5.4). Other notable devices include USB microphones (9.96%), USB cameras (8.54%), and computers (7.83%). Less commonly used devices include MIDI connections (2.49%), iPad stands (0.71%), and several items with a usage percentage of 0.36%, such as large screens, ring lights, ethernet cables and stereo speakers, headsets and microphones, piano notes, My Music Staff, and Yamaha Disklavier.



5

Figure 5.4 Teachers' technological setup.

An additional analysis was conducted using Jamovi analysis software to show the combinations of the devices used in a lesson. The table in Appendix 8 provides a detailed breakdown of how these devices are combined during lessons. The most common combination involves mobile phones/iPhones, tablets/iPads, and laptops, used by 13% of respondents. Other notable

⁵ The format of Figure 5.4 differs from Figures 5.5–5.13, as the larger number of items made it clearer to present them in a vertical layout.

combinations include tablets/iPads and laptops (5%), laptops with USB cameras, microphones, and additional cameras (5%), and tablets/iPads and computers (4%). The frequency of single-device usage is also significant, with laptops being used alone by 11% of respondents and mobile phones/iPhones and tablets/iPads being used alone by 7% each. As confirmed in the teachers' interviews, one overhead camera is usually needed to capture the piano keys and one camera on the side to capture their posture (see Section 7.2.3, Fig. 7.1).

Teachers were asked what technology most of their students use for online piano lessons (Fig. 5.5). The most frequently used device is the tablet/iPad, accounting for 29.22% of the total, followed closely by laptops, which comprise 27.40%. Mobile phones/iPhones are also commonly used, representing 19.18% of the devices.

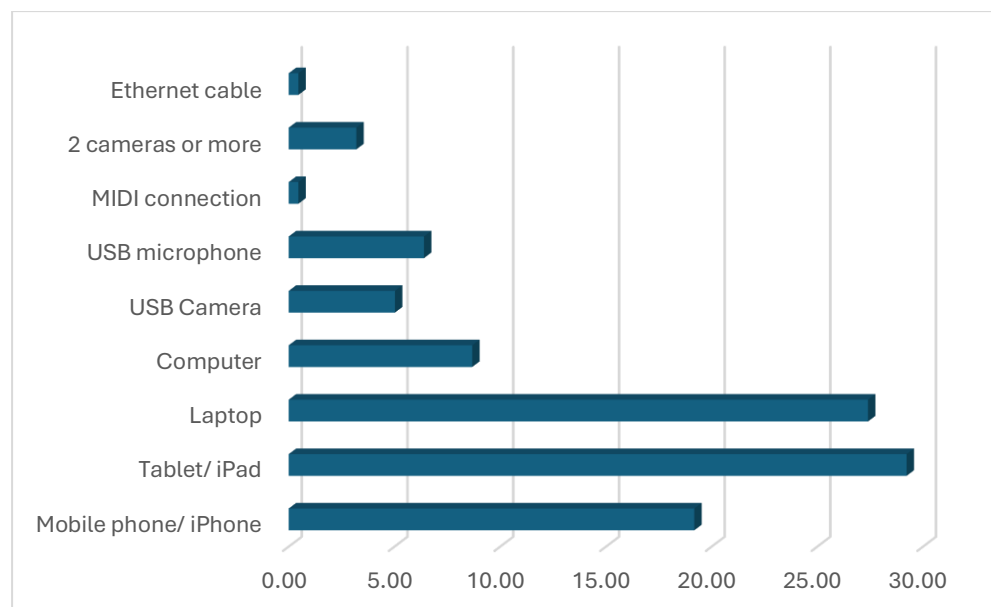


Figure 5.5 Students' technological setup according to teachers.

Additionally, parents were also asked what devices they used for OPL, and it has been reported that 35% use tablets/iPads, 26% use laptops, and 20% use mobile phones/iPhones (Fig. 5.6). The statistics show that a fifth of students used mobile phones during lessons, which is not considered sufficient to see or hear the teacher's instructions, as teachers have reported. In the interviews with teachers, it was apparent that some students were not equipped to have efficient

online lessons, resulting in students not understanding the teacher's feedback, demonstrations, or issues with video and sound.

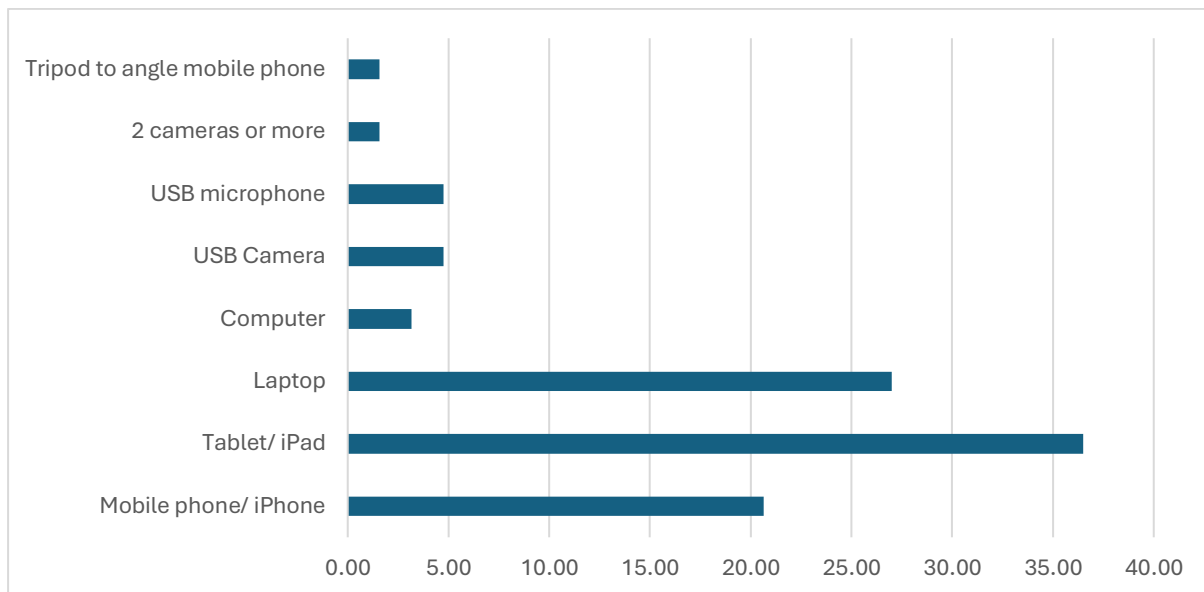


Figure 5.6 Technological setup used by students as reported by parents.

5.6.2 Videoconferencing software

When asked which videoconferencing platforms the participants used, it turns out that most teachers and parents use Zoom, which is the most widely used platform, with 37.89% of teachers using it (Fig. 5.7). This is followed by FaceTime, which is used by 21.05% of respondents, and Skype, which is used by 15.26%. Microsoft Teams and Facebook Messenger are also notable platforms, used by 6.84% and 7.89% of respondents, respectively.

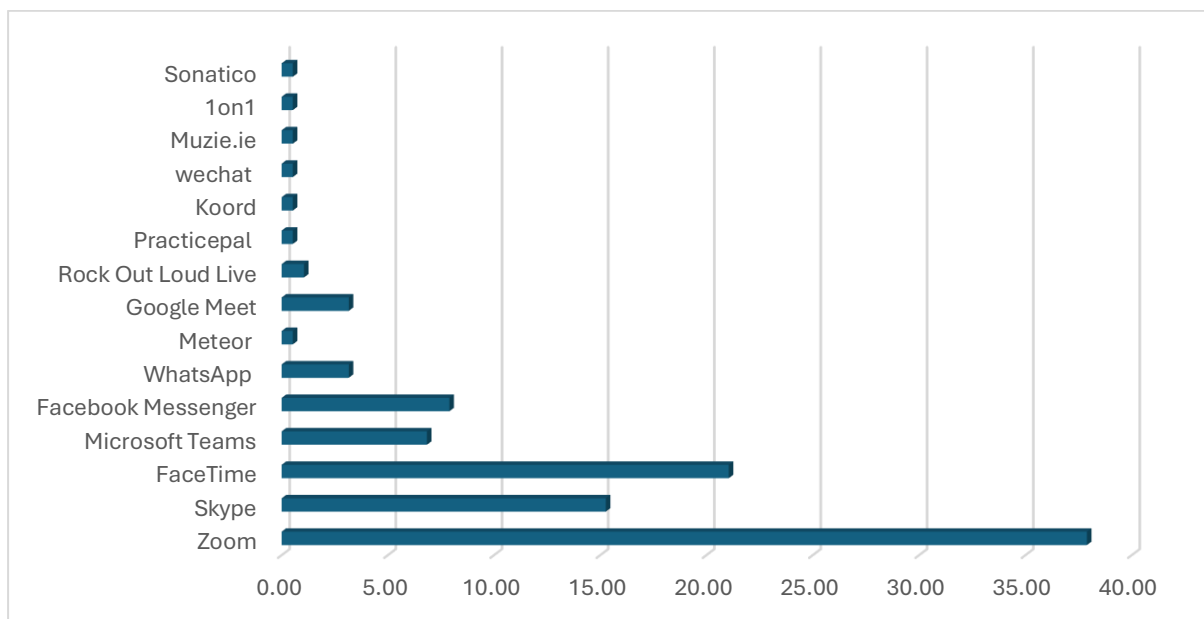


Figure 5.7 Videoconferencing software used by teachers.

Figure 5.8 shows that, according to the parents, Zoom is the most frequently used videoconferencing platform, with 44.26% usage. This is followed by Skype, which is used by 19.67% of respondents, and FaceTime and Microsoft Teams, which are used by 13.11% of respondents. Facebook Messenger is used by 6.56% of respondents, while WhatsApp and Viber are used by 1.64%.

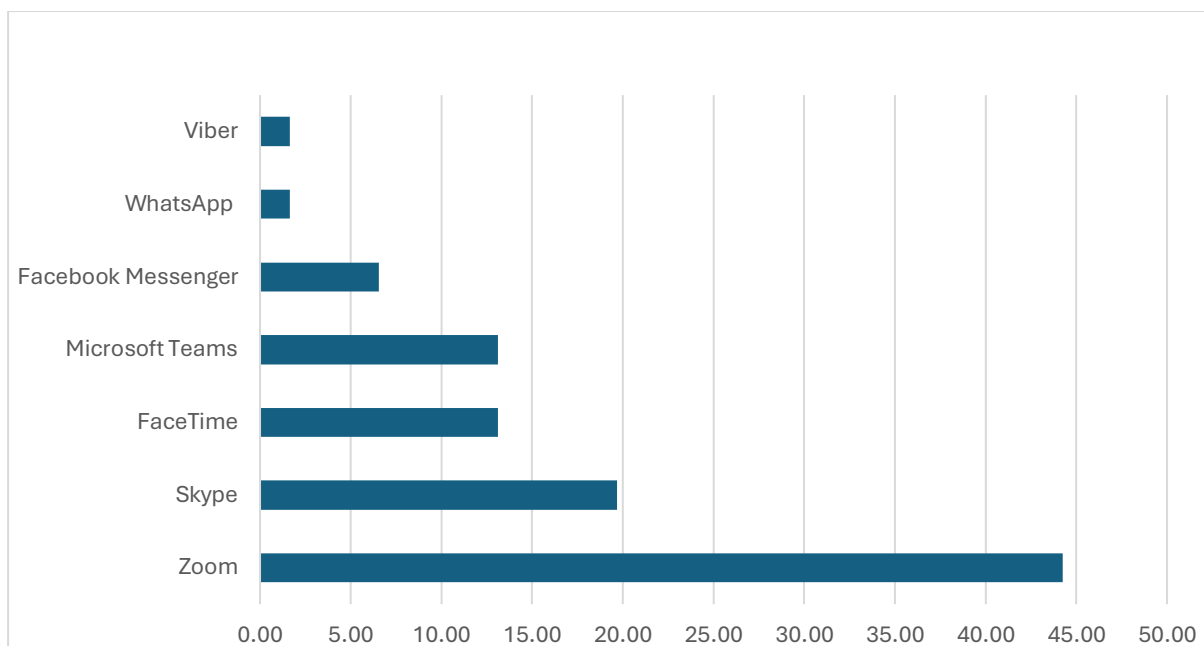


Figure 5.8 Videoconferencing software used by students as reported by parents.

The analysis reveals that Zoom is the leading videoconferencing platform, significantly ahead of its competitors such as Skype, FaceTime, Microsoft Teams, and Facebook Messenger. This matters because widespread use of the same platform means teachers and parents are likely to share similar experiences, which in turn influences their satisfaction with OPL. Asking participants which platforms they used was important because the choice of platform affects how well lessons run. Some platforms are more stable and suitable for music lessons than others, so knowing what teachers and parents used helps to explain their overall experience with OPL.

5.6.3 Broadband connectivity

Broadband connectivity issues have been considered a disadvantage in online music education research. The frequency distribution (Fig. 5.9) shows that a small percentage of teachers (3%) always experience connectivity issues, while 23.2% report often experiencing them. About half the time, 13.1% of respondents face connectivity issues. Most respondents, 58.6%, experience connectivity issues sometimes, while only 2% never encounter them. Additionally, a multiple regression analysis demonstrated that having no connectivity issues may influence satisfaction with online piano lessons (Section 5.3).

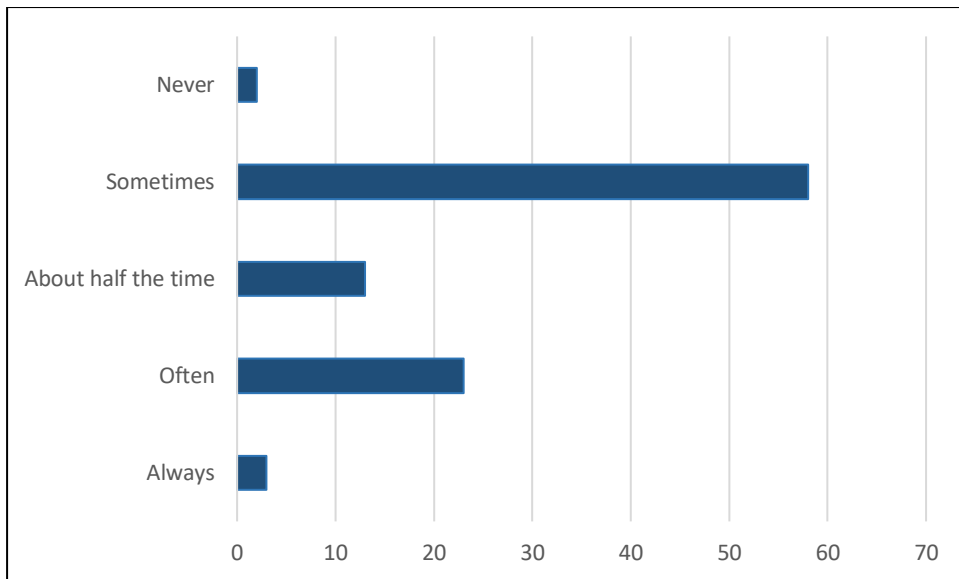


Figure 5.9 Issues with connectivity according to teachers.

The frequency distribution (Fig. 5.10) shows that 13.6% of parents often experience connectivity issues, while 4.5% face them about half the time. A significant majority, 65.9%, experience connectivity issues sometimes, and 15.9% never have connectivity issues.

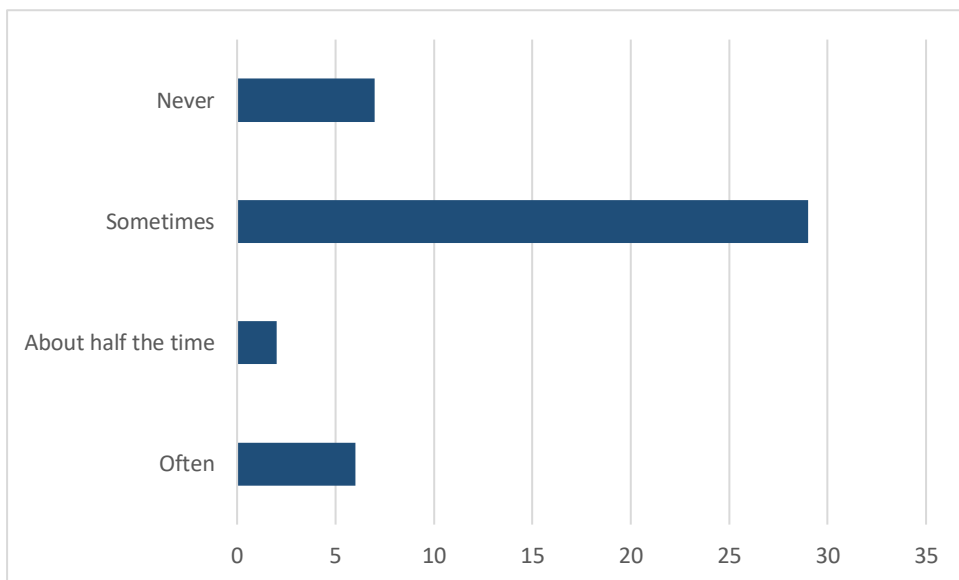


Figure 5.10 Issues with connectivity according to parents.

Connectivity issues are a significant concern for many respondents in both datasets, with most experiencing these problems at least sometimes. The consistency in the median values (both at 4.00) across the two datasets underscores the prevalence of these issues, validating the experiences of many. Since connectivity problems were a major concern in earlier studies (Section 2.1.2), this variable was included in the current analysis to determine whether it continues to pose challenges after the pandemic.

5.6.4 Asynchronous tools

Asynchronous online music education may involve pre-recorded video lessons, tutorials, and other digital resources that students can access at their own pace. In this study, teachers were asked if they would record and send videos to their students and, similarly, if the students had received video recordings from their teacher. Two analyses were employed to test this variable: multiple regression analysis, which did not yield any significant results in this matter, and descriptive statistics, which also show that the majority of participants did not use this asynchronous tool that much.

The frequency distribution (Fig. 5.11) reveals that video recordings were sent to the students with varying regularity. Only 6% of respondents always send video recordings, while 9% send them often. About half the time, 10% of respondents send video recordings. Most respondents send video recordings less frequently, with 37% using them sometimes and 38% never using them. The data shows that many teachers send video recordings infrequently or not at all, with the most prominent groups falling into the 'sometimes' and 'never' categories. This suggests that, although valuable to some as a tool, video recordings are not universally adopted or integral in the music lesson practices of all respondents.

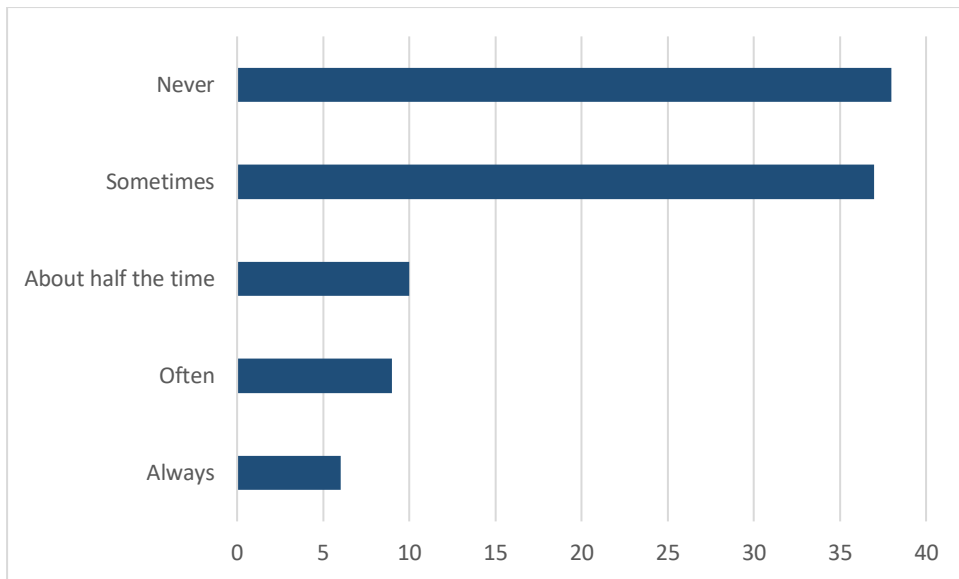


Figure 5.11 Frequency of teachers sending video recordings to students.

Parents were asked how often their piano teacher would send or share video recordings (Fig.5.12). Out of the total responses, 6.8% of respondents always receive video recordings, while 2.3% use them often. Another 6.8% receive video recordings about half the time. A significant portion of respondents, 27.3%, receive video recordings sometimes, indicating a moderate level of adoption. However, 56.8% of respondents never received video recordings from their teachers.

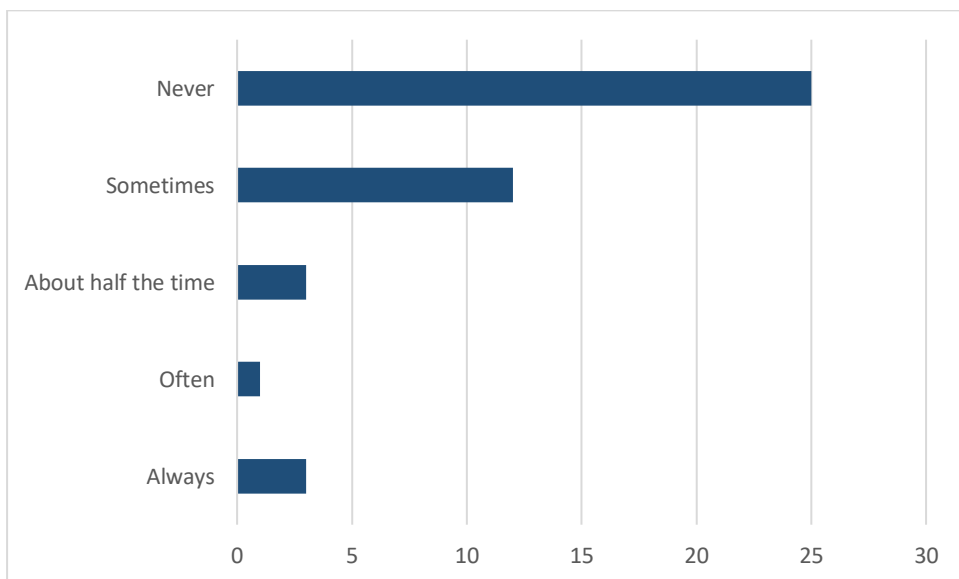


Figure 5.12 Frequency of students receiving video recordings from teachers.

Neither group made extensive use of video recordings, although teachers showed more varied usage patterns. More parents than teachers reported never receiving recordings, suggesting that while this tool exists in teachers' practice, it is not widely adopted. This contrasts with the literature review (Section 2.4.3), which highlights asynchronous resources as a key element of online music education. The difference may reflect the diversity of teachers in this sample and the possibility of multiple parents reporting on the same teacher. More broadly, the data suggests that asynchronous strategies are not yet a common feature of OPL for young beginners.

5.6.5 Teacher's confidence in using technology

The literature review discusses that some teachers are more reluctant to use technology in their lessons because they either do not know how to use it or lack confidence in using it (Section 2.4.4). Thus, it was important to test whether teachers' confidence in using technology affects their level of satisfaction with OPL. Furthermore, this variable was included in multiple regression analysis (Section 5.3), but did not yield any significant results.

The data reveal that a substantial majority of teachers feel confident using technology, with 39.0% describing themselves as very confident and another 39.0% as fairly confident (Fig. 5.13). A smaller segment of the respondents, 13.0%, feel somewhat confident, suggesting that while they may have some proficiency, there is still room for improvement. A few respondents are slightly confident (6.0%) or not confident (3.0%).

Overall, the data indicates that most respondents are confident in their ability to use technology, which is a positive sign for adopting and effectively using digital tools in their activities. However, the presence of a small but significant group with lower confidence levels suggests that they may need additional support or training.

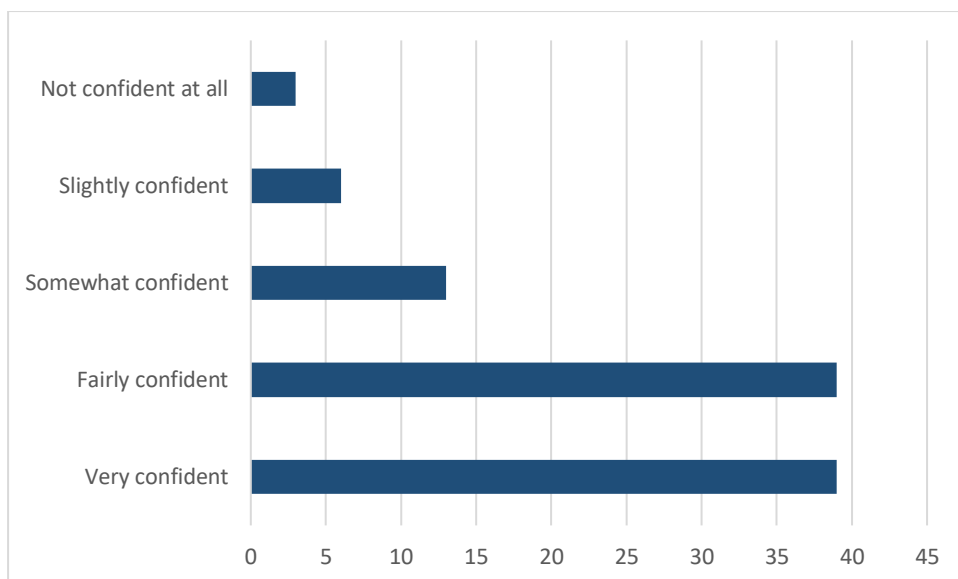


Figure 5.13 Teachers' confidence in using technology during online piano lessons.

5.7 Summary of quantitative results

The quantitative analysis explored the relationship between factors such as student independence, skill acquisition, parental support, motivation, and satisfaction with online piano lessons. Additionally, it examined other factors, such as the technology used, teachers' and parents' prior experience of having OPL, students receiving video recordings, and teachers' confidence in using technology. The survey sampled an international cohort, which strengthens the generalisability of the findings beyond a single national context, especially in comparison to previous studies that have often focused on one country.

Regression analysis showed a significant correlation between student independence (annotating the scores without teachers' prompting them, asking questions, or responding to the teacher's feedback) and teacher and parent satisfaction with online piano lessons. This suggests that students' ability to work autonomously is a major predictor of successful online music education, reinforcing the importance of fostering independence in young learners.

Furthermore, teachers emphasised the importance of skill acquisition, such as reading notation, maintaining a steady beat/pulse, and knowing dynamics and articulation. This indicates that teachers are more satisfied with OPL when students can work autonomously and demonstrate

musical understanding—an area this thesis aims to explore further, particularly in relation to young beginner learners. This finding highlights the need for instructional strategies that encourage self-regulation in young students, particularly in digital learning environments where direct teacher intervention is limited.

The most nuanced findings concern parental involvement during online piano lessons. While teachers believed parental involvement to be a necessary factor, in the regression analysis of the parent survey, self-reports by parents about their involvement did not significantly influence parents' satisfaction with online lessons. Could it be that supportive parents do not recognise their involvement as a distinct factor, as it is deeply ingrained in their perception of parenting? Alternatively, is parental self-reporting unreliable due to biases in how parents perceive their role in their child's musical development? This finding suggests that perceived parental involvement in online piano lessons may be shaped by cultural norms and personal expectations rather than measurable engagement.

Other factors that might predict satisfaction levels with online piano lessons were also examined: connectivity and teachers' confidence in using technology. The analysis revealed that connectivity problems influenced the teachers' satisfaction with online lessons. Furthermore, teachers who felt more confident while using technologies reported higher levels of satisfaction in an additional regression analysis. This suggests that teacher training in how to conduct piano (or other instrumental) lessons online could play an essential role in improving the online learning experience.

Other descriptive tests also confirmed the increase in online piano teaching, with 51.9% more teachers offering hybrid lessons or teaching exclusively online and 3.86% more parents having hybrid or exclusive OPL compared to before the COVID-19 pandemic lockdowns. These findings reinforce the increasing demand for research into effective online pedagogies in music education. With more students and teachers engaging in digital music instruction, understanding the best practices for fostering student independence and parental engagement becomes increasingly important.

Chapter 6 Results: Experiences Behind the Numbers: Content Analysis of Teacher and Parent Reflections

6.1 Introduction

This chapter presents findings from the open-ended responses collected through the teacher and parent surveys, using content analysis. While the quantitative findings identified which variables were statistically associated with teacher and parent satisfaction in online piano lessons (OPL), the open-ended questions aimed to explore whether participants would highlight the same factors as meaningful in their own words, or whether new, unanticipated themes would emerge. The open-ended questions (Appendix 2) focused on satisfaction, perceptions of student learning, and reflections on teaching in online settings.

6.2 Teachers' survey

6.2.1 Teachers' survey themes

The number of respondents for the content analysis of the teacher's survey was slightly higher (n=107) because three respondents only answered open-ended questions and none of the quantitative questions. As explained in section 4.5.3, the codes from the open-ended questions were categorised into several key themes. Each theme, or parent code, was either subdivided into smaller themes or subcodes or, in some cases, further divided into first- and second-level subcodes. For example, the parent code 'Negative experiences' had a first-level code with no directly attached segments, which was then subdivided into second-level codes. Appendix 9.1 demonstrates a complete view of the code matrix. Figure 6.1 shows each parent code's frequency and percentage of coded segments (themes).

As shown in Figure 6.1, negative experiences dominate the analysis of the open-ended questions, accounting for over half of the responses. Positive experiences, while present, are significantly less frequent. Issues related to student behaviour, new opportunities, teaching adaptability, and preferences for face-to-face lessons are also highlighted, while neutral experiences, lack of home resources, and teacher workload are mentioned less frequently.

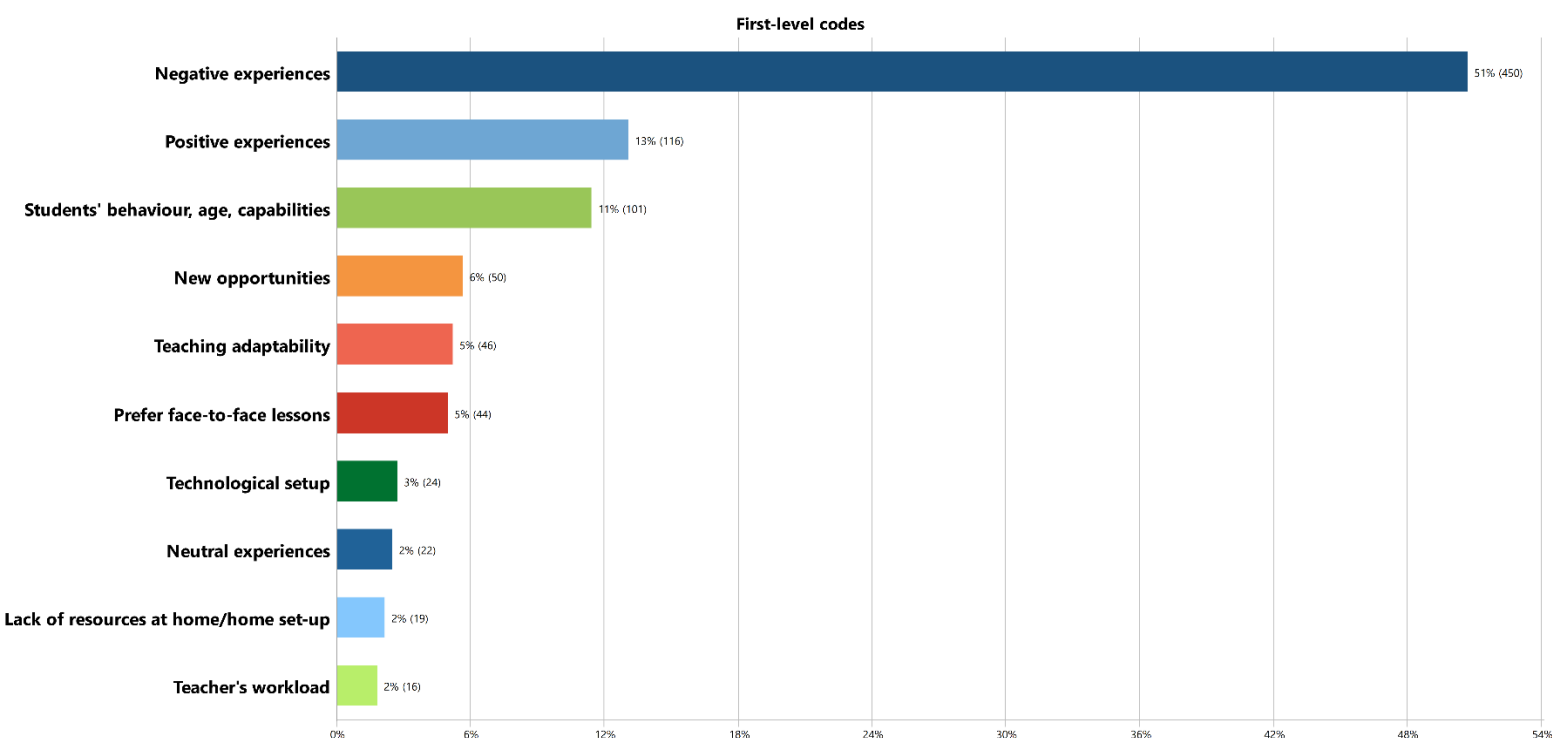


Figure 6.1 Teachers' content analysis, main (parent) themes.

6.2.2 Negative experiences

The following figure (6.2) displays the distribution of the first-level subcodes from the parent code—‘Negative experiences’. The chart reveals three main negatives that the teachers found in online piano teaching: technological issues, student behaviour, and technical aspects of piano teaching. Other negatives include, to a lesser extent, teaching methods, slower progress, relations between students and teachers, and the effectiveness of teaching methods using the online platform. Other areas mentioned less often include frustration, parental support, and teachers' physical absence.

Some first-level subcodes also have second-level subcodes, as these codes contain several segments that could be further subdivided into more precise codes for clarity. The codes are as follows: 1. Technological issues, 2. Student's behaviour during the lesson, 3. Piano teaching technical aspects, 4. Teaching approach, 5. Student-teacher relationship. Each first-level code with second-level subcodes will be analysed separately.

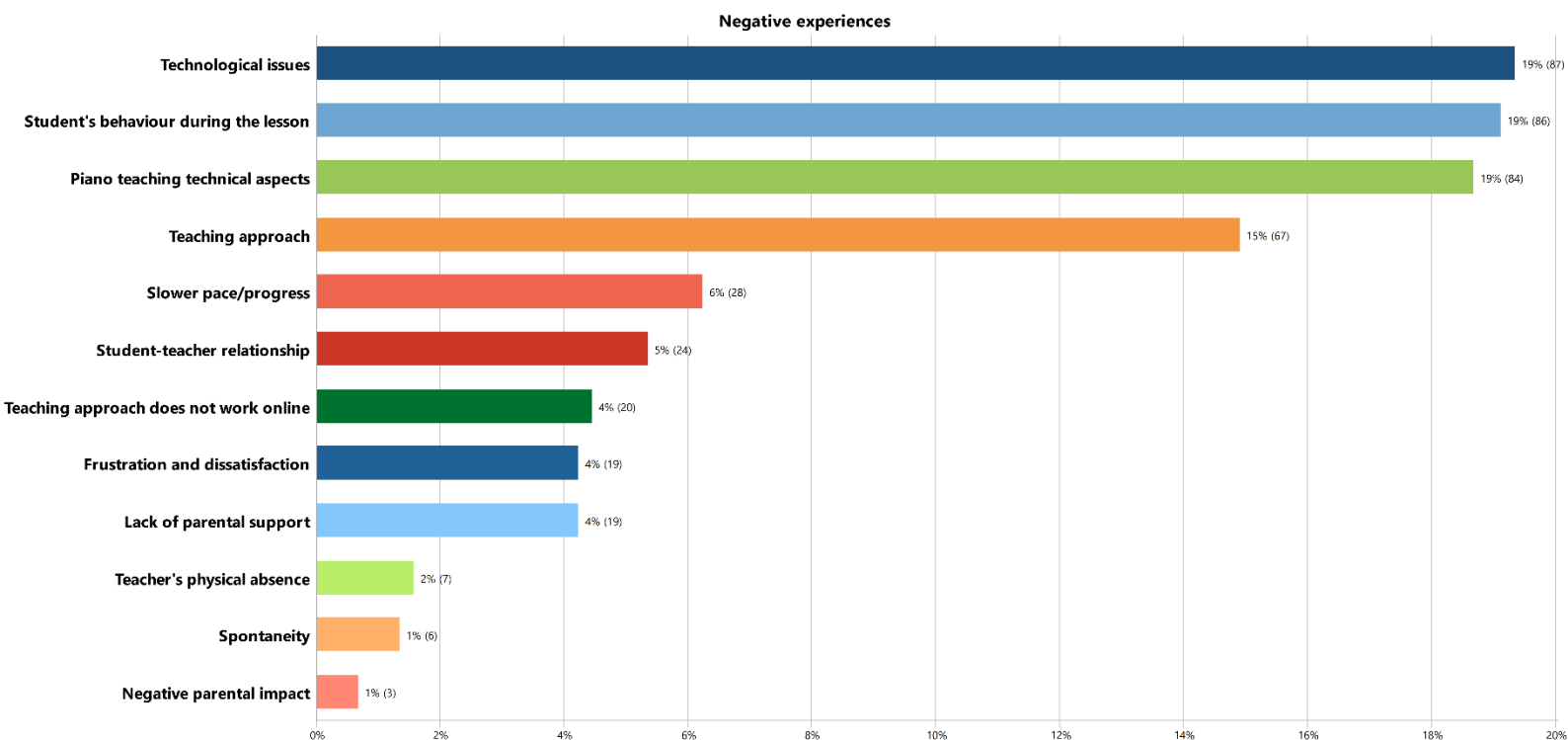


Figure 6.2 Teachers' content analysis: first-level codes within the theme 'Negative experiences'.

1. Technological issues

Technological issues were the most significant challenge for online music lessons, as shown in the theme of 'Negative experiences' (Fig. 6.2). This includes poor internet connections, unstable video and audio quality, which resulted in difficulty seeing students' hands and keyboards, and time lags that prevented playing or clapping together (Fig. 6.3). Many students lacked the proper equipment or technical setup such as sufficient practice space, poor internet connection, difficulty capturing the right camera angle, using only a mobile phone for the lesson or not having a proper piano. Technical issues frequently interrupted the flow of lessons, causing the teacher difficulties in showing concepts, giving feedback, and keeping the students engaged. Although

some solutions were found, the constraints of the technology continued to be a source of frustration and an impact on the general quality of teaching according to teachers' perceptions.

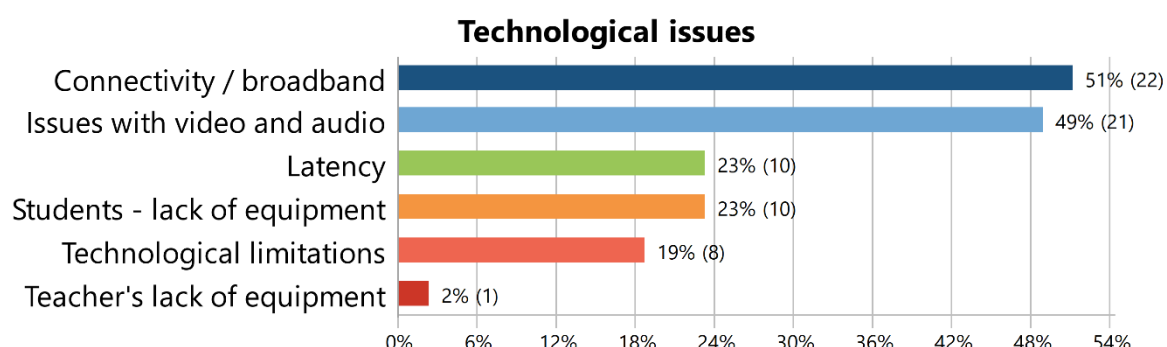


Figure 6.3 Teachers' content analysis: second-level codes within the theme 'Technological issues'.

2. Student's behaviour during the lesson

First of all, this code is not the same as 'Students' behaviour, age, capabilities' (Fig. 6.1), because this code is about what is going on in the lesson (students lose their focus or get distracted) and less about students' behavioural traits, age, level or capabilities in general (Fig. 6.4). Second of all, the subcode 'attention and engagement' might seem similar to 'lack of focus', but it is used when teachers mention the word engagement, or they mention how to keep them engaged during the lesson - an action rather than a passive statement that students just lose their focus or attention.

The code 'Students being distracted' usually referred to family members entering the room during lessons or pets disturbing them, and was often related to the code 'Lack of resources at home/home set-up', where the piano was placed in a shared living space (4 counts in the Code Relations Browser (CRB), Appendix 9.1). All further references to the Code Relations Browser in this section (6.2) refer to Appendix 9.1. Finally, 'lack of motivation' usually means a lack of practice due to losing motivation.

As seen in the CRB, the lack of focus is mainly associated with students' age (8 counts), indicating that this code was used 8 times concurrently with 'Age as a factor'. In other words, teachers would

often say that young students had issues focusing during OPL. Hence, there were 8 statements, such as this one from Teacher 38: 'Some very young children find it hard to focus'.

Regarding the CRB, the second-highest code, coded with 'Age as a factor', is 'Attention and engagement' (7 counts), which states that young students have difficulty holding attention. It is more challenging to keep them engaged, such as Teacher 68, who claims, 'Small children do not sit well, and it takes a great deal of time to get their hands in the right place.' In the second place in CRB, this code is related to 'Parental involvement' (6 counts), which means that the lack of focus could be solved by having parents more involved with OPL.

However, some teachers had to devise new ways of engaging them during OPL, which is evident in the CRB table, where the code 'Lack of focus' is related to the code 'I came up with something new' (3 counts). For example, Teacher 24, when talking about one student who struggled with OPL, said: 'The student had difficulties focusing on the lesson. I changed my approach and introduced many more interactive online games to break up the lesson and work on theory, rhythm, sight reading, etc., which greatly helped!'. Teacher 102 also added to the notion: 'Some students cannot focus well during online lessons because the lesson becomes more demanding. In that case, I have to do more off-the-bench activities to grab their attention.'

In summary, the chart indicates that the primary behavioural challenges during lessons are related to students' focus. However, some teachers found ways to hold their attention and engage them. Of course, 'it takes up more time and energy from the teacher', as stated by Teacher 102. Hence, there is a code regarding the teacher's workload (Fig. 6.1). Furthermore, the environment where the OPL takes place is also critical, as it might cause further distractions, and teachers are usually helpless in situations such as when, for example, they cannot close the door for the pet that barges into the lesson.

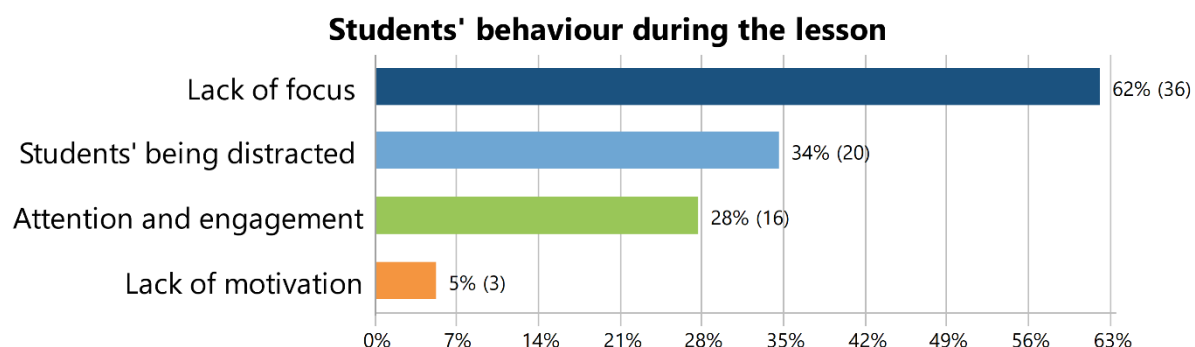


Figure 6.4 Teachers' content analysis: second-level codes within the theme 'Students' behaviour during the lesson'.

3. Piano teaching technical aspects

This code has been subdivided into particular aspects of piano teaching, thus showing the aspects most negatively impacted in OPL (Fig. 6.5). The code 'Difficulty teaching technique' is more abstract because the technique might be related, for example, to posture. Only the segments that did not state any specific technique, just the word technique, were attached to this code.

Demonstrating and correcting the hand position, sitting posture, and finger placement proved extremely difficult, as teachers could not physically guide students' movements. In CRB, the code 'hand position/posture' is mainly associated with 'tactile approach/physical demonstration', indicating that teachers who frequently use their bodies to demonstrate or touch students to adjust their sitting or hand position may have a more challenging time teaching online. This quote from Teacher 22 supports this notion: 'Many times a gentle touch will remind a student that their shoulders are up or the hand position has collapsed.'

Teachers provided specific examples of the difficulty teaching notation, especially younger students, such as Teacher 22: 'I also found that students who were on the cusp of learning to read music did not learn to do so via online lessons. This only became apparent when I saw them F2F again.' In CRB, 'teaching notation' has 4 counts in relation to 'Age as a factor', supporting the idea that younger students find it more challenging to learn the notation while having the lessons online. Another aspect of teaching note reading is hand placement and finding the keys on the

piano; this was pointed out by several teachers, with Teacher 78 claiming that ‘it is challenging to conduct the lesson when the student is still at the stage where they are not familiar with the notes and keys’.

Rhythm and timing were problematic, as teachers could not clap, count, or play along with students to help them maintain the correct tempo. By no surprise, this code is associated with ‘Inability to play together’ in CRB as teachers are used to playing, counting or sometimes even singing while students are playing, which is not possible to do while having the lessons online due to latency issues.

Overall, teachers reported several issues while teaching online, such as the inability to annotate scores, provide fingering suggestions, and teach pedalling techniques. Some teachers claimed they did not teach pedalling while teaching online during the pandemic. Additionally, due to sound quality issues, teachers struggled to assess and provide feedback on students' musical expression, phrasing, and dynamic range. However, this code ranks as the third largest negative in the ‘Negative experiences’ category, indicating that while some piano teaching aspects can be overcome, technological aspects like connectivity and broadband are not always within teachers’ control.

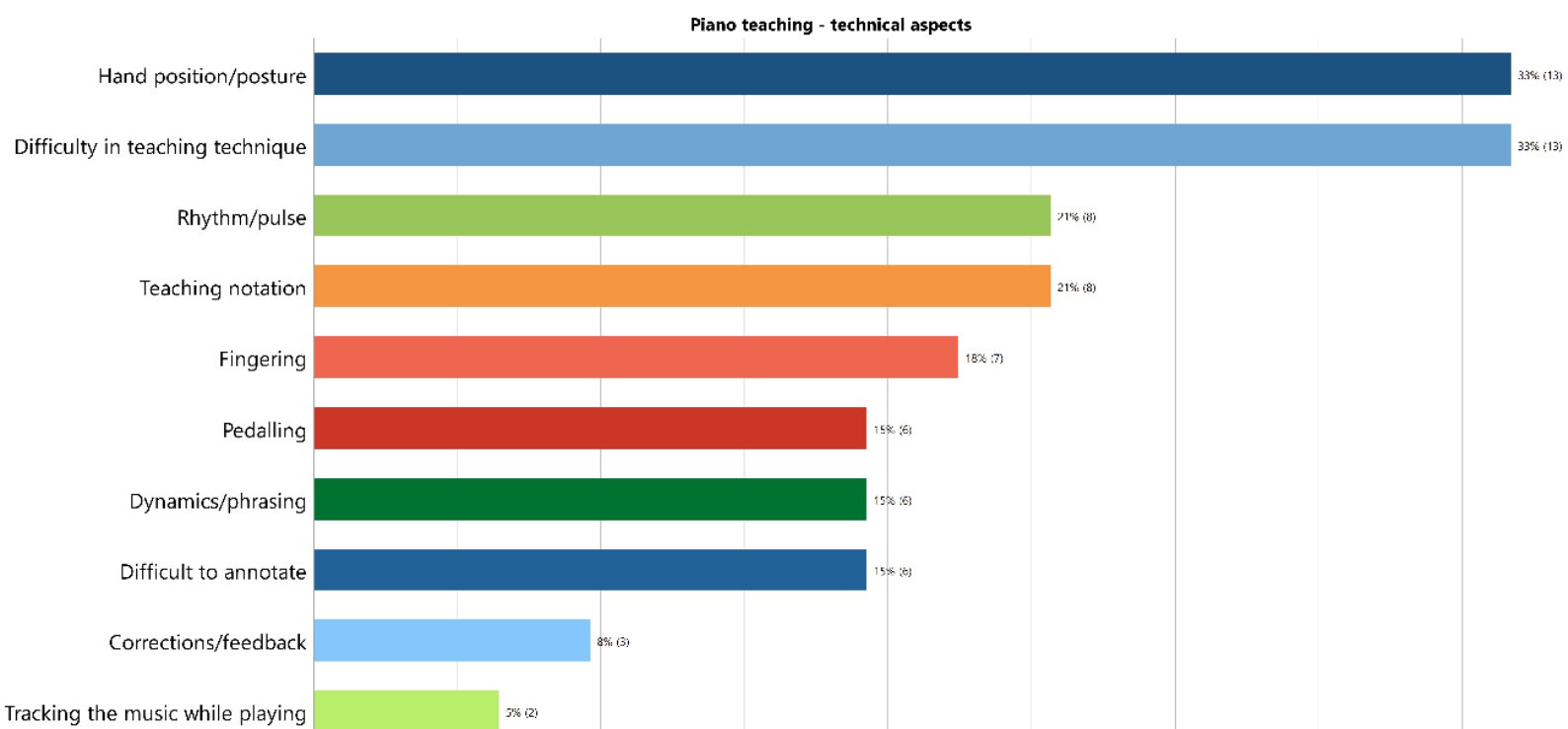


Figure 6.5 Teachers’ content analysis: second-level codes within the theme ‘Piano teaching – technical aspects’.

4. Teaching approach

The teaching approach came in fourth place according to main (parent) themes (Fig. 6.1). The most significant issues were the inability to play together and the difficulty in demonstrating (Fig. 6.6). Teacher 35 touched on quite a few things concerning not being able to play together, offering solutions and admitting that it might be too much of a workload:

'Not being able to play duets in live time. Although I could record a backing track, it wasn't easy to get the two parts together. Only by my singing their part could they get an idea of how it was meant to sound. In the end, I stopped doing this as it took too much lesson time.'

Teacher 73 offered a solution with a few caveats to avoid latency issues: 'Imitation games are stilted as there is a time-lapse. It works only when the pupil plays straight after the teacher, but then it is best to 'start again' to cover the time-lapse and not encourage bad time-lapse keeping!', meaning that teacher and student play at the same time, but the teacher starts a few seconds later to overcome the latency issue.

Although online teaching is believed to heavily rely on demonstration, many teachers reported difficulties in demonstrating proper technique and providing physical guidance. For instance, Teacher 52 noted that 'it was almost impossible to show the correct hand position and to demonstrate arm movement'. Teacher 61 added that it was 'significantly more difficult to demonstrate good musical playing due to restricted camera angles and audio compression.'

The lack of multisensory interaction, such as touching the student's hands to correct their posture or movements, and the limitations in using movement-based teaching methods were also discussed. Teacher 29 expressed frustration: 'Playing an instrument is such a bodily experience, and explaining the technique to a young student is difficult without being able to physically help them.' Teacher 52 summarised how much the teacher's physical approach is important in the lesson: 'I think students need support by physically showing them what is the right posture, movement of the fingers, arm, turning their pages, annotating on the score, singing and counting while they play etc.'

Teachers found it more challenging without the ability to physically point to the music, turn pages, or use body language to gauge the students' needs. However, those who did mention that pointing at the music is an issue also said that they had to teach their students how to navigate their music sheet and introduce them to 'musical language' or music terms. Thus, it seems that this made some of the students more independent.

The online format was seen as less suitable for younger students who require more hands-on support and a multisensory learning environment. Teacher 11 shared quite a few teaching methods which they used during in-person lessons but were unable to do online, which summarises all the negative aspects that teachers are unable to do while teaching online:

'covering their hands with a book while they sightread, to help them learn to play by touch; moving away from the student, to allow them to start to feel independent. So, if they are performing, I'll sit or stand back. Or, if there's something they need to practise, I might occasionally 'nip to the other room' for two minutes (sometimes, I'll just be standing on the other side of the door!) and then discover more about how they work independently...'

Overall, the online teaching approach was perceived as less effective, particularly in areas requiring close physical interaction, real-time musical collaboration, and movement-based pedagogical techniques.

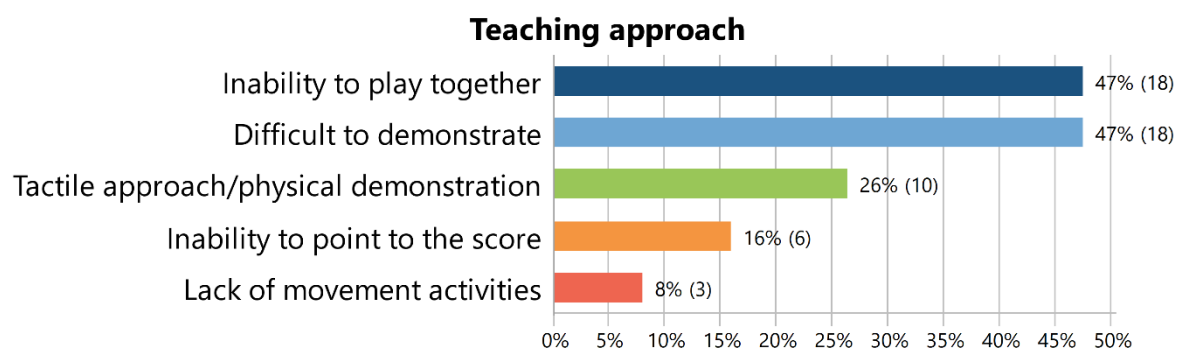


Figure 6.6 Teachers' content analysis: second-level codes within the theme 'Teaching approach'.

5. Slower pace and progress

This code is fifth in the code frequency, and it does not have any subcodes (Fig. 6.1). It was concluded that explanations and transitions took longer, and teachers had less control over the lesson environment, leading to frequent interruptions. Teacher 8 brings back that it is slower when they cannot point at the score: 'It took longer to explain things in online lessons; in person, you can just point to something', while Teacher 35 adds that it is due to students not being organised sometimes: 'I feel we get less things done and time can be wasted while a pencil/ the correct page is found. I do not really have control over what is going on in the lesson environment, and the flow of the lesson could be frequently interrupted.'

Students also developed bad playing habits that were difficult to correct remotely. For example, Teacher 66 claimed that '[he/she] found that all the students slowed down with their progress whilst online, and some developed bad habits that were difficult to spot and correct on the screen'. Other teachers claimed that the progress was slower due to bad audio or video: 'Sometimes it wasn't clear if the student didn't have a clear aural image of the music or if the technology was struggling with the sound. This resulted in going slower and double-checking before moving on' (Teacher 75).

Overall, the pace of lessons slowed down, and less could be accomplished in the same amount of time. For some students, online learning resulted in minimal progress or even developing bad playing habits, which are usually difficult to address and to change in the future.

6. Student-teacher relationship

The subcodes highlight the challenges of maintaining strong student-teacher relationships in online learning environments compared to in-person lessons (Fig. 6.7). Many teachers report difficulties fostering organic, personal interactions that are more easily achieved face-to-face. Making eye contact, reading nonverbal cues, and having spontaneous moments of levity are crucial for building trust and rapport, but are much harder to cultivate virtually. Teacher 11 shares a few other things that it is impossible to do online, yet it is so vital when it comes to teaching young students: 'looking them in the eye to reassure them; listening to their stories of how their day went to build trust and rapport; rewarding them with stickers; having a spontaneous laugh and joke (perhaps prompted by a musical mishap)'. Teacher 42 sums up what many teachers rant

about: ‘Human interaction, reading moods and communication are all much more difficult online - especially with younger learners’.

Teachers also note feeling less control and authority over their students when lessons take place in the students' own homes. This can lead to more behavioural issues and a lack of cooperation that would be less likely in the teacher's studio space. Teacher 15 complained about some students: ‘They were in their own home environments and felt they had rights that they did not have in my studio. There was a lot of acting out and lack of cooperation that I never would have seen if they were in my presence.’

Additionally, online lessons can create more distance and remove the direct personal contact valued in the student-teacher relationship. Many teachers express a sense of diminished emotional connection and the loss of the rewarding feeling of sharing the joy of learning. Teacher 11 shares the dropout statistics in their teaching studio, saying that if the students did not start face-to-face, they are more likely to quit piano lessons as it is difficult to establish rapport: ‘I found it difficult to build a good rapport with new students who I only saw online. As such, 100% of those who started during the pandemic quit within 9 months. Normally, 5% would quit within nine months’.

Overall, the passages suggest that the physical separation and technological mediation of online lessons pose significant challenges for teachers in developing the close, supportive relationships that are important for student engagement and progress.

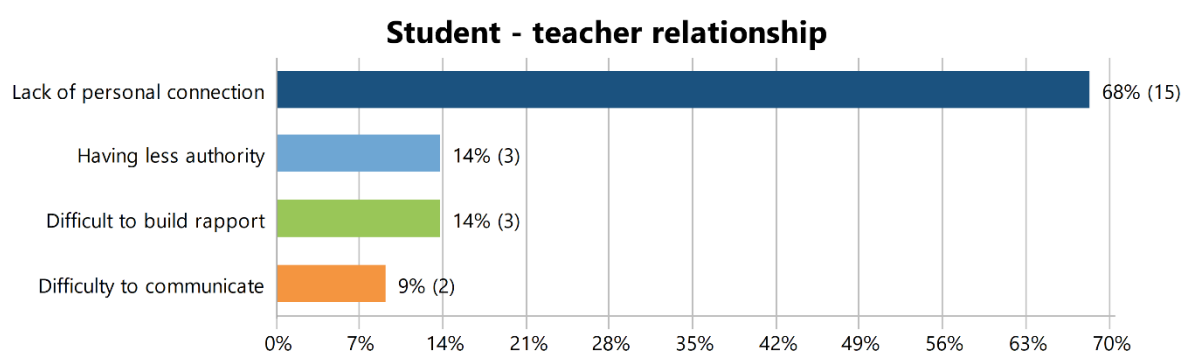


Figure 6.7 Teachers’ content analysis: second-level codes within the theme ‘Student-teacher relationship’.

The following are several more codes (themes) in the 'Negative experiences' section, which do not have any additional subcodes (Fig. 6.1).

7. Teaching approach does not work online

The teaching approaches of many instructors do not translate well to online formats, as perceived by many teachers in this survey. It is not a coincidence that in CRB, this code correlates with 'Prefer face-to-face lessons', with a relatively huge number of 7 segments and 3 segments in relation to code 'Frustration and dissatisfaction', which further demonstrates that online teaching is not for every teacher (and student).

According to CRB, there are also 3 segments in relation to the 'Age as a factor' code, and one of the examples is Teacher 3, who decided not to accept any young students and stated the reasons why: 'I'm very strict about the under-10s I will accept into my now fully online studio. During lockdowns, I did teach my in-person students online, and I found that they generally needed the multisensory environment of the face-to-face lesson.[...] I have never liked teaching young ones because you have to wrangle/teach the parents so much. I want 1 person on my roster if I'm being paid for 1, not 3 (kid, mom, dad).' Teacher 7 also lists reasons why they would not teach any young students even more recently:

'It takes up far too much mental space and preparation to plan an online lesson for a young student [...] I would only teach online with existing students who I feel are capable of paying attention and preparing for the lesson as seriously as if they were face to face. For me this is only adult students in my experience.'

Instructors relying on physical interaction, movement, and hands-on guidance struggle to teach their methods remotely effectively. The inability to read students' body language and provide in-person feedback makes it challenging to tailor instruction to individual needs. Only when moved online did Teacher 61 realise how much they relied on reading body language: 'Teaching online made me realise just how much I read people's body language when teaching face-to-face. Restricting my ability to read their body language makes it harder to calibrate my instructions and questions to the student's needs.'

For some, online lessons feel impersonal and less inspiring than face-to-face teaching, negatively impacting student morale and technique. For others, the online format does not suit them for other reasons, such as in the Teacher's 88 case: 'I am very animated and upbeat during the lessons. My enthusiasm didn't seem to reach them to help create enthusiasm in them' or Teacher's 66 cases: 'It didn't work well for me as I see the lessons as collaborative'.

Looking at this code alone, it can be concluded that quite a few instructors strongly prefer in-person instruction, finding online formats incompatible with their philosophies and approaches to teaching.

8. Frustration and dissatisfaction

This particular theme was created when teachers expressed negative emotions, such as 'I hated it [...] Hopeless' (Teacher 1) or 'It's impossible!' (Teacher 11). They found the format challenging, unnatural, and ineffective, particularly for younger students. Teacher 58 even claimed to discontinue teaching online: 'We gave up. I don't think it's good for students or teachers, I think it's a waste of time and money. Teacher 57 said, 'Teaching online was challenging and testing my patience. [...] I hate teaching online.'

It has been reported that students become easily frustrated and disinterested, with some even quitting lessons altogether. This is a concern, as noted by Teacher 57, who is a teacher with a child who, due to frustration, will not have any OPL. Regarding students' dropout, Teacher 88 reported students quitting, and Teacher 82 explained why: 'A number of my students chose to suspend lessons over Covid. Some because it was 'one more thing' parents found difficult to support their children while also trying to work, but also because some parents felt it was another thing that required screen time.' This has also been noted in CRB, with 3 segments related to the 'Student dropout' code and 3 segments related to 'Age as a factor', which shows that younger students are more likely to quit piano lessons if it frustrates them or the teacher.

To question 107: 'How well do you feel that online learning suits your teaching approach?' Teacher 82 answered, 'I'd rather not,' and Teacher 87 added to the same question: 'Not very!' further expressing frustration with OPL. Overall, the online format was seen as a poor substitute for in-person instruction, leading to a negative experience for some teachers and students.

9. Lack of parental support

Lack of parental support was a significant challenge for many students during online lessons as reported by the teachers. Parents were often unavailable, leaving children distracted and unable to stay focused. In CRB, this code is highly associated with the code 'Age as a factor', meaning that younger students needed to be supported by their parents more often.

Some teachers, such as Teacher 20, wanted the parent to be in the room during OPL ('The only thing I don't like is when parents refuse to be in the room with their kids. It's usually a hot mess because what we are learning is too technical- besides, I prefer young kids to be accompanied in face-to-face lessons as well.') Some other teachers found it frustrating to get even parents prepared for the lessons, as in the Teacher's 30 cases: 'I had to spend much time getting the parent organised for lessons!'

Effective online learning requires active parental engagement, such as ensuring a suitable learning environment, overseeing practice, and providing feedback to the instructor. Without this support, the children struggled to make meaningful progress. Teacher 37 said: 'Lack of using the ample support that I offered between lessons caused the issue for the vast majority of students who struggled. When I held their parents accountable, and they actually took heed to read their email, click on the links provided, helped their child actually USE the audio files and YouTube videos that I created for them, the child immediately showed improvement.' Thus highlighting the importance of parental support. Teacher 79 continues explaining why parental presence is essential for young students:

'Young children cannot understand through an online platform what's required of them without the supervision of a parent or guardian behind. The parent or guardian has to know how to check their hands and techniques and feedback to me accurately so that I can correct them accurately. Sometimes, this doesn't happen correctly. Without parental supervision during the online lessons, they are lost'.

It is apparent that parental involvement is crucial in OPL. However, while the negative experiences are associated with no parental support and students losing out on their progress, it is evident

that if parental support is there, it results in positive experiences, especially for younger students, as it is discussed in section 6.2.3.

10. Teacher's physical absence

While this code is treated as a separate entity within the 'negatives' parent code, it does not fully align with the 'teaching approach' subcode, which primarily includes actions during teaching, such as pointing at the score or playing together. The lack of the teacher's physical presence can make the learning experience feel more demotivating for students, especially young ones who need the teacher's physical presence to take the lesson seriously. In CRB, this code is also associated with 'Age as a factor' with 4 segments, as it shows that a teacher's physical presence is important for young students, especially.

While a teacher's physical presence or absence in OPL can have many explanations for what this is and it comes in many forms, for some teachers, such as Teacher 45, it is the feeling of being impersonal 'I feel it is more impersonal and less inspiring than to be in a room with someone'. For Teacher 11, physical presence is

'to overtalk. In organic conversation, people often interrupt each other or speak at the same time. Online, the need to stay entirely quiet while each party talks or plays is unnatural and stifling for teacher and student; to give corrections or praise in real-time, for example, if a student is playing a scale in a F2F, I might give prompts such as 'lift' or '3' (finger number) or 'sneaky thumb' while a child is playing, particularly if the scale is new.'

These examples show that physical presence can mean different things to different teachers, whether it is the lack of personal connection or the loss of natural interaction. It also seems that this is something many only become aware of after moving from face-to-face to online lessons.

11. Spontaneity

In addition to negative experience, there is a separate code dedicated to teachers' comments on spontaneity, as 6 teachers mentioned this. It could be concluded that the online format requires a more structured and rigid approach, with less opportunity for the instructor to interrupt, guide,

and respond in the moment. This can limit the instructor's creativity and spontaneity, leading to a greater focus on having students play through their repertoire and providing feedback rather than engaging in more dynamic and interactive lessons. Teacher 29 explains: 'Online teaching has to be more structured and very much you speak then I speak, I demonstrate then you try a type of situation. In person, I can interrupt more and guide you in the moment. Online lessons don't really allow for that kind of instruction while students are playing.' Instructors may feel the need to be on camera 100% of the time, further restricting their ability to move around and access resources spontaneously. Overall, the online environment presents significant barriers to spontaneous, responsive, and creative teaching that is more readily achievable in face-to-face settings.

12. Negative parental impact

While this code might look similar to 'Lack of parental support', here it was about cases where the parents' presence disturbed the lesson flow or the child's focus. For example, Teacher 43 said that the parent had loud conversations on the phone, and Teacher 87 noticed that a parent sitting in the background could change the teacher-student dynamic. This is not the same as a lack of support.

To sum up, negative experiences dominated this analysis, with teachers pointing to issues with technology, teaching approaches they could not use online, changes in student behaviour, altered lesson pace, and the impact of the teacher's physical absence. Further sections explore other experiences, though some codes were also linked to the 'Negative experiences' theme in the Code Relations Browser, and are reported accordingly.

6.2.3 The positives

Of all the positives, parental support was cited as the most important for younger students to engage well in online lessons—especially in providing technical help, keeping students on task, and making practice easier (Fig. 6.8). Many teachers reported that students became more independent and showed improved musical understanding. Some even reported that a few students showed more progress than in-person lessons, benefiting from the more tranquil home environment and increased parental involvement. Teachers also enjoyed the advantages of an

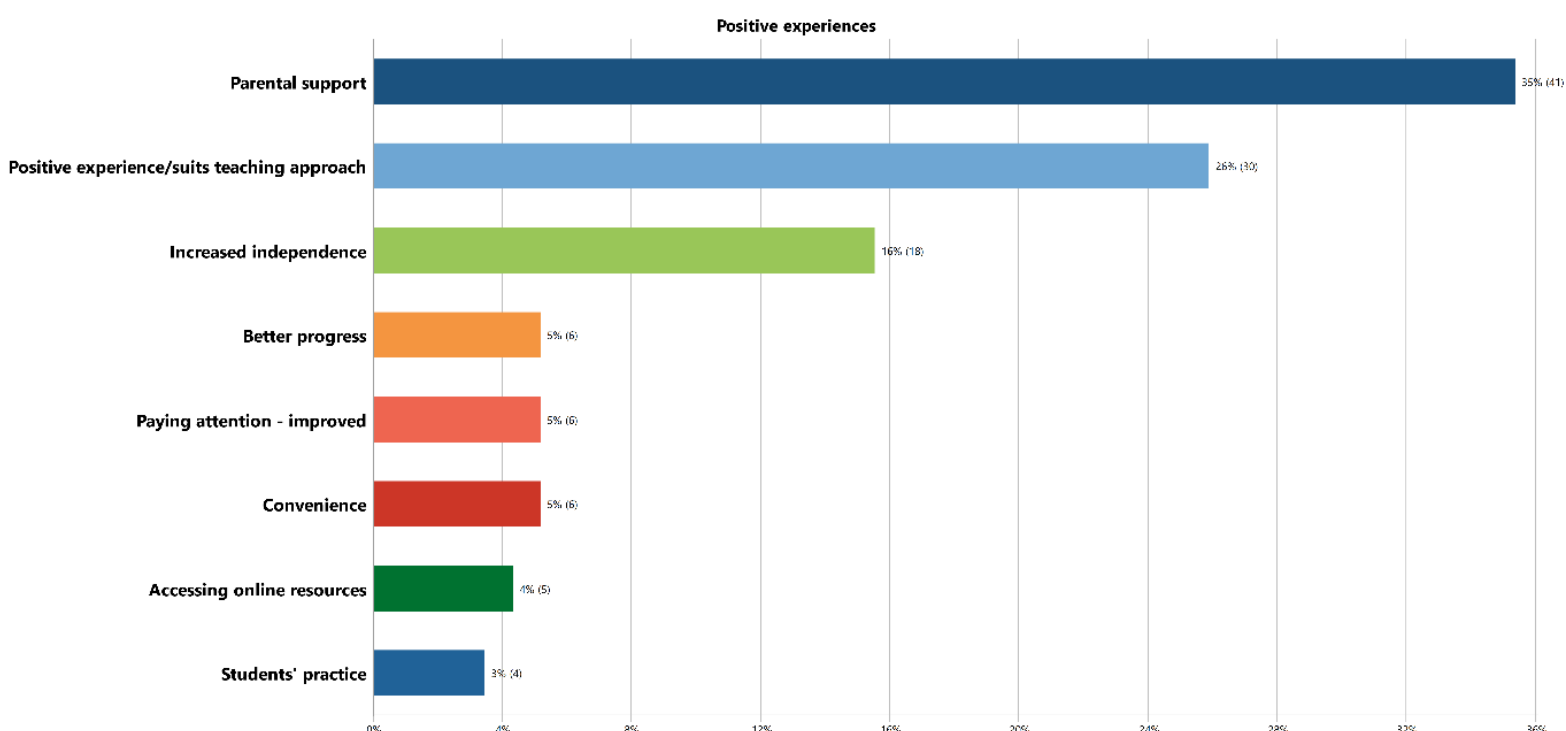


Figure 6.8 Teachers' content analysis: first-level codes within the theme 'Positive experiences'.

online format for easier scheduling and access to digital resources, plus giving more tailored feedback during the lesson. It is important to note that none of the codes has subcodes, and each code will be analysed separately in the following section.

1. Parental support

With parents present, students were better able to stay focused, troubleshoot technical issues, and receive hands-on guidance. Teacher 18 confirms that 'Most issues are overcome with having an engaged adult sitting with them to help.' The Suzuki teaching approach, which involves parents actively participating in lessons, as pointed out by Teacher 38, can be translated well to the online format: 'means the parent is sitting with the child and making notes (and recording the lesson), so the parent is able to do the teacher's job to some extent'. Another Teacher (91) shared, 'We work as a team, sometimes with a parent nearby but not hovering, and we get the work done as best we can', highlighting the collaborative side of working with a student and a parent.

According to CRB, several other codes cross paths with the positive 'Parental support' code, highlighting many benefits of a parent's presence during OPL. The most significant one, which collected 6 segments within this analysis, is 'Lack of focus', meaning that students focus better when parents are present. Three teachers have pointed out a few negatives of parents' presence in the lesson, but the positives outweigh the negatives in this case.

The second most significant code in relation to 'Parental support' is 'Age as a factor' with 4 segments being coded. This again shows that parents can help with students' focus but it also means that parents can generally help around and maybe be more verbal in translating what their young child means (as some of the young kids might be quite shy). Teacher 49 even asked all parents of students under the age of 11 to be present in every lesson, and many other teachers mentioned that students from 5 to 9 years do require parents' presence at all times. In two cases, it was mentioned that parental involvement helps those with ADHD or non-neurotypical students. Overall, online lessons worked best when parents were organised, involved, and able to provide the necessary assistance to their children throughout the lessons.

2. Positive experience: online teaching suits the teaching approach

This code was mainly created due to the nature of question 170 ('How well do you feel that online learning suits your teaching approach?'), with 13 teachers claiming that it does not suit them, 18 teachers saying that they prefer face-to-face lessons and the same number (18) reporting positive teaching experience. Many teachers find that online teaching aligns well with their teaching style and methods. According to CRB, this code is mainly associated with 'Technological setup', which means that if the teachers (and students) master the best suitable setup, they are much happier teaching online.

Controversially, since there have been many negatives listed out due to student age, Teacher 21 claims that they 'have really enjoyed teaching young students online. There is a learning curve at first, but it becomes easier once you do it for a bit. Some students have a harder time with some of the technical details of playing, but we spend more time on those things during the lesson.' In contrast with the code 'Spontaneity', where teachers complained about not being able to be spontaneous during OPL, Teacher 23 shares that 'it suits my upbeat approach to learning as I am

able to keep things engaging even online', showing that it might be up to teacher's personality and attitude.

Opposite to the code 'Difficult to build rapport', Teacher 39 shares how to build rapport with students and how technological setup can increase satisfaction with the lessons and productivity in general:

'It's fun! Screen sharing, the writing of their compositions is instant; I get to see their instrument and home setup, I get a very good view of their hand positions, and they are mine. They take pleasure from sharing their art or trophies with me, which encourages good rapport between us.'

Moreover, Teacher 57 seconded Teacher 39 about building the teacher-student relationship: 'The main factor in the teaching process is the establishment of a positive relationship with the pupil, and this can be achieved both face to face and online.'

Overall, they feel online teaching is a natural fit that allows them to maintain strong personal connections with their students, with Teacher 102 highlighting all other positives that can happen in OPL:

'For most students, online lessons are almost as effective as in-person lessons. They bring some benefits as well: students learn music vocabulary quickly because we need it to communicate, they become more independent learners, I can actually assess what they have understood since I am not next to them to help them too much.'

This teacher insight leads directly into the next code about another positive experience when students become more independent as a result of having online piano lessons.

3. Increased independence

While lower levels of independence, such as lack of focus and inability to annotate the scores, are associated with dissatisfaction with OPL, if students are independent when they start OPL or develop independence while having OPL, it is associated with satisfaction and positive experiences of OPL. It has been reported in the open-ended questions that many students developed greater practice autonomy, learning to ask themselves the right questions and figure things out. They became more self-reliant, following the music, writing fingerings and directions themselves, and conversing in musical language. This helped improve their sight-reading skills as they relied less on visual demonstration. The need to be more independent also gave students more responsibility and confidence in their musical development, as they had to focus more on tasks, mark their mistakes, and control their practice. While some skills took longer to learn online, students ultimately learned them better and became more independent.

4. Other notable positives

Many students made quick progress due to increased practice time (when referring to the period during pandemic lockdowns); some even achieved greater comprehension and skill development than before the pandemic. The quieter, calmer home environment and increased parental support contributed to the improved outcomes for a portion of the students. Students appeared more attentive and focused as well. This may be due to the teachers' inability to support their students in the moment, and some students' being able to focus better through technology. Overall, listening and attention have improved in the online learning environment.

The elimination of commuting allows for more flexible scheduling, while the home environment enables relaxation, freedom of movement, and reduced distractions, as reported by the teachers. Students also benefited from learning from the comfort of their own spaces. Teacher 24, who continues teaching online exclusively, shares:

'I am also much more relaxed due to being in my own home space, often wearing more comfortable clothing, able to freely move / stim parts of me that are not on the webcam, and also can turn off my microphone while students perform so they can actually focus better and not be distracted by me writing / typing notes. Students also needed time to adjust, but as soon as they did (and I did) they were able to enjoy the lessons in the same

way. Many students seemed to be quite comfortable being in their own houses, which definitely helped them feel more at ease.'

The flexibility allows teachers to teach from anywhere, which is especially helpful for those who are also performing musicians.

Among other positives reported, online format offers greater annotation capabilities, immediate access to reference materials, and ease through online portals. Converting physical resources to digital formats presented a learning curve, but the ability to share screens and instantly access online content has been seen as one of the factors that contribute to positive experiences in OPL.

6.2.4 Student's behaviour, age, and capabilities

Having previously discussed broader positive and negative aspects of online piano lessons, this section focuses specifically on how student characteristics—particularly age and ability—shape teachers' experiences and satisfaction with online teaching. The following parent code was created when participants described their students, for example, their age or capabilities, concerning their satisfaction or dissatisfaction with teaching them (Fig. 6.9). As reported in the descriptive statistics (section 5.5), younger students, particularly those under 10, generally struggled with online piano lessons during the pandemic. Furthermore, as shown in section 6.2.2, when discussing the negatives related to students, many teachers related the negative points of teaching online to students who have difficulty staying focused or lack the technical skills to engage effectively online, which was often associated with their young age.

Beginner students, in particular, had difficulty understanding instructions, maintaining proper hand positioning, and understanding the feedback without the teacher's physical presence. Teachers often had to wrangle with parents to keep young students on task and found the online environment less conducive to the multisensory, hands-on approach required for young learners. As a result, several teachers set age minimums of 10 or older for online lessons, and some even cancelled lessons for their youngest students, as they did not feel the online format allowed for sufficient progress. Younger students also tended to become more easily frustrated and

distracted, leading some to quit lessons during the pandemic. In contrast, teachers generally had more success with online lessons for older, more experienced students who could better focus,

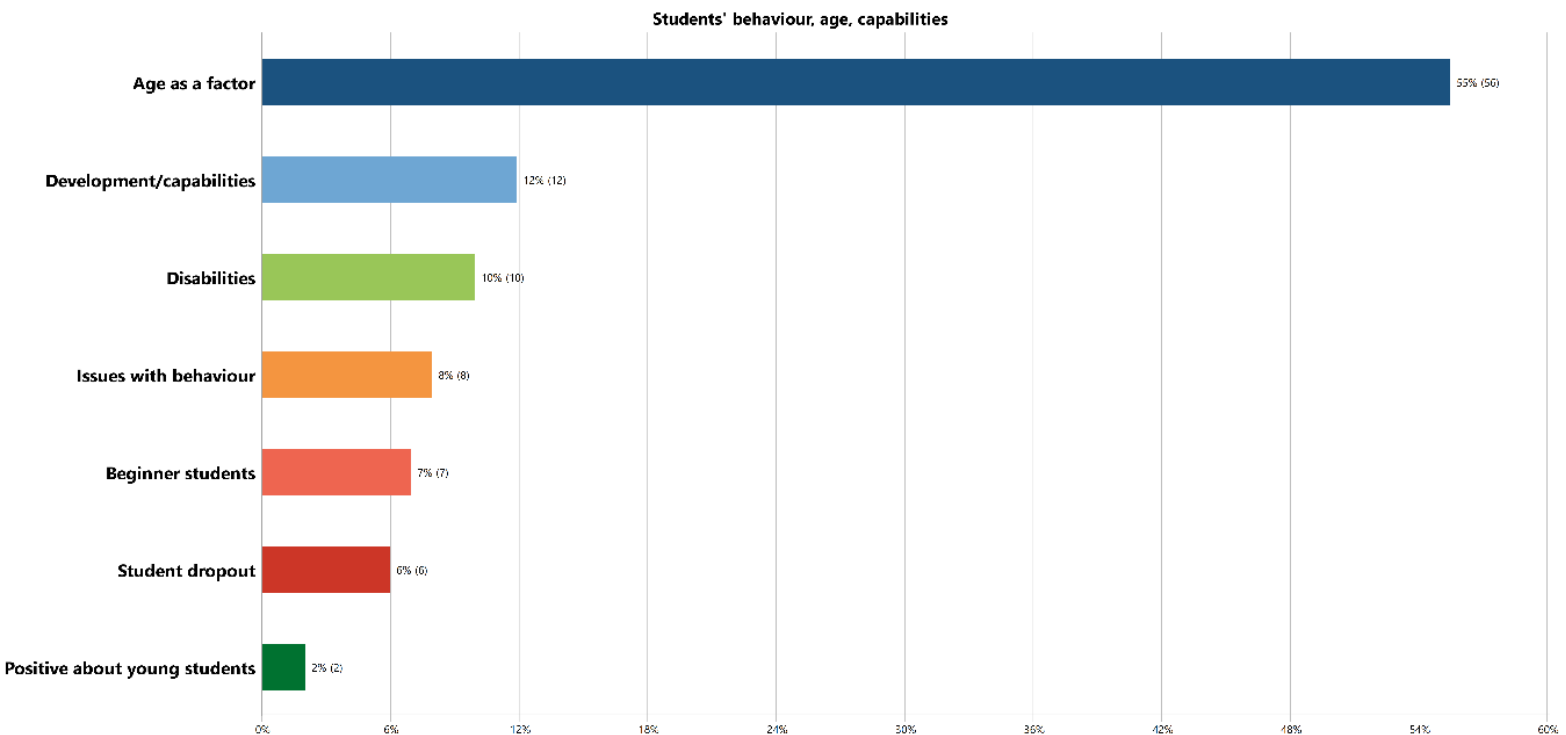


Figure 6.9 Teachers' content analysis: first-level codes within the theme 'Students' behaviour, age, capabilities'.

follow instructions, and prepare for lessons independently. Some teachers also found online lessons were not suitable for students with certain neurodevelopmental conditions, such as ADHD or autism, when the appropriate strategies and support were in place. The consensus was that face-to-face lessons were far more beneficial for young, beginner piano students, while online lessons could work well for older, more advanced students. The following section discusses each subcode of this parent code.

1. Age as a factor

This code has been applied in a more negative context. For example, if a teacher mentioned, 'Younger students struggled with focus', this statement would be linked to two codes: 'Lack of focus' and 'Age as a factor.' According to the CRB, this code frequently overlaps with others, particularly as the survey focused on 5- to 9-year-old students. Notably, the most frequently coded segments (8 each) were associated with two codes: 1. 'Lack of focus,' which was already

discussed in the 'Negative experiences' section, and 2. 'Development/capabilities,' which will be addressed in the next section.

In the second place in CRB with 7 coded segments is 'Attention and engagement', which has also been discussed in the 'Negative experiences' section. In the third place with 6 segments goes 'prefer face-to-face lessons', meaning that face-to-face lessons are more effective for younger students. Five segments collected 'Beginner students' as young students were interchangeably called beginner students. A few more codes received 4 segments in relation to student's age: 'Teaching notation', which means it was more difficult to teach young students notation, 'Teacher's physical absence' was also mentioned with claims that younger students need more physical support from the teacher and only one positive code – 'Parental support' which shows that the lessons can have more positive outcomes if the parent is near.

Many teachers found that younger children (5-9 years old) had difficulty focusing, maintaining attention, and understanding instructions through a screen. The lack of physical presence and hands-on guidance from the teacher was a significant challenge, making it harder to correct posture, hand placement, and other technical aspects: 'It's very difficult to teach younger students online without a teacher presence because you have to correct many things and sometimes they don't understand the teacher input' (Teacher 34). Also, Teacher 44 adds: 'It is difficult to teach young students when they do not have a strong foundation'.

Most agreed that face-to-face lessons were far more beneficial for this age group, allowing for more interactive, multisensory learning experiences. Teacher 14 highlights the importance of face-to-face teaching for young students and that their level of understanding can impact their learning online: 'Younger students thrive on corrections and feedback in person. It requires unique angles and approaches to help younger students understand corrections verbally'. Teachers reported that the energy and preparation required to engage young students remotely was often not worth the limited progress made: 'Younger children find it more difficult to learn online and it takes more time and effort to keep them interested and progressing' (Teacher 18).

While some teachers were able to work with a few exceptional young students online, the consensus was that online lessons were better suited for older, more experienced students who

could self-regulate and engage more independently, with Teacher 33 claiming that OPL would not work with young students long-term: 'I don't think it works as well long term. I use online lessons for this age group now (post-Covid) only when necessary, due to illness, for example'. Finally, Teacher 54 summarised what other teachers shared in part:

'With young students, I fundamentally believe in hands on, playful engaging learning - and this is often hard to achieve online to the extent we would have in person. It is harder to play games, and often, young kids don't engage/connect nearly as well through the screen. It also makes behaviour management more difficult. Beginning students will struggle more with correct hand placement, tracking in their music, and general lack of their teacher being there to aid them.'

Overall, the consensus was that online piano instruction was significantly less effective for young beginners and novice students than in-person lessons.

2. Development and capabilities

The majority of the teachers who took part in this survey concluded that online lessons are generally more suitable for adult students and older children who have a strong foundation in instrumental playing and can focus, understand instructions, and engage independently with the technology. Younger or less experienced students may struggle with the limitations of the online format, such as difficulty reading music, following instructions, and maintaining attention. Teacher 84 rightly summarises that 'Communication skills are not quite developed with the very young students, and therefore they have a difficult time relating the cause of their frustrations, which might be due to misheard information from glitches in sound over the internet or misinterpreted instructions/directions/assignments for practice.'

Some students seem better able to connect through technology than others, possibly due to their experience level or developmental readiness. Teacher 7 claimed it would be possible to teach only existing students (usually those they met face-to-face before moving online). By and large, teachers agreed that online lessons are not appropriate for young beginner students, and the earliest recommended age is around 8-9 years old, depending on the child's capabilities.

3. Disabilities

Students with disabilities such as ADHD, Irlen Syndrome, anxiety, and autism generally had difficulties with the online learning environment. They required more support, redirection, and creative strategies to stay focused and engaged. Younger students and those with attention deficits struggled in particular. Teachers reported that for many complex learners, having a supportive parent present during the online lessons made a big difference. All in all, the results show that the online format was quite challenging for the neurodiverse students who needed more support in creating their learning environment and understanding expectations.

4. Other students' capabilities and characteristics

As already mentioned, teachers reported that younger students would not be able to stay focused. Further distractions in their learning environments, connection problems, and limitations with technology would make this even more difficult. Some students resisted the online format, for example, with one student refusing to engage and another student lying on the floor, as reported by teachers. A few teachers mentioned that online lessons may be more suitable for students from around Grade 3 or ages 8-9, depending on the child's maturity and capabilities. Overall, the online setting seemed to amplify certain children's difficulties with focus and cooperation during lessons.

According to CRB, students' dropout is mainly caused by their age and their levels of frustration (3 segments each). It has been reported that many younger students, particularly those around 5 years old, struggled with online piano lessons during the COVID-19 pandemic, which led to dropping out of lessons. However, some of these students resumed in-person lessons as they got older.

6.2.5 New opportunities

Online lessons have provided piano teachers and students new opportunities during the COVID-19 pandemic and beyond (Fig. 6.10). After COVID-19, the possibility to teach online has allowed lessons to continue when in-person meetings were not possible due to illness, weather events,

or transportation issues. Online lessons have helped maintain student progress and prevent missed lessons, which is especially beneficial for young students. Some teachers have found online lessons work well for makeup lessons, analysing pieces before in-person practice, and teaching theory. Online teaching has enabled teachers to reach students from other locations and countries with limited access to music instruction. While most teachers prefer in-person lessons, many have found online lessons a helpful supplement or alternative when necessary.

Having an online platform and experience (after COVID-19) inspired some teachers to create new settings, such as online music group lessons or teaching music theory online, and some teachers used this opportunity to teach students with disabilities who would otherwise not travel to the teacher's home or studio. All in all, most teachers had to adjust their methodology and embrace online platforms, which some of them found valuable in enhancing accessibility and continuity of music education, although most prefer a hybrid or mostly in-person approach when possible.

Although this code encompasses numerous subcodes, it is not being discussed in detail, and no direct quotes are provided, as most coded segments comprise descriptive sentences that explain when teachers use online teaching (for example, when someone is ill) or when they choose to teach online full-time. This code highlights the importance of this research, demonstrating that an investigation into online piano teaching is particularly useful given the increase in online teaching by teachers since the COVID-19 pandemic.

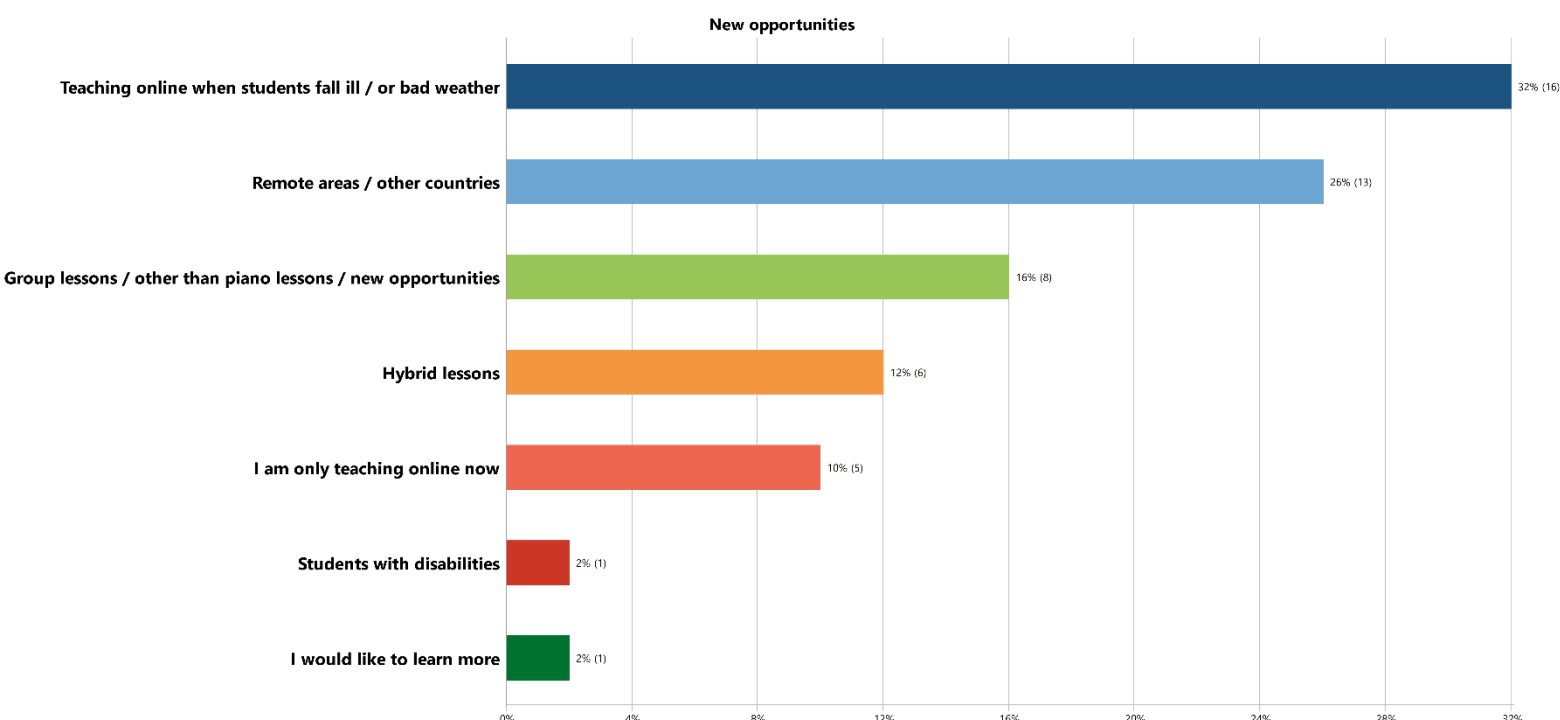


Figure 6.10 Teachers' content analysis: first-level codes within the theme 'New opportunities'.

6.2.6 Teaching adaptability

The transition to virtual teaching forced piano instructors to create new methods and teaching strategies (Fig. 6.11). Teachers needed to become more structured, organised, and clearer in their demonstrations so that the activities would be more interactive and keep students engaged. They had to establish rules such as 'mute oneself when one does not speak/play the piano' (Teacher 52) or reducing lesson time from 30 minutes to 20 minutes, as it was too difficult for students to concentrate (Teacher 59).

Teachers had to hone their aural skills and communication abilities to compensate for the limitations of online platforms. Some found that online teaching allowed them to reach more students and incorporate digital resources, and others who struggled with maintaining student focus created different ways how to engage them, such as 'breaking down activities into bite-size pieces and the score annotation' (Teacher 18) or creating 'more interactive online games to break up the lesson and work on theory, rhythm, sight reading' (Teacher 24)'. Teacher 43 shared that it is parents who need to be motivated in order for students to practise: 'I use student awards, challenges, WhatsApp Emojis, to motivate my piano parents because they are the ones that

create homes with space for music.’ Overall, the experience has pushed teachers to be more adaptable, creative, and technologically savvy, with many incorporating the new techniques they learned even after returning to in-person lessons.

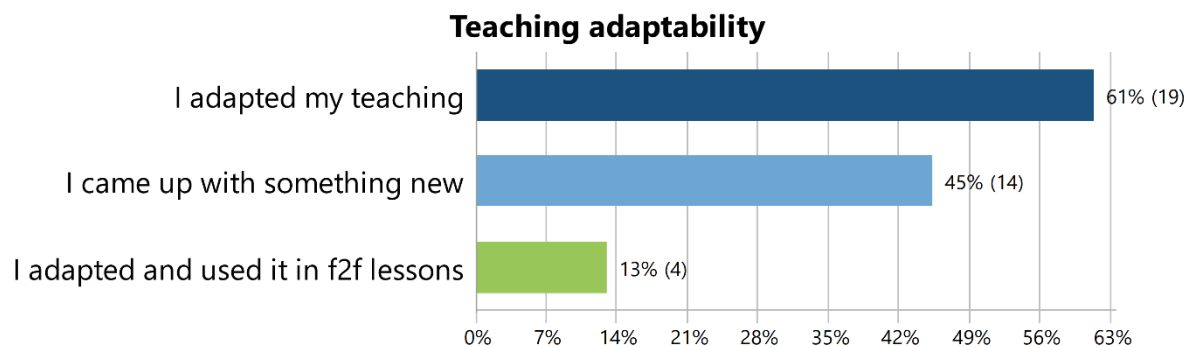


Figure 6.11 Teachers’ content analysis: first-level codes within the theme ‘Teaching adaptability’.

6.2.7 Neutral experiences

A minority of music teachers found online teaching to be a neutral or at least acceptable experience, though they generally prefer in-person lessons (Fig. 6.12). Some found the transition to online seamless (i.e. nothing has changed in their teaching or lesson routine). However, most agreed that online lessons were better than no lessons, and some saw them as a useful temporary measure or compromise when in-person was not possible during COVID-19. Overall, the consensus is that while online teaching can work, face-to-face lessons remain the preferred and more beneficial mode of instruction, especially for young students.

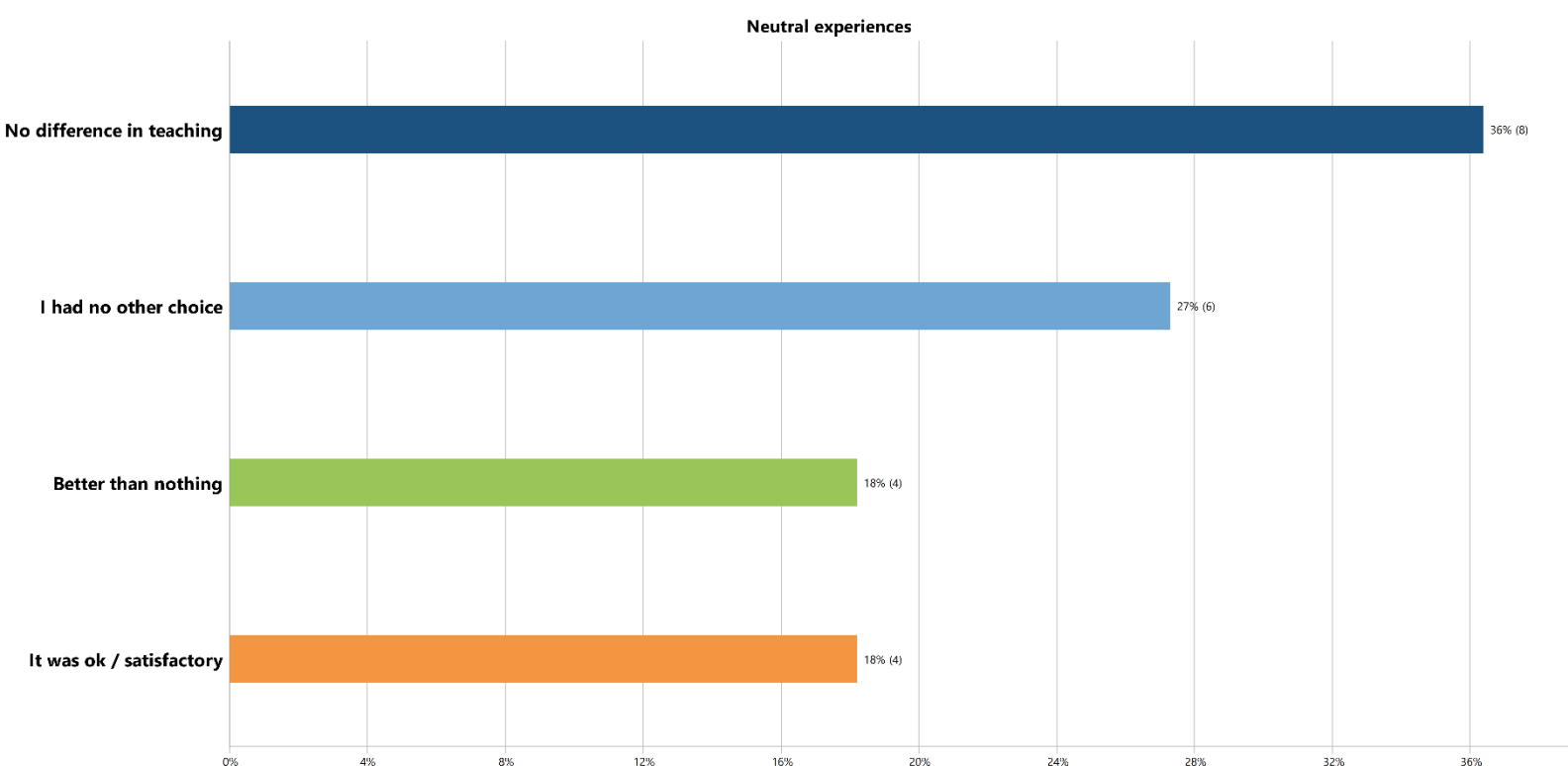


Figure 6.12 Teachers' content analysis: first-level codes within the theme 'Neutral experiences'.

The remaining codes discussed below do not have subcodes and are presented as single codes (see Figure 6.1 for an overview of parent (main) codes without subcodes).

6.2.8 Practical challenges of online piano lessons

1. Preference for face-to-face lessons

Although the teachers have not been asked to specify their preferred teaching mode, a significant number (33 teachers out of 44 coded segments, with some individuals being coded multiple times in the same response) have expressed their preference. Many music teachers prefer face-to-face lessons over online teaching, especially for younger and less advanced students. Teachers emphasise the importance of physical presence, being able to make real-time adjustments, and fostering a personal connection with students. While online lessons might be a stopgap, this group of teachers felt that face-to-face instruction was far more effective in developing technical skills, maintaining focus and motivation, and supporting the general learning progression of students. Some teachers were willing to use a hybrid approach,

combining in-person and online lessons, but generally view online teaching as less desirable than traditional, in-person music lessons.

2. Technological setup

This theme demonstrates the different technological configurations and workarounds that music teachers have implemented to enable successful online teaching. Many have used video conferencing tools like Zoom and special software like Forte or Meteor to make lessons interactive by adding screen sharing and multimedia resources. Teachers have had to digitise their setups, i.e. converting scores into digital files and sharing screens with students. They have also learnt new technologies, a significant learning curve that allowed them to create more engaging digital content like interactive games. While there have been some audio quality and technical issues, teachers have found workarounds such as recording themselves, asking students to record their practice, or having additional cameras and microphones to improve the quality. Overall, the teachers have embraced the technological transformation of their teaching practices to deliver high-quality online music instruction.

3. Lack of resources at home/home setup

Some teachers (those who teach from home or at schools) saw students' practice conditions for the first time. It has been noticed that many beginners practise on cheaper digital keyboards rather than acoustic pianos, which limits their experience. Teachers noted that when having OPL at home, they lose the opportunity to play a better piano either at the teacher's home or at school. Secondly, online lessons have allowed teachers to better assess students' home setups, identifying issues like poor instrument quality, unsuitable piano stools, and distracting home environments. This has enabled teachers to provide more personalised advice, such as adjusting their piano stools to improve their posture. Most teachers saw it as an advantage as they could suggest how to set up to improve students' practice conditions and learning outcomes.

4. Teacher's workload

Several teachers said that teaching online takes far more mental effort, preparation, and involvement on the part of the teacher compared to in-person lessons. Teachers report needing to be more focused, using time more efficiently, and providing more detailed materials in advance. The online format is described as more intense and tiring, with quicker burnout. It also makes teachers more tired because of too much exposure to screens. In general, the transition to online teaching during the pandemic has been complicated, with slow progress from the students and more work required from teachers.

6.2.9 Code Relations Browser according to survey questions (Teachers' survey)

As outlined in the previous sections (6.2.1 – 6.2.8), the Code Relations Browser (CRB) has been incorporated into the overall analysis, with the corresponding table attached in Appendix 9.1. The CRB was set up by displaying all the codes along horizontal and vertical axes. The table shows which two codes appear together in the same segment, and higher numbers indicate that the same two codes were used in several documents, i.e., in multiple respondents' responses. Only codes with counts above 3 were included in the analysis, as having just 1 count among 107 responses was considered insignificant.

In this section, the CRB is structured differently: the open-ended questions are shown in the top row and the codes in the columns (Appendix 9.3). This layout highlights which codes appeared most often in response to each question, so the section is organised according to the questions.

Q150 (As someone who has experienced teaching online during the COVID-19 pandemic, can you identify any notable differences in terms of your teaching or students' learning in any way? Please reflect on any changes or similarities you have observed.) The most prominent code shows that teachers are disappointed with lesson pace and slower student progress (18 counts) when they have online lessons compared to before or after the pandemic. This might refer to the change in the lesson format or the pandemic as a factor. The second most significant theme observed by teachers is issues with audio and video (14 counts) and issues with connectivity/broadband (13 counts), which refers to slow broadband as the whole household had to rely on the same router and 'increased independence' (14 counts) which demonstrates

that due to the change in the lesson format, some students became more independent as they could not rely on teachers physical modelling or teachers pointing at the scores for example.

On the positive side, some teachers claimed they adapted their teaching (12 counts) and found new technological setups (12 counts). However, 10 times, teachers pointed out that they could not play with their students to demonstrate appropriately, which was a significant disadvantage in their teaching approach. Also, this is the only question where teachers prominently pointed out an increased workload, meaning they had to learn to use technology and prepare for the lessons more than in face-to-face situations.

Q157 (On a scale from 0 (not at all) to 10 (very much), how satisfied are you with teaching young students (5- 9 years old) piano online? In your own words, could you please explain your answer.) The number one reason teachers were dissatisfied with OPL was the age of the students (24 counts). It is concluded that they expressed their dissatisfaction because all segments coded with 'Age as a factor' were negative, with some saying phrases like 'Youngest children didn't learn at all' (Teacher 1). This code is also discussed in section 6.2.4. There is no other code which has such a high frequency in the whole CRB, which means that students' age is a critical factor in teachers' satisfaction or dissatisfaction with the OPL and since the teachers were asked about 5-9 years students, it can be concluded, according to this content analysis, that OPL is not suitable for such young students. Of course, many teachers mentioned workarounds and teaching approaches for this age group of students. However, it is a powerful notion that students' age affects their and their teacher's experience in OPL.

In the second place is 'lack of focus' with 18 counts, which is usually referred to as the 'Age as a factor' code (discussed in section 6.2.4), which shows that younger children have difficulty focusing while having piano lessons online. This is usually backed up by positive (6 counts) or negative (11 counts) stories about parental involvement in the OPL. Finally, teachers strongly preferred (15 counts) having face-to-face lessons rather than online ones when teaching young students.

Q121 (What could be the reasons why they might struggle more than other students while having online lessons? What do you think helped to overcome their struggles?) Before teachers were

asked this question, they were given question 29 (Have you ever taught a 5-9-year-old student who particularly struggled during online piano lessons?). The single most important reason why some students struggled with OPL, according to the teachers, was their 'lack of focus' (20 counts) during the lesson. The second reason is 'being distracted' (15 counts), which meant they would be disturbed by pets or family members during the lesson. Again, same as in the previous analysis, the 'lack of focus' is usually followed by positive (17 counts) or negative (12 counts) stories about parental involvement in the OPL, which means that involving parents and having them sit next to a child can improve their focus during the lesson. As discussed before, 'lack of focus' is often coded together with 'age as a factor', meaning that younger students had trouble focusing during the OPL, discussed in sections 6.2.2 and 6.2.4.

Q170 (How well do you feel online learning suits your teaching approach? Please elaborate on how online learning complements and/or challenges your approach to teaching piano.). An equal number of segments (18 each) was coded in this question, with one group of teachers saying that the online setting suits their approach and another group preferring face-to-face lessons. An additional 13 segments were coded, with those firmly saying that the online setting does not suit their approach. 13 more segments were coded in relation to young students' age, showing why teachers think their approach might not be suitable for online lesson settings.

In all, the table (Appendix 9.3) illustrates the challenges across the board in many aspects of teaching and serious doubts about whether the online setting is suitable for students aged between 5-9 years, since numerous teachers reported that they usually do not focus, easily get distracted, and might not progress as expected as in face-to-face lessons, is emphasised.

6.3 Parents' survey

6.3.1 Parents' survey themes

Content analysis of the parents' survey was slightly different as the sample was significantly smaller (n=46, the number of respondents in content analysis is larger, because one respondent only answered open-ended questions and none of the quantitative questions) than the teacher sample (n=107). Parents' answers were usually organised in paragraphs rather than short

sentences and were very detailed, showing that those who did take time to complete the survey made an effort to express their feelings and experiences in open-ended questions. Responses were coded in two rounds, the same as while coding the teachers' survey; however, some codes are different compared to the teachers' open-ended questions analysis, as seen in Appendix 9.2 and Figures 6.13 – 6.18.

'Negatives' is the most frequently mentioned category in main (parent) codes (Fig. 6.13), accounting for 54% (97 occurrences), which is consistent with teachers' survey analysis. In the second place, code 'the teaching' (18% or 32 coded segments) refers mainly to how the piano teacher handled the shift to online teaching and their techniques and approaches. It is important to note that the coded segments in the code 'the teaching' are positive, and for the negative comments about the teaching, a separate 'negatives related to teaching' subcode has been created in the 'Negatives' parent code. Both codes have subcodes, which will be discussed in the following sections. Code 'Negatives' is further subdivided into the second-level codes – 'negatives related to teaching' and 'negatives related to students'; however, the subcodes are not as varied as in the teachers' survey analysis.

Positive adaptation is the next most mentioned category, making up 12% (21 occurrences). 'Better than nothing' is noted by 7% (13 occurrences), indicating a sense of adequacy or acceptance, though this also means that the respondents would not choose online lessons if they had not been forced to by circumstances. As in the teachers' survey analysis, there was a comparison between online and face-to-face teaching, even if the respondents were not explicitly asked to compare. The code 'No change' was used when participants would say that there is no change in teaching or learning, whether online or face-to-face, and it was mentioned by 4% (8 occurrences). 'Prefers face-to-face' code accounts for 4% (7 occurrences), showing a preference for traditional in-person teaching methods.

Finally, 'Parental Involvement' is the least mentioned category, with 1% (2 occurrences). However, compared with the teachers' survey analysis, teachers mentioned parental involvement (positively and negatively) more than parents did. Needless to say, none of the groups of participants was asked explicitly through open-ended questions about parental involvement in online lessons.

In summary, Figure 6.13 highlights the primary concerns of their child's online piano lesson experience and the negative aspects. The 'Negatives' are seen as the theme, which is three times bigger than the second largest theme – 'The teaching'. It can also be concluded that parents tend to think more positively about their piano teachers and appreciate their hard work, commitment, and ability to adjust in the moment; however, some parents still choose face-to-face lessons over online ones.

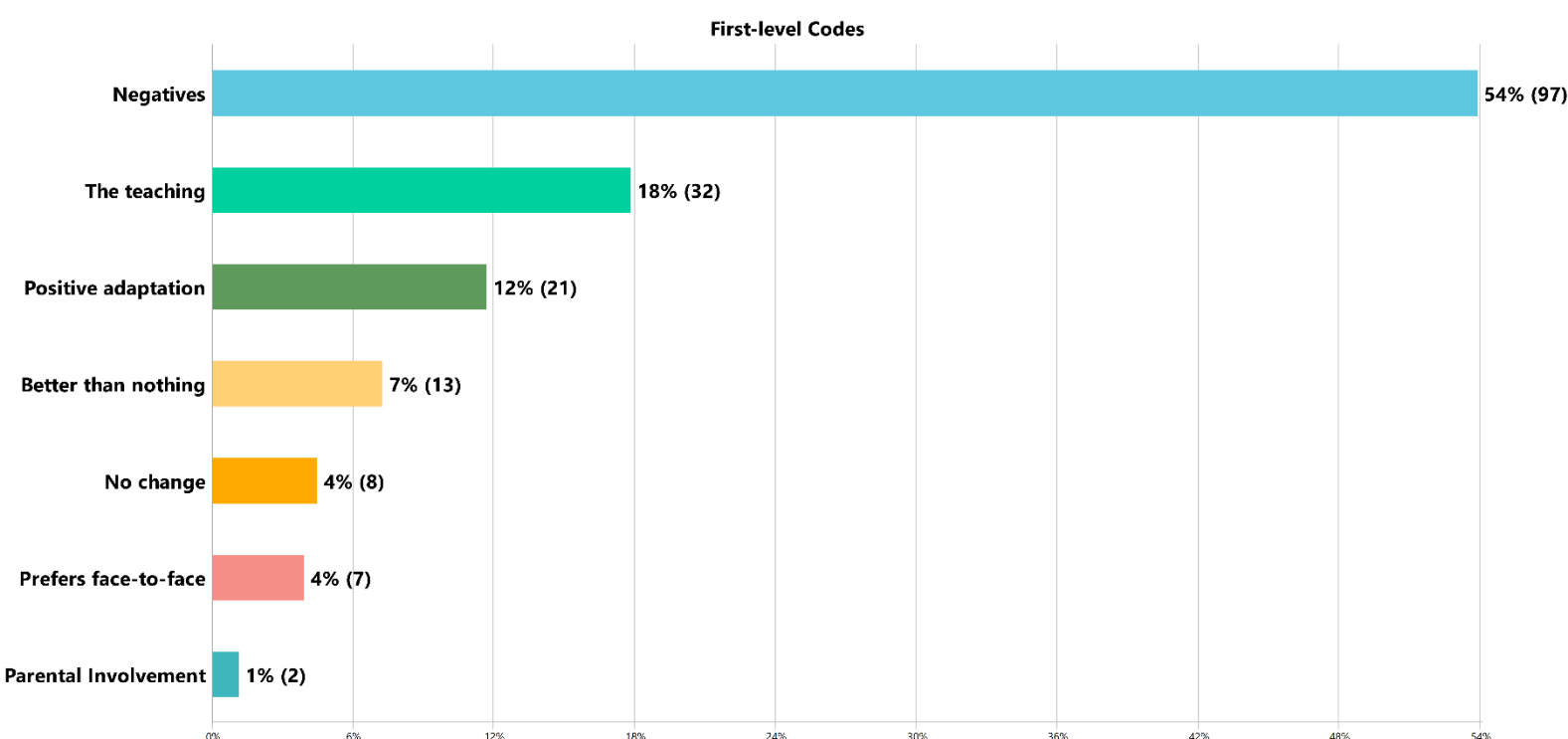


Figure 6.13 Parents' content analysis, parent (main) themes.

6.3.2 Negative experiences

It can be seen in Figure 6.14 that the most significant negative is related to the student, meaning the student's behaviour, development and/or motivation. The segments coded within this code relate to students' lack of focus, lower engagement, or not understanding what they were asked to do while having OPL. The second category is 'negatives related to teaching', which translates to teaching aspects that cannot be taught online. Therefore, it is seen as negative, such as the teacher's physical absence, inability to play together, or not noticing mistakes (according to parents).

As mentioned in section 6.3.1, two first-level codes had further second-level subcodes, which will be analysed in the following sections: 1. Negatives related to students, since it has 37 coded segments, it was necessary to subdivide the segments into more accurate subthemes; and 2—negatives related to teaching. The code ‘Student’s age/level’ will also be analysed in a separate section.

Regarding other codes, 11 parents (12 segments in total) claimed OPL were not as effective, and some parents even gave a percentage: one parent said that online lessons equal 50-60% of face-to-face lessons (meaning the progress and productivity), and another said it is 90% (the latter parent claimed that they currently have online lessons). Parents also mentioned technical challenges like connectivity issues and poor audio and visuals. However, Parent 31 admitted that both parties (teacher and student) needed to be better prepared, meaning they could have used better equipment for the OPL. However, this seems to be a less prominent theme than the teacher’s analysis. Finally, one parent acknowledged that the transition to an online lesson setting can be stressful for both - the teacher and the child.

In CRB analysis (Appendix 9.2), the code ‘online lessons are less effective / lower quality’ is usually associated with ‘better than nothing (14 counts), which shows that while the parents might not have been happy with their child having online lessons, they had no choice due to the circumstances – pandemic lockdowns. This code is also associated with ‘lower engagement/focus’ (11 counts), which means that parents see OPL as ineffective due to losing their child’s focus during the lesson.

In a nutshell, it can be noted from the chart that issues concerning students and the teaching process are the biggest negative aspects. Other major ones include concerns about the

effectiveness of online lessons, challenges associated with students' behaviours, technical issues, and emotional stress.

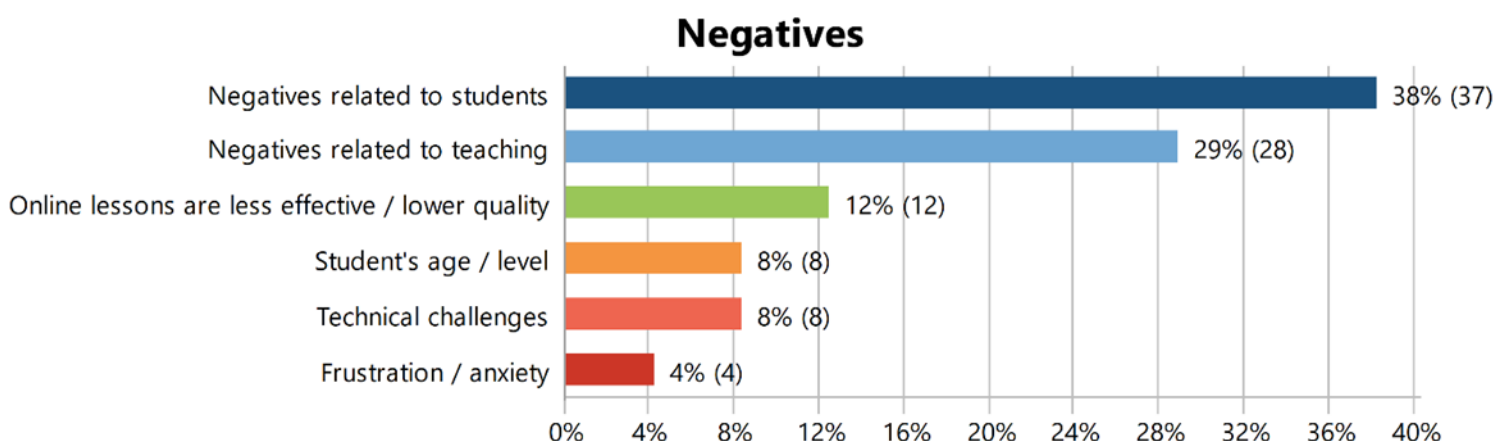


Figure 6.14 Parents' content analysis: first-level codes within the theme 'Negatives'.

1. Negatives related to students

As seen in the teachers' survey analysis, engagement and focus are among the main issues that might cause dissatisfaction with OPL (Fig. 6.15). In this survey, 11 parents stated that their child was not fully focused and less engaged, which plays a big part in the 'negatives' section. Parent 40 said, 'It is difficult to get a young child into 'lesson mode' when at home,' meaning that there is no division between study and leisure time while students are in the same space—home. Furthermore, 9 parents claimed that the child progressed less than in face-to-face lessons, and 5 parents mentioned that the child was less motivated than in face-to-face lessons.

Interestingly, a theme that did not occur in the teacher's analysis is 'students not understanding instructions or feedback,' which was noticed by parents. A few parents reported that children did not understand teachers' instructions, did not know where to place their hands, and could not find the keys. The majority of parents who claimed that their child could not understand the instructions stated that their child was at an introductory and beginner level, and it is possible that students did not know the keys or were not able to read the music independently at this level. Therefore, finding the keys on the piano or the notes on the score might be even more difficult when they have to do it by themselves.

There might be two solutions to this problem (looking back at the qualitative analysis of teachers' survey): having multiple cameras, one showing the posture and for communication, and another overhead camera showing the keys. The second solution (according to teachers) is to involve a parent. Parent 23 also adds that they only have this issue while having the lesson online and not face-to-face: 'The main challenge is to try to understand what the teacher wants her to do or mimicking the techniques in each section. For a difficult passage, he would show her how to do it and ask her to repeat after him, but we still find it challenging, as sometimes she didn't grasp what he meant. We don't usually have this issue with face-to-face lessons.'

In CRB (Appendix 9.2), lower student engagement and focus are associated with 'less progress' (11 counts) and 'online lessons are less effective / lower quality' (11 counts), which summarises that some students have difficulty focusing while having online lessons, therefore they do not learn as much as they would in face-to-face lessons.

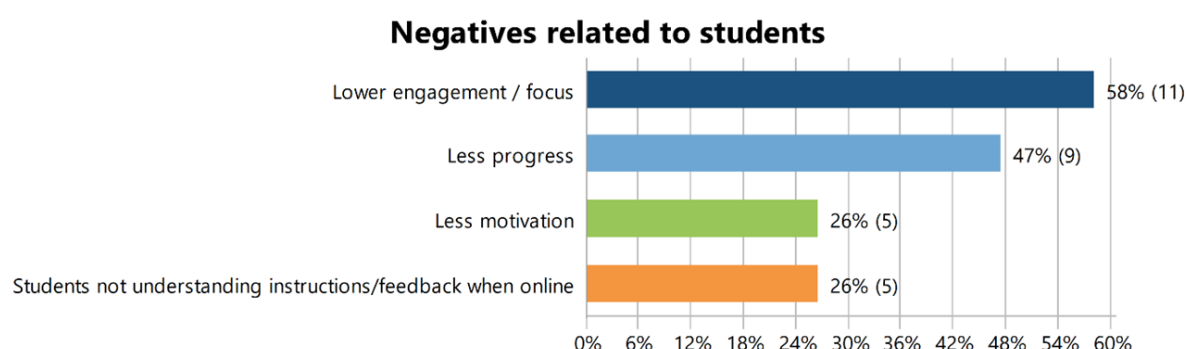


Figure 6.15 Parents' content analysis: second-level codes within the theme 'Negatives related to students'.

2. Negatives related to teaching

Quite a few parents mentioned the physical aspect of a teacher sitting next to their child in the lesson (Fig. 6.16); as Parent 13 said, 'Learning music is a very practical skill; it is made engaging and interesting when there is a physical presence to guide you. Online lessons are somewhat impersonal and make it less interesting.' However, Parent 20, whose child still has piano lessons online, was also concerned regarding the physical presence of a teacher: 'The teacher needs to be able to see the kid's entire body movement, not just fingers!! Students must also be able to

see the teacher's full body in order to learn how to be one with the instrument in order to communicate a piece of music to the audience.'

Parents were concerned that teachers do not spot students' mistakes as quickly and efficiently as they would in a face-to-face situation. One parent mentioned that after having online lessons for a while, they discovered student posture problems. There might be several possibilities according to teachers' open-ended question analysis: 1. Teachers tend to wait until the student finishes the passage or the piece and correct it afterwards due to latency issues and not to disturb the lesson flow. It has been reported in teachers' surveys that they would take turns, whereas, in face-to-face lessons, the teacher would jump to correct right away. 2. It might have to do with both parties' camera angles and devices. For example, if the student only uses a phone, it might not capture the fingers or how the student sits. This could be resolved by the teacher having a conversation with a parent and explaining the best setup for OPL.

Some parents expressed that the emotional connection between the student and the teacher was not there, and Parent 21 added, 'It's not great if you didn't already have a good relationship with the teacher' - hence the question in the survey - 'if they've had face-to-face lessons before moving online.' However, some parents whose children have never met their teacher live do not see it as an issue.

Parent 15, who moved straight back to face-to-face lessons, complained that their teacher was not able to 'read a child's body language remotely and better guess what concept a child is struggling with' and Parent 34 claimed that it is not only the technical aspect that teachers need to teach, but the musical and an emotional one, which is more difficult to do in an online situation: 'Also, the teacher teaches not only the mechanical pressing of keys but also values - love for music, expression of feelings, therefore the live facial expressions of teachers and body language are very important. Many things cannot be expressed in words; they can only be felt. And music lessons are one of those things.' Additionally, two parents mentioned that students lost the opportunity to play together with the teacher, just as many more teachers see it as an issue.

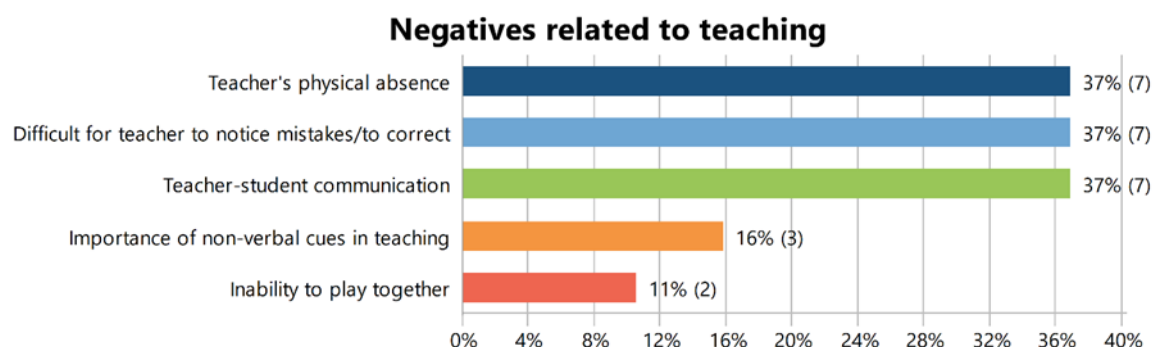


Figure 6.16 Parents' content analysis: second-level codes within the theme 'Negatives related to teaching'.

3. Students' age and level

Some parents have done their observations and concluded that online lessons are not suitable for young beginner students, such as Parent 7, whose child was 7 years old while taking OPL and at a beginner level:

'I think online lessons for young children who have never had any face to face lessons from the very beginning is not recommended. Children need the first stage of face-to-face to learn the hand techniques, to feel the instrument, and to build a relationship with the teacher. We were lucky that this was the case for us. I would not start my 6-year-old straightaway from online lessons. But after the child has commanded the basic techniques, the posture, then if needed, can change to online lessons, perhaps from ABRSM grade 3 or 4. We switched to face-to-face lessons as soon as they were allowed. Someone sitting next to the child, overseeing their whole performance, not just the hand-playing bit, it's really important.'

Another Parent (15), whose child was also a 7-year-old beginner, claimed,

'My child was around 7 at the time, and I believe that particularly for young children, it is difficult for them to form questions to help their understanding to compensate for the teacher not being able to so easily read a child's body language remotely and better guess

what concept a child is struggling with. Online piano lessons for young children are, in my opinion, not such an idea, particularly for timid children. However, I also had an older child also doing the online lessons, and being older and better able to comprehend and vocalise feelings and questions, he enjoyed them more and got more out of them.'

Considering this project focuses on young beginner students, the input from parents is invaluable. However, it becomes imperative to consider this issue from different perspectives. This explains why parents were invited to give their perspectives through the survey and interviews. The combined input from the teachers, parents, and students themselves will be crucial in understanding this issue.

6.3.3 The teaching

As seen in Figure 6.13, this theme is the second most important theme, and it shines a positive light on the efforts of their piano teacher. This code has three subcodes showing a positive input from the teachers (Fig. 6.17). While the majority of parents who had online lessons during the pandemic but moved back to face-to-face lessons as soon as it was allowed (Section 5.4), parents complimented their teacher's effort to adapt to the online situation, to motivate and engage their children, one parent (17) whose child is still having online lessons to this day feels optimistic about it: 'Online lessons are about 90% value of F2F however this teacher is so brilliant this is better than any other teacher I've seen. Allows flexibility in timing and saves travel time (several hours away).'

Parents mapped out a few aspects of how teachers adjusted to online teaching, with Parent 2 saying that the teacher adapted through 'trial and error', and other parents mentioning that teachers were using multiple cameras, having shorter lessons, writing homework and about the child's progress on Google doc and sharing it with a parent, printing out and sending paper certificates to keep their motivation (since there were no exams for a few months since the Covid-19 breakout), finding motivating pieces for students to play - usually pop songs (again, might be because there were no exams and it was unknown what syllabus will be following), advising parents on what kind of setup to have as well for them to have the most out of the lesson.

While there have been many complaints about teachers not assessing their students properly, Parent 4 was impressed by the teacher's ability to provide feedback (this might have something to do with the relative pitch of a teacher, which makes it easier to identify mistakes just by hearing the sound if there are any technical difficulties with video): 'I was impressed with her ability to use technology to see & listen to what my child was doing and give feedback.'

In CRB analysis (Appendix 9.2), the code 'teaching – the positives' is mainly associated with the other positive codes, such as independence (9 counts) and engagement/focus (8 counts), meaning that the teaching influences these positive aspects in learning, it is also associated with a few negatives such as student's age/level (9 counts) and 'online lessons are not as effective/lower quality' (7 counts) which shows that parents were happy with teachers efforts and approach but at the same time they do not believe that online lessons are suitable or effective for young children. Interestingly, the teachers made the same conclusion (Section 6.2.4).

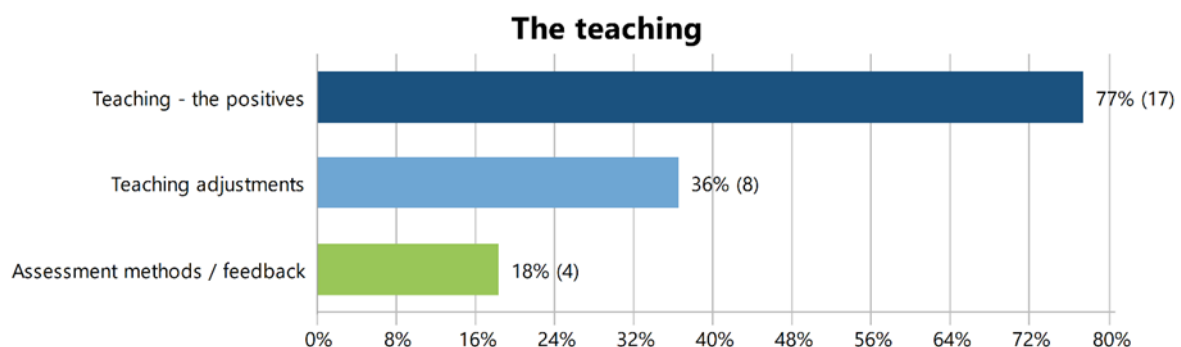


Figure 6.17 Parents' content analysis: first-level codes within the theme 'The teaching'.

6.3.4 The positives

Despite the many negatives discussed in earlier sections, parents reported their children making good progress, succeeding in local competitions, and remaining motivated to practice through the challenges of online lessons (Fig. 6.18). However, some posture issues were noted, and the importance of a strong foundation built through in-person lessons before the pandemic was emphasised for sustaining progress during remote instruction.

Some parents mentioned that they were satisfied with their children's progress during OPL, such as passing exams or participating in festivals. Five respondents reported a positive change in their child's learning—they became more independent due to having the lessons online, which has also been reported in the teachers' survey analysis (Section 6.2.3).

A few parents mentioned that their children were engaged because there was little to do during the lockdown. It has been noticed that finding a piano teacher in some remote areas is challenging. Thus, online lessons make it possible for some children to learn piano, just as Parent 25, whose child had online lessons after the COVID-19 pandemic, says: '[It] allows flexibility in timing and saves travel time (the teacher lives several hours away)'. Another Parent (13) saw a different positive in the online lesson setting due to her child's personality: 'My daughter is shy and very soft-spoken. Her interaction with the teacher and recitals have made her more confident; she has overcome much of her shyness and can be on her own within a group'. For context, the parent mentioned musicianship group lessons organised during the COVID-19 pandemic and the online concert organised by the same teacher.

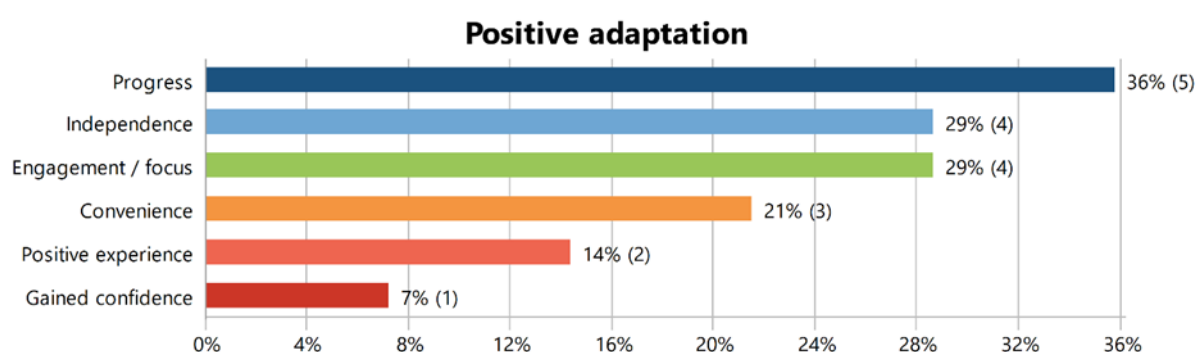


Figure 6.18 Parents' content analysis: first-level codes within the theme 'Positive adaptation'.

6.3.5 Parents' preferences

Although the codes 'Better than nothing', 'No change', and 'Prefer face-to-face lessons' appeared less frequently, they remain important to acknowledge (Fig. 6.13). The code 'better than nothing' shows that parents were grateful that the lessons were still going during the lockdown, but they would not commit to online lessons long-term if they were not forced to by the circumstances. Parent 21 also mentions, 'Not great if you didn't already have a good relationship with the teacher',

which shows the importance of having met the teacher in person before starting OPL. The code 'no change' could be seen as positive because the coded segments demonstrated that there was no change in the teaching or in the students' learning when shifting to an online setting, which ultimately means that the learning continued in the same way regardless of the medium. Finally, unavoidable comparisons have been made between online and face-to-face lessons, with some parents stating that they prefer the latter, which is also confirmed by the statistical analysis, which shows that the majority of the students moved back to face-to-face lessons once the COVID-19 restrictions were lifted (Section 5.4).

6.3.6 Parents' Reflections

As mentioned in Section 6.3.1, the answers from the parents were well thought out and provided many different reflections in terms of online teaching and learning. This is a powerful quote by Parent 43, which shows that it might not be about the format of a lesson but about the teacher: 'If there is no other option, I would prefer to have a good teacher doing online lessons rather than having face-to-face with a mediocre teacher.' It is important to note that Parent's 43 children had online lessons before the COVID-19 pandemic and are still having hybrid lessons to this day.

Another controversial thought from Parent 25, whose child started online piano lessons after COVID-19, signifies that those who either had online lessons before the pandemic or started learning piano after the pandemic have a more positive attitude towards OPL:

'I don't think the lessons have to be in persons for the students to learn however I have only experience of the introductory levels so I don't know if the same would be true for more advanced students. I do believe there is an additional benefit of face-to-face lessons that online lessons can't provide, but equally, online form provides opportunities to learn piano with various teachers (on an international scale) that wouldn't be otherwise possible. Distance is not an issue.'

On the other hand, a Parent (15) who represents the majority of participants—who did not have online lessons before the pandemic, shifted to online during the pandemic, and moved back to face-to-face lessons (the teacher visits them at their home)—claims: 'Online piano lessons for

young children are in my opinion not such a great idea, particularly timid children'. This shows the diversity of the situations and that OPL might not be suitable for every learner.

In summary, parents of young students who had OPL during the pandemic tended to associate it more with negative experiences than those whose children had lessons before or after. At the same time, as Parent 43 noted, much depends on the teacher—their characteristics, teaching approach, or qualifications—rather than on the format itself.

6.3.7 Code Relations Browser according to survey questions (parents' survey)

This section discusses the second type of CRB, which is based on open-ended questions, just as in section 6.2.9. As revealed in the CRB (Appendix 9.4), the open-ended questions reveal two predominant themes: exploring the positive aspects of teaching and the negatives of OPL. Surprisingly, the tendencies are similar across all three open-ended questions; for example, the code 'teaching adjustments' has been coded 17 times within each open-ended question, which is not the case in the teachers' survey analysis. Therefore, it is sensible to analyse CRB by looking at the bigger picture and not analysing it by each question separately (Appendix 9.2). Moreover, the analysis is also more fruitful by looking at the Code Relations Browser according to each code, which shows which segments have been coded more than once, which helps to make links between the codes.

It can be summarised that parents appreciated the teachers who adapted their teaching to online lesson settings and were grateful that the lessons did not stop because of the pandemic. Parents also noticed the negatives, such as students' lack of focus or engagement, which affected a child's lesson pace and progress. The negatives that have to do with a child seem to outweigh the negatives of the teaching format, for example, the teacher's physical absence or inability to play with a child. Nevertheless, apart from a couple of cases, the parents would still prefer face-to-face lessons over online lessons.

6.4 Summary of teachers' and parents' qualitative survey results

It is challenging to compare both analyses as the number of codes and subcodes used is slightly different, with some codes being exactly the same in both groups and some not being applicable to one of the groups. For example, teachers comment a lot about teaching techniques and specificities of piano teaching, while parents are unable to do so. Nevertheless, some comparisons and conclusions can still be made, and the main themes can be drawn and compared between the two groups.

The negatives were the most prominent themes between the groups. The most significant negatives, according to teachers, are:

1. technological issues (connectivity, latency, teacher's or student's lack of equipment),
2. student's behaviour during the lesson (such as lack of focus and attention, being distracted or not motivated),
3. inability to teach certain piano playing aspects (e.g., hand position, posture, technique, rhythm and pulse, notation, to name a few),
4. the inability to play duets or use tactile methods in online lessons,
5. slower pace or progress,
6. student-teacher relationship, such as lack of personal connection or inability to build rapport.

The negatives that parents deemed to be most important were related to:

1. students behaviour (such as lack of focus, lower engagement, lower motivational levels or students not understanding instructions and feedback),
2. teaching (such as teacher's physical absence, inability to play duets, teachers not noticing mistakes or difficulty to communicate),
3. online lessons are less effective or lower quality.

While the issues with students' behaviour and inability to use certain teaching approaches, are consistent in both analyses, there are certain discrepancies between the groups:

- teachers elaborated on inability or difficulty teaching certain piano playing aspects,
- parents did not emphasise the technological issues as much as teachers did,
- it was more difficult for teachers to notice and correct mistakes during online lessons according to parents,
- students did not understand the teacher's feedback or instructions while having OPL, which has not been noticed by the teachers as much.

According to teachers' qualitative analysis, it can be concluded that teachers overlook the mistakes due to:

- a) distorted audio and video, which they complained about intensively: 'communication skills are not quite developed with the very young students [...] which can cause frustrations, which might be due to misheard information from glitches in sound over the internet...' (Teacher 84);
- b) the latency, so in order not to interrupt the lesson flow, teachers would hold on to any small feedback and say it once the student stopped playing, as mentioned by Teacher 11 'Online, the need to stay entirely quiet while each party talks or plays is unnatural and stifling for teacher and student' (in face-to-face lessons, teachers can correct mistakes immediately, which is probably the difference parents noticed);
- c) due to the lack of equipment or insufficient camera angles that either the student or the teacher has. Many teachers complained that students do not have a good technological setup for online lessons, and one parent (31) admitted that both parties (teacher and student) needed to be better prepared;
- d) Most parents who claimed that their child could not understand the instructions stated that their child was at an introductory and beginner level, and it is possible that students did not know the keys or could not read the music independently at this level.

According to teachers' qualitative analysis, there might be two solutions to this problem:

- 1) for both parties, having multiple cameras, one showing the posture and for communication, and another overhead camera showing the keys,
- 2) to involve a parent.

Both groups agreed that students make less progress or the lesson pace is slower while having the lessons online, with teachers elaborating that explanations and demonstrations take longer time. There are frequent interruptions or technological issues, such as calls dropped due to connectivity issues. In contrast, parents did not elaborate on this theme much and just stated that their child made less progress. In addition to this code, parents claimed that online lessons were less effective or of lower quality, which was paired with the 'lack of focus' code in CRB (Appendix 9.2), meaning that because students get more easily distracted, they do not gain from the online lesson as much as they probably would in face-to-face lessons.

The trend regarding negative experiences is very similar in both groups. While teachers ranked technological issues as the number one negative in OPL, both groups agreed that student behaviour, lack of focus and engagement are the second most significant negative that might affect satisfaction with OPL. This is followed by negatives related to teaching, such as teachers' physical absence, inability to play together or difficulty communicating and building a relationship between a student and a teacher. Teachers explained that the technical aspects of piano teaching are challenging, which comes as the third most significant negative for them. Both groups mentioned the feeling of a slower pace of the lessons and students not making as much progress as they would face-to-face, which ultimately comes down to the two most significant negatives according to both groups – lack of focus and teachers' inability to do certain teaching aspects online.

Parental involvement emerged as an important factor. Lack of parental involvement was associated with teachers' negative experiences, and parental support during the lesson was seen as the biggest positive, particularly when teachers discussed teaching young beginner students who initially struggled with online learning. Having the parent cooperate with the teacher, such as helping with the technology or assisting with the lesson flow, makes a huge difference for the teachers. However, only two parents mentioned helping their child out during the lessons, and this theme overall did not look significant in any of the parents' analyses (e.g., Section 5.2.2).

Technological advancement was among the positives that teachers found, such as having a comfortable technological setup, or knowing apps or software that help with the lessons, positively influence teachers' satisfaction with online lessons. Teachers have been reported to be

creative in sharing screens, doing music theory by writing notes on the whiteboard, playing interactive games, or simply recording demos, backing tracks, or the whole lesson and sharing them with their students. The positives that parents noticed had to do with teachers' adaptability, such as making shorter lessons, having multiple cameras, and sharing homework online with a parent and teacher, influencing other aspects of learning such as independence and engagement. Another major positive that teachers and parents noticed was students' increased independence. It is possible that due to a lack of physical support and encouragement from the teacher, as reported by the parents, some students became more independent and continued progressing while having OPL.

When discussing students' age, teachers found many issues related to negative student and teacher experiences while having OPL, such as difficulty focusing, maintaining attention, developmental capabilities, and understanding instructions through a screen. The lack of physical presence and hands-on guidance from the teacher was a significant challenge, making it harder to correct posture, hand placement, and other technical aspects of piano playing. This theme is significant because it demonstrates that many teachers and parents claim that online lessons are unsuitable for young beginner students for the reasons outlined. Overall, the consensus was that online lessons were better suited for older, more experienced students who could self-regulate and engage more independently.

Since many teachers and parents experienced OPL during the pandemic when there was much uncertainty, and some people experienced illness or loss, it is possible that some of the participants' answers reflected that specific period of time. Those who experienced OPL during the pandemic might associate online lessons with stress, working from home, looking after their kids, helping them with online setup, etc., and maybe the kids themselves were not so accustomed to online learning 4-5 years ago. For example, Teacher 11 supports this idea from their observation: 'In some cases, parents worked from home and couldn't support the child. In one case, a student's 3-year-old sibling was screaming in the background, with both parents in work meetings, leaving the 8-year-old student to fend for himself. He was distracted and found it hard to concentrate,' which shows that parents might have been too stressed out during the lockdowns and they had too much on their plate. Therefore, it can be concluded that some negative experiences with online lessons have something to do with the pandemic and not necessarily with the online lesson setting.

Finally, among other themes which were somewhat consistent between both groups was the notion that online lessons are better than nothing, which shows that both teachers and parents would not go for online lessons if they had a choice or a notion such as neutral experiences or 'no change' which can show a positive light since there were no drastic changes between online and face-to-face lessons. A convenience factor has been mentioned by both groups, meaning that it is easier to schedule the lessons, students do not miss out on lessons due to illness if they can schedule a lesson online instead of face-to-face, none of the parties lose time commuting to the lessons and it is easier to find a teacher for some families who live in remote areas. While there was a significant number of teachers (n=22 or 21%) saying that online lesson setting suits their teaching approach, and even more of them (n=33 or 32%) mentioned that they adapted their teaching and found new ways of teaching online, there is still a significant notion stating that they prefer piano lessons face-to-face (33 or 32% of the teachers and 6 or 13% of the parents).

To sum up, teachers and parents have found more negatives than positives in online piano teaching. The most prominent negatives, according to teachers, are technological issues, students' lack of focus, and the inability to teach specific aspects of piano playing. Students' lack of focus is mainly associated with young students and their developmental capabilities. Due to these issues, many teachers and parents do not recommend OPL for young beginner students. Furthermore, teachers praised parents who were actively involved with OPL. Regarding the positives, both groups were pleased with increased students' independence.

Chapter 7 Results: Teaching Strategies and Experiences in Online Piano Lessons – Interviews with Teachers, Parents, and Students

7.1 Introduction

This chapter draws on semi-structured interviews to capture the teachers', parents', and students' experiences with online piano lessons either before, during or after the pandemic as well as to confirm or explore further the factors identified in previous analyses that affect the participants' satisfaction with OPL. In line with the explanatory mixed-methods design, the purpose of the interviews was to help make sense of the survey findings and to explore participants' experiences in more depth. Although each data collection method was designed to address all four research questions, discussions about teaching approaches and suggestions arose more naturally during the interviews with teachers. As a result, this chapter places more emphasis on that particular area. Since all interviewees were selected from the survey pool, their responses not only confirmed previous findings but also offered further explanations and new insights. Students' input provided a fresh viewpoint, one that had not emerged in the earlier parts of the study.

The thematic analysis is also supported by several visual tools generated in MAXQDA. These include the Code Matrix Browser (CMB), which shows how each participant's answers were coded (Appendix 10; see Section 4.8.2), the Code Relations Browser (CRB), which illustrates how codes are interrelated (Appendix 11; Section 4.8.2), and Document Maps, which visualise similarities and differences among participants (Sections 4.7.1–4.7.3). The latter are not referenced in the main text but could be consulted for participant-level comparisons if needed.

7.2 Teachers' interview analysis

Instead of presenting all themes in one single table, the overarching themes, along with their related sub-themes and sub-sub-themes, will be presented within each relevant results section. This makes it easier to follow the analysis as each theme appears alongside the data it relates to. It also allows for a more coherent flow between the analysis and the participants' responses,

keeping the structure of the findings closer to how they actually emerged during the coding process.

7.2.1 The negatives

As in the open-ended question analysis, this theme has been coded the most (Table 7.1). The last three themes were added to this table, as they also represent negative experiences. The teachers pointed out that the most significant negatives are related to technological issues and students needing to be more focused and easily distracted. According to CMB (Appendix 10.1), issues with connectivity and broadband have been mentioned by every participant and are the biggest obstacles to having a positive experience teaching piano online. They have also mentioned issues with audio and video and latency, which affect their teaching approach, such as an inability to play together. Some teachers solved this problem by purchasing an Ethernet cable, and for Teacher 3, this problem was resolved after moving to a different area where the internet was faster. Most teachers who are still teaching online agree that if the connectivity issues are resolved in the future, this would solve most of the problems, and they would enjoy teaching online even more.

The teachers found that students' lack of focus and being distracted was also very significant, which is consistent with the open-ended question analysis (Section 6.2.2). This analysis also confirms that younger students (5-8, according to Teacher 6) and especially boys (according to Teacher 7) are more likely to lose focus. As in the open-ended questions' analysis, teachers who participated in these interviews agreed that involving the parents is the most significant solution. Additionally, teachers reported that young students 'wiggle' or 'fidget' more than older students, which is inherent for this age group (Teacher 1). In contrast, in face-to-face lessons, the teacher would do a physical game, just as Teacher 1 reports:

'Real life lesson they might actually just stand up and do a little game or a clapping thing or something very physical on a piano that takes up the whole span of the piano, for example, or we might swap places: 'You sit there you are the teacher for a minute, I am a student. You tell me what to do.' And it's very dynamic. It's physically dynamic. So with

younger children face-to-face lessons, I have those tools, but in an online setting, we can't do that, so they get very restless.'

The teachers also reported that certain teaching aspects, such as the inability to play together, significantly impacted the activities that teachers can and cannot conduct online. Teacher 4 found a workaround to this issue by demonstrating and copying, which works well, or by asking the student to mute the microphone and trying to play the duet simultaneously without the teacher hearing what the student plays (sometimes parents can report if the duet worked or not or they can record it on their end). Teacher 5 also reported using the 'copy-cat' method, dividing the material into small chunks and counting the beats while demonstrating or mimicking students' mistakes and demonstrating the correct way of playing.

Among other negatives that can impact the way of teaching, it has been noticed that teachers who are more used to tactile approaches and do all sorts of games involving physical demonstrations reported dissatisfaction with online piano lessons as they cannot do any of that. They believe that younger students need more physical, hands-on interaction and that they are unable to correct their hand position or technique. Teacher 1 also mentioned a lack of spontaneity in the lesson, an inability to build trust and rapport with students online, and reduced verbal and non-verbal communication due to the latency. Nonetheless, while some teachers complained that they could not demonstrate adequately, others reported having multiple cameras which sufficiently captured all aspects of piano playing. Having one camera and just moving it around for the demonstration is sufficient for some teachers. In contrast, others went the extra mile and created short tutorials on specific aspects of playing technique.

An important code in CMB (Appendix 10.1), according to the number of participants who mentioned this theme, referred to slower progress by the pupils while having OPL. Teacher 6 reports that it takes longer for the young beginner students to understand the concept of playing and navigating through the scores and keys and that the teacher's explanations need to be more detailed. She reports that if something takes 10 lessons to learn face-to-face, the same concept might take 12 lessons while learning online. She also adds that it would be best if beginners start their learning journey face-to-face, and once they grasp the basic concepts, they could move to an online lesson setting. Other challenges that teachers mentioned had to do with students'

organisational and communication skills, such as being unable to take notes or misunderstanding instructions, which will be explored in the next section.

Some teachers have become more accustomed to online teaching than others. Teacher 5 reported having learnt to look directly at the camera and not at the whole screen while talking to students, as this way, it looks more realistic to make eye contact with the student. Additionally, an issue raised in the analysis of the open-ended questions regarding teaching pedalling, Teachers 4, 5 and 9 reported either directing the camera angle to their feet or asking parents to direct the camera to the student's feet to see how they are using the sustaining pedal. Teacher 4 also added that she had made tutorial videos on how to use sustaining pedals, which students found very helpful.

Most teachers found workarounds in the teaching aspects, which seemed challenging at first, such as the inability to play together. The negatives related to students' lack of focus and concentration required the same solution as suggested in the first phase of this research – parental involvement or, if possible, hybrid or face-to-face lessons. However, the only issue that is not in teachers' or students' hands is the connectivity or broadband, and if it is resolved in the future and if we have a faster, seamless connection, both teachers and students would feel more satisfied with their OPL.

Table 7.1 Interviews with Teachers, Negative Themes.

Overarching Themes	Sub-themes	Sub-sub-themes
Negative experiences	Technological issues	Connectivity / broadband
		Issues with video and audio
		Latency
		Technological limitations
	Student's behaviour during the lesson	Students' being distracted
		Lack of focus
		Attention and engagement
		Less practice
		Students moving/fidgeting
		Lack of motivation
	Teaching approach	Inability to play together
		Multisensory
		Difficult to demonstrate

		Tactile approach/physical demonstration
		Lack of movement activities
		Inability to point to the score
	Piano teaching technical aspects	Hand position/posture
		Pedalling
		Rhythm/pulse
		Difficult to annotate
		Difficulty in teaching technique
		Teaching notation
		Fingering
		Dynamics/phrasing
		Corrections/feedback
		Tracking the music while playing
	Teaching approach does not work online	
	Slower pace/progress	
	Teacher's physical absence	
	Student-teacher relationship	Difficult to build rapport
		Difficulty to communicate
		Lack of personal connection
		Having less authority
	Frustration and dissatisfaction	
	Spontaneity	
	Not satisfied with results	
	(Lack of) resources at home/home set-up	
	Prefer face-to-face lessons	
	Teacher's workload	

7.2.2 Student's abilities and characteristics

Cohesively with open-ended questions analysis, teachers reported that students' age and maturity have much to do with their and their students' satisfaction with online lessons (Table 7.2). The student's age has been reported as the most significant drawback and is related to numerous factors. According to CRB (Appendix 11.1), teachers reported negatively about young students relating to the inability to focus, students moving or fidgeting, teachers' preference to teach such students face-to-face rather than online or simply stating their preferred teaching

approach does not suit the online lesson setting when it comes to young students. Similarly to open-ended questions analysis, the young students are associated with parental support, which demonstrates that in order for the students to get the best out of the lesson and to be more focused, parents need to be present and able to support the child (this theme will be analysed separately in this chapter, section 7.3.5). Finally, a significant number of respondents reported having adapted their teaching to support their students, or they came up with new approaches, for example, by giving a reward once the task is completed or communicating with a parent through messages and emails more often.

Interestingly, Teacher 3 stated having a minimum age requirement to start online piano lessons, which is 10, and she would admit younger students only in exceptional circumstances, such as if they are already playing another instrument up to a certain level and want to add piano as a second instrument. Teachers 6 and 7 do not recommend OPL to children as young as 5 or 6 years old due to their inability to focus or difficulty understanding the basic concepts of playing the piano and the stress levels associated with teaching this particular group. Additionally, Teacher 7 does not suggest teaching young beginner students online for novice teachers in particular, due to her personal experience: ‘because we don't want to be stressed out by teaching online if we don't have more mature experiences before teaching online.’

It has also been concluded that home distractions could be an integral obstacle for younger students, while the older students are better at blocking these kinds of distractions out. The teachers, in general, decided that online lessons are more feasible for older beginners and intermediate students. They also added that young beginners, around 5-7 years old, are better served by in-person instruction if parents or guardians do not provide appropriate parental support during online lessons.

As mentioned before, teachers listed the qualities and characteristics of a student who would benefit from OPL the most:

1. The ability to focus during online lessons. It is very important to keep students focused and concentrated during online lessons, especially for younger students in the age group 5-9 years old. Instructors may have to call in parents to help keep the students focused,

but this approach does not always work and varies from parent to parent. Teachers 6 and 7 reported working with very young students and claimed it is more challenging and mentally exhausting to keep young students engaged when teaching online, which adds to their workload. Consistently, the same teachers who experienced exhaustion keeping the young students focused also preferred face-to-face lessons for the same reasons.

2. Teachers talked about independence in several ways;
 - a) knowing the basics of playing the piano, i.e. knowing the notes on the music sheet and navigating the keys on the piano: 'just to point the finger, to know their left and right hand, to find the letter on the piano. That's a really high-order skill. And I don't think people necessarily give that credit. It's just so hard. And even if I showed them a picture of my own hand just to translate that to their own hand. That's... that's not a given.' (Teacher 1);
 - b) knowing 'musical geography' (Teacher 5), i.e. understanding bar numbers, phrases, musical terms;
 - c) following the teacher's instructions (understanding what the teacher asks them to do).
3. They should have a visual and verbal understanding; this way, they could follow the music score, make annotations, and read and write their homework or other notes. A parent must be present if a student does not know how to read and write. The only exceptions are informal music learning, improvisation, or teaching by rote, which sometimes does not require looking at the music sheet.
4. Curiosity. It could be inherent or cultivated by a teacher; just as Teacher 2 explained, instead of supplying the music and materials as she used to do before, now she asks for the pupils to find their music, which makes them more excited about learning overall.
5. Communication skills are essential to building relationships and understanding a teacher's instruction: 'student needs to be able to modify their physical technique and everything based on the teacher's verbal explanations' (Teacher 3). For Teacher 8, communication is critical to understand if the student understands the instruction and to diagnose any issues before introducing new information. Teacher 8 also reported having a timid student who does not talk, so he adjusted his approach to just close-ended questions. However, parental input is essential here as the parent sometimes can articulate what the students wants to say.
6. Emotional independence, which ties together with the teacher's physical presence and why it is essential for some young students:

'I think emotionally, some children need someone there with them physically. So, in a lesson, it's me. At home, it might be a parent, but if the parents are not available, they're there on their own, and sometimes they can feel a bit lost. Even though I am there at the end of the screen, the other side of the screen, it doesn't provide them the emotional reassurance that they would have in a face-to-face lesson. So they might get a little bit more nervous, or they might be a bit more insecure. Whereas in the lesson... I had to sit close to them if they needed me, or I pulled back. If I wanted them to be more independent, I'd sit further away. So emotionally, if they don't have that sort of emotional independence, and if they're a little bit unsure and they haven't learned how to manage that yet, then online lessons can be quite challenging and unpleasant.' (Teacher 1).

7. Students needing to be organised might sound self-explanatory, but teachers did feel that they lost their lesson time because students were looking for a pencil, for example. Teachers advise sending a memo to parents so that students have the right books for the lesson, a pencil and a rubber ready for the lesson.
8. Maturity. As Teacher 7 explained, maturity means having greater responsibility, respect, and attentiveness. Other factors that indicate maturity, which is a very essential requirement for online learning environments, include the ability to stay focused, communicate well, and clarify their concerns and questions.

It is excellent if students possess these abilities prior to starting OPL, but it is possible for them to develop them during the lessons. Similar to what has been mentioned before, the general advice is for such students to have face-to-face lessons before moving online. If face-to-face lessons are not an option, there are several suggestions: involving a parent, having the teachers make tutorial videos, and ensuring the camera angle shows the keys/teacher's hands. Alternatively, if parental support is not available, it is still possible to teach young beginners online. However, the progress might be slower due to the teachers' detailed demonstrations and the time required for explanations.

Table 7.2 Themes from teacher interviews: students' behaviour, age, and capabilities.

Overarching Themes	Sub-themes
Students' behaviour, age, capabilities	Age as a factor
	Development/capabilities
	Independence

	Being able to navigate the notes/keys/playing independence
	Beginner students
	Curiosity
	Communication skills
	Being organised
	Students need to be emotionally independent
	Student dropout
	Ability to focus
	Maturity
	Issues with behaviour
	Positive about young students

7.2.3 Teaching approaches and suggestions

Teachers were reflective about their teaching practice, and all the positives and negatives they had listed were often paired with solutions or discoveries they made while teaching online (Table 7.3). According to most teachers interviewed, the most critical characteristic a teacher must possess is the ability to explain and demonstrate. Teacher 6 explains:

'I think I tend to explain things more. You probably realise from listening to me that I tend to go off and get excited about things [...], but I make sure that everything is absolutely crystal clear because when they're online, it's difficult to mishear something or not quite get it. So, I make sure that everything is absolutely understood before I move on. So I maybe move a tiny bit slower than I did.' Additionally, for the same reason, Teacher 7 asks more questions to ensure students understand the explanations.

As stated in the previous section, teachers often complain about not being able to play together with their students. However, a few teachers found workarounds in this issue, especially in terms of improvisation. They experienced a more positive input in their online teaching, just as Teacher 2 explained that they would take turns while improvising and that she has adapted her approach ever since moving from face-to-face lessons to online lessons. Now she would 'go on to YouTube on my own photographs and screen share and say, here are some pictures; pick what you like today, an improvised one of them. And then we can discuss that. So that hasn't really affected what they do.' Teacher 6 claims still improvising together with the student and playing, for example, the bass line while the student plays the blues over the top. Teacher 8 mentioned not only improvising but also songwriting with students and that they had learnt quite well, which

enhanced the lesson. Teacher 8 adds that 'often this limitation opens the door to you to talk more about [music] instead of the mechanics', which has changed this teacher's approach in general due to this reflection-on-action.

Teachers 5 and 7 stress knowing the students before starting OPL, building a rapport with them, and getting to know their idiosyncrasies. For example, if a student puts their shoulders up while playing, the teacher would know that it is not a consequence of having OPL but a habit that the pupil had before (Teacher 5). Furthermore, Teacher 2, who teaches exclusively online, mentioned meeting students and their parents outside the lessons and just having tea outdoors or going for a walk, which helps build the relationship between the student and the parent.

Interestingly, it has been mentioned that one ability which, if the teacher possess it, would enhance their online teaching and experience as a whole – having the relative pitch or the ability to hear and identify the notes without looking at student's hands and knowing the material (pieces) very well to help navigate the student through passages seamlessly. This would allow smoother music tracking without relying on the visual input – looking at students' fingers and sometimes even singing the passages instead of playing them on the piano (or even asking the students to sing as in Teacher's 8 case) would allow both parties to internalise the sound deeper and grasp the music concepts faster.

Other tips and discoveries that teachers came up with enhanced their overall teaching and lesson satisfaction. The list is divided into two categories: strategies related to the teaching approach and the use of technological tools that were found to be helpful:

1. Not talking over each other.
2. Not trying to control the environment that the students are in and instead – embracing it, just as Teacher 2 remembered: 'Sometimes they get distracted with things at home with pets and things coming in. But I like that. To me, it's part of their life. So if they've got something they want to show me, go and get it, go and show me. It's part of the lesson, as it would be if they bought something, so that doesn't bother me if we suddenly turn around and the dogs roll around on the settee. And we have a laugh that we just did create dog

music...' Alternatively, as teacher 9 shared: 'Never thought you'd hear in a piano lesson number 1563, Rosie, please put the lizard back and come back to the piano now.'

3. Getting used to the latency and trusting that students copy the teacher: 'I've learnt also to overcome the delays so I know that coming together will be (demonstrating: bu-bump, bu-bump), and you have to gauge what the delay is and just trust that it's correct. And just encourage the child to mimic and copy and get that musicality of rhythm in them. But then, when you step away, and they do it by themselves, then you know that they're doing it by themselves. It must be right.' (Teacher 5).
4. Looking directly into the camera (not at the screen) to cultivate eye contact with the student (Teacher 5).
5. Keeping parents up to date by sending regular emails and messages.
6. Having shorter lessons – instead of one hour dividing it into two 30-minute lessons: 'because it's really difficult to keep their attention in ways, even if they are brilliant, it gets tiring and, you know, and I find that it's better to keep seeing them short little amounts throughout the week than actually in a big goal.' (Teacher 8).
7. Linking pupils together so they could play to each other in pairs – 'And there's the grade eight pupil and the very early beginner, each playing something to each other', says Teacher 2, adding that it would not be logistically possible if the lessons were face-to-face.
8. Sending a certificate or a small gift box by post for the student achieving a certain goal.
9. Breaking into manageable, understandable pieces of information, a chunk, like a phrase, and not interrupting while the student is playing.
10. Having a positive and problem-solving mindset: 'I think the important thing, and this was a problem for a lot of my colleagues, the important thing, is to believe that it is doable, not even to believe to know that it is doable. I went into it from day one thinking, right? If there's something I have a problem with, I will find a strategy to deal with it. And that's it is to find a strategy to overcome any possible problems.' (Teacher 9).

Technological tools and adjustments that teachers suggest:

1. Writing music and building soundtracks on Sibelius and Audacity: 'During the lockdown, I wrote pieces of music for them, they gave me the part, and then we learned it. And then

I built it into a soundtrack of 18 people playing all together all their different instruments.’
(Teacher 2).

2. Moving the camera for a better demonstration: ‘I’ll just put it right under the key so we can see my fingers or by the pedal. So I’ll move it around so we can see exactly what I’m doing.’
(Teacher 6). It is important to note that some teachers interviewed for this project stated having 1 device for the lessons, which was sufficient according to them.
3. Asynchronous teaching – recording the whole lesson for the students and parents to watch later and making tutorials explaining a specific playing technique, which could be more effective than explanations and demonstrations during the lesson.
4. Teachers can annotate the scores on the screen by uploading them on their computer and either screen sharing on Adobe Acrobat or using an application such as EpicPen, which allows them to draw over any software on Windows and Mac.
5. Having several cameras, one usually overhead camera, one on the side of the piano and external speakers and microphones.
6. Zoom specific – to put ‘original sound for musicians’ on so that it would not block the sound of a piano, which is considered noise and would be cancelled otherwise.
7. Using software such as PracticePal to manage lessons, send lesson notes, and record and upload videos.
8. Upgrading to a faster broadband or using Ethernet cable.

When conducting interviews, this teacher was happy to share the setup that she uses for all online lessons: a camera capturing the teacher as a speaker (right corner), a camera capturing the teacher’s fingers and hand position from the side of the piano (left corner) and an overhead camera showing the full length of the piano (bottom) (Figure 7.1). The same teacher also mentioned sharing the screen while doing theory, such as highlighting the scores, demonstrating voicing, etc.:



6

Figure 7.1 An example of a camera setup for online piano lessons.

On the other hand, some teachers shared their challenges with online teaching, saying it presents unique difficulties without straightforward solutions. These teachers rely heavily on the tactile, physical demonstration, and nonverbal communication—major elements of their teaching style, which is somewhat harder to translate into an online format. They said the lack of face-to-face interaction and an inability to provide hands-on guidance make this particularly difficult for younger children, who benefit from movement and hands-on activities. Other teachers pointed out that the online class changed some aspects of their dynamic and interactive way of teaching, which they both valued highly. Additionally, for teachers focused on formal educational goals, such as exam preparation, the slightly slower pace of student progress in online lessons can feel limiting. As a result, these teachers expressed a preference for face-to-face teaching, and in some cases, as Teacher 1 noted, they experienced a decline in motivation to teach online:

'We didn't have all of those little gaff moments. So silly things that don't really teach you the piano, but they build that relationship, and they bring joy, and they're the important part of it... the child is enjoying their lessons. That's one thing that keeps them excited

⁶ Photo included with participant's consent.

about playing. And also from my motivation as a teacher, I have to be enjoying my work. If I'm not enjoying it, I don't want to do it unless it's in sync. And I have a huge capacity for a certain amount of work that I don't enjoy; I can do a certain amount of it. But if I have a large proportion of work that I'm not getting any pleasure out of, any fulfilment or enjoyment, it's just soul-destroying, my motivation slips, and I don't want to do it. I find myself wishing away every minute. Whereas in real life, I absolutely thrive as a piano teacher. I absolutely love it. So the difference to me is so stark that I have not even considered working online again since the last lockdown.'

Finally, there were two camps regarding whether online lesson setting suits the teacher's teaching approach, with some of interviewees stating that they have had positive experiences teaching online or even if they have had any issues, they found workarounds, one teacher stating not teaching children below 10 years of age and three teachers stating that they cannot teach with the same sense of freedom and ease when teaching online as they cannot adapt certain approaches.

Table 7.3 Themes from teacher interviews: teaching approaches and suggestions, and teaching adaptability.

Overarching Themes	Sub-themes
Teaching approaches and suggestions	Teacher's ability to explain and demonstrate
	Improvisation
	Funny stories
	Knowing the student before moving online
	Teacher's relative pitch/knowing the material
	Teaching limitations
	Not to speak over each other
	Teaching philosophy
	Teacher not trying to control the environment
	Difficult for novice teachers
	Lack of teacher's motivation
	Teacher can't control the environment
	Meeting parents and students f2f while having online lessons exclusively
Teaching adaptability	I adapted my teaching
	I came up with something new
	I adapted and used it in f2f lessons
Technological setup	Home-based equipment
	Videoconferencing software

	Invested into equipment
	Camera angle
	Annotating on screen

7.2.4 Positive experiences

The majority of teachers reported positive experiences regarding their pupils' achievements and teaching experiences (Table 7.4). First and foremost, teachers find it more convenient as they do not have to commute to lessons. Scheduling lessons is also more convenient as both parties do not need to travel. One teacher has a positive experience teaching online because they prefer keeping privacy and not having people over (if they teach at their home). Another teacher is happy to avoid catching any illnesses from students and students not using their equipment, which extends the longevity of the instrument.

The positives regarding students and their learning were that students felt more comfortable and confident learning in a familiar environment like their home, using their equipment. More than half of the teachers mentioned that seeing the students online helps them see their home setting, the instrument that they are playing on, the chair that they are sitting and the room that it is in, which gives a teacher a context of some of the issues may be with the posture or technique that the student has been having just because of the equipment or the setup that they have at home. Teacher 5 sees a disadvantage in that if the student is practising on a keyboard at home, whereas if the student were visiting the teacher, they would have a chance to play on the teacher's grand piano, which is considered better for the playing technique.

It has been reported that, in some cases, students can focus better and make progress during online lessons if they have appropriate parental support and good equipment. Online lessons have also helped develop students' musicianship skills, such as counting bars, understanding musical form, and annotating scores. While progress may not necessarily be faster for others, students tend to be more independent in finding bar numbers and knowing 'musical geography' and take more responsibility for their practice. Interestingly, Teacher 2 also noticed that students became tech-savvy since the pandemic, which helps with the lesson flow.

The positive experiences can be summed up in statements such as ‘I know lots of teachers don't like it, but I've loved it. And in fact, I'm still doing it.’ (Teacher 2). Alternatively, Teacher 3 shared, 'I've had so much more energy, you know, kind of better mental health since I've stopped teaching in those multi-teacher studio settings'. Furthermore, most teachers claim that their teaching strategies are the same as face-to-face (Teachers 4, 5, 6 and 9) as the principles of teaching piano remain the same, with teacher 9 topping up, which sums up that online teaching suits some teachers more than others:

'And honestly, at that level, there was nothing that I couldn't do without demonstrating on a video, on a Zoom call, on Teams, call whatever. There was nothing that I couldn't do. Sometimes it took a little longer, particularly if the children were not academically very able or musically very able, but I always managed to meet my targets for every lesson'.

Table 7.4 Themes from teacher interviews: positive experiences.

Overarching Themes	Sub-themes	Sub-sub-themes
Positive experiences	Related to students	Students feeling comfortable at home
		Better progress
		Tech savvy students
		Students learnt 'musical geography', musical terms
		Students making their own notes
		More confident
		Self-regulation
		Students' practice
		Paying attention – improved
	Related to teaching	Positive experience/suits teaching approach
		Convenience
		Accessing online resources
		Better demonstrations
		Better time management

7.2.5 Parental support

As mentioned before (Section 7.2.3), one of the major solutions to keeping students focused, concentrated, and understanding the teacher's instructions if they cannot do so by themselves is to involve a parent in an online piano lesson. Nearly every teacher mentioned positive learning

outcomes when the student receives parental support, however, there were a few negative situations also being listed in terms of parental involvement (Table 7.5). Below is the list of things parents can help with during the lesson, as identified by the teachers.

1. Parents' presence can help with students' focus and concentration.
2. Parents or any responsible adult can help with technology, such as camera setup or finding pencils and books.
3. Being a 'helping hand' or an extension of a teacher, helping find notes and keys, and translating the teacher's instruction sometimes.
4. Teacher 1 found parents helpful in making the students understand the environment around them: 'I think a parent can help them identify: 'This is your classroom now.'
5. Parents have been found to be able to replace or substitute teachers' physical absences by sitting next to them.
6. Helping their child(ren) articulate what they have practised and what questions they have as some children might be very shy and not talkative.
7. Parents who are part of the Suzuki approach if that is the teacher's speciality are required to 'sit with their child and can help them hold their arm or lose their fingers for them, taking notes during the lesson' (Teacher 4). In the Suzuki approach, parents are expected to create the environment for their children's music at home by listening to recordings of the music they're learning at home daily, practising with the child, or supervising their daily practice.

However, the level of parental support can depend on the teacher's preference, as some teachers would prefer a parent just sitting in the lesson without interfering, so that the child would learn to advocate for themselves. In contrast, other teachers prefer parents to be available or within 'earshot' (Teacher 9), so if there is a problem, the student could call them right away. Furthermore, Teacher 9 advocates that the parents she has worked with 'were trying to be helpful; they always did their best. And often, the parents found it more difficult because obviously they really didn't know what they were doing.' There were a few cases where parents were not helpful, for example, when 'the younger sibling follows the parent and if I don't want a two-year-old in the lesson' (Teacher 1) or when a parent is 'in and out on her mobile phone with work calls or putting the chicken in the oven' (Teacher 2). These are the cases when parents were not only unhelpful, but disturbing the lesson flow as well.

On the flip side, Teacher 6 shared a couple of cases when a parent was a musician and interrupted or contradicted the teacher's teaching during the lesson:

'Dad would sort of come in and say, but have you done this? And have you done that? And have you done... (in the middle of the lesson, which interfered with his (student's) thought processes, so he wasn't able to concentrate). And then I had another whose mother is also a musician, and she would insist on sitting just out of view and telling the child how to play. If I suggest something, she tells something different. So parental involvement, in my view, is not a good thing.'

This can also happen in face-to-face lessons, but the teacher sometimes has no control over who comes into the lesson in an online lesson setting. The same teacher (6) confirmed that if she needed anything or had any questions, she would ask and communicate with the parent. However, this uninvited interference part has made her online teaching experience somewhat unpleasant. In addition, Teacher 8 reported a case when a parent refused to be in the lesson: 'I thought the lesson was for her, not for me!' which demonstrates a misunderstanding of the role of the parent in an instrumental lesson. Further to this, Teacher 1 noticed that

'some children respond better when the parent is not in the room because they become dependent on the parent, they expect the parent to do everything, and it takes away their autonomy. And by doing that, they don't have a sense of agency. They're not involved enough. So in some cases, I'd say to the parent: 'Come in at the end of, and I will give you a summary of what we've done and what to practice', but actually, in some cases, I didn't want them there.'

However, Teacher 4, a trained Suzuki teacher who only works with children and their parents together, says that 'teachers that haven't been trained to work with parents... do not know how to use the parents in the best way, but to me, yes, online, it is brilliant to have the parents. They're taking notes and are able to assess their child one-on-one, hand-on-hand if necessary, as the teacher requires.' This shows the different attitudes, preferences and experiences of parental involvement in online lesson settings and in general.

Parental involvement was already a strong theme in the content analysis, but the interviews revealed many more situations and power dynamics between teacher, parent, and student. It is not enough to say that parental involvement solves all issues; much depends on how the three parties work together.

Table 7.5 Themes from teacher interviews: parental involvement.

Overarching Themes	Sub-themes
Parental Involvement	Parental support
	Negative parental impact
	Lack of parental support
	Teachers are not trained to work with parents
	Sending updates to parents

7.2.6 Why teach online nowadays?

Teachers who continued teaching online noticed that since the pandemic, students have become more accustomed to online learning, and some of them have become tech-savvy, making it easier for the teachers to follow the lesson flow. Teachers have listed various new opportunities and advantages that online teaching and learning can offer (Table 7.6). One important benefit is that it allows access to a global student base, enabling teachers to reach students across the world and students to access specialised teachers, no matter the location. That widens the pool of potential teachers and students, allowing for better personal fits. It also provides greater flexibility in scheduling because lessons can take place from anywhere and continue even when students or teachers are sick or unable to meet in person. It helps continuity in learning in situations such as illness or when a teacher or a student travels or relocates.

‘It is also based on parents' ambition’, according to Teacher 8, as this teacher noticed that parents who sign their children up for online lessons nowadays just want them to enjoy and learn new skills. In response to their wish, this teacher would try to help them understand basic hand positions, focus on rhythm, ‘solfegging’ and allow them to explore the instrument on their terms, more in an informal way. He says that

‘there are many parents who don't care. They just want the kids to enjoy and have a little bit of knowledge of instruments. [...] But I'm very honest with the parents from this time: it's not

the best format if you want them to do a more professional path because there are a lot of things I cannot teach. I'm very limited [...] in this format.'

making it clear to parents that face-to-face lessons would be more appropriate if they wanted their children to learn more professionally.

Additionally, online lessons allow for innovative teaching strategies, such as linking students to play for each other or using technology for ensemble work. Teachers 2 and 8 advocate that hybrid lessons (a few online and a few – face-to-face) would be an ideal scenario as face-to-face lessons, especially with young beginner students, ‘teach them structure and basic concepts, and then [the teachers would] keep reinforcing that online.’ (Teacher 8). Teachers who are exclusively or mainly teaching online reported high satisfaction levels and having more energy since they do not need to commute or have more privacy if they used to teach pupils at their private homes. While some challenges still exist, the significant benefits of online teaching and learning include increased accessibility, convenience, and creativity.

Table 7.6 Themes from teacher interviews: technological setup and new opportunities.

Overarching Themes	Sub-themes
New opportunities	Remote areas / other countries
	Teaching online when students fall ill / or bad weather
	Hybrid lessons
	Group lessons / other than piano lessons / new opportunities
	I am only teaching online now
	Students with disabilities
	I would like to learn more
	Depends on student's and parents' ambition
Covid-19 comparisons and experiences	Negative attitudes towards online lessons during the pandemic
	Students adapted since the pandemic
	Everyone's attitude has changed
	Pandemic consequences
	Difference between Covid and now

7.2.7 Summary of interview analysis with teachers

It can be concluded that teachers satisfaction with OPL depends on several factors:

- A factor that does not entirely depend on the teachers or students is the issues with connectivity or broadband speed. Some teachers purchased a better broadband package, and some started using an Ethernet cable, but sometimes it depends on the area where the teachers and students live, as there might not be good coverage. Teachers concluded that if the latency and broadband speed were resolved in the future, they would be more satisfied with OPL.
- Latency or inability to play together or count/clap simultaneously. While instrumental teaching is a significant downside, teachers found workarounds by asking the students to copy their demonstrations, asking them to play simultaneously while the student is on mute, or sending video tutorials to cover a certain aspect of playing.
- Student's ability to focus and concentrate during the lesson. Teachers reported that younger students, especially, have issues with concentration during OPLs and that involving a parent usually helps. However, teachers who experienced burnout from engaging young students in online lessons during the lockdowns do not recommend OPL if the circumstances allow them to.
- Other students' abilities and characteristics. Students who can focus, have good visual and verbal understanding, are curious about learning, have good communication skills and emotional independence, and just generally organised (knowing where the books and pencils are) are more likely to get the most out of OPL rather than those who do not possess these characteristics or are in a different developmental stage. Teachers reported that progress would be slower without these skills and would most likely need parental support. They also report that knowing the basics – the piano keys, reading the score or being able to follow the teacher's instructions can make it or break it for a young beginner student trying to learn online, and it is advisable to get face-to-face support to understand the basics before moving to the OPL setting.
- The teaching approach. If a teacher is more used to a tactile approach and physical modelling, such as the Dalcroze Eurhythmics method, the same method might not translate well into online teaching and would require certain adaptations, focusing on verbal explanations and demonstrations. On the other hand, the Suzuki method, which involves parents, works very well online, it has been concluded.
- Teacher's abilities and characteristics, such as musical abilities - having a relative pitch or being able to explain and demonstrate, as well as the teacher's mental attitude towards

online teaching – being open to new ideas, solving problems, finding new ways of teaching (such as Teacher 2 doing improvisations or combining students into ensembles).

- Technological part. Teachers suggest having a fast internet connection, having multiple cameras, and integrating various software into online lessons, such as EpicPen, Audacity, and PracticePal, to name a few.
- Parental involvement. The level of parental involvement depends on the student's ability to stay focused, communicate, and have a general visual and verbal understanding. The more independent the student, the less parental input is required. It has been conclusive that younger beginner students need more parental support than older and more mature students. However, it also depends on teacher and parent communication. Some parents might undermine the teacher's suggestions or disturb the lesson, so intricacies such as these must be considered.

Finally, a new theme, which is different from what has been found in the first phase of this research, emerged, and it explains why some teachers and parents might be more satisfied with OPL than others, which is the aims and goals of all three parties. Teacher 8 mentions that parents who sign up their children for OPL nowadays just because they want them to enjoy music and learn something new are not focused on them playing professionally. As per Teacher 2, she teaches students more informally, focusing on theory, harmony, composition, and improvisation. On the other hand, Teacher 5, who prepares the students for exams more often and is a professional pianist, would encourage a more hybrid approach, so to be able to have a few face-to-face lessons if there is a possibility to make the best out of it, which suggests that face-to-face teaching might be more appropriate for those on the professional path rather than those who want to enjoy and have fun with it. Moreover, Teacher 1, who prepares students for exams, prefers face-to-face lessons. Teacher 7 mentioned that she was not satisfied with the exam results of students after she taught them online for some time. So it ultimately comes down to what is the goal of the lessons, how serious about playing are the students and the students' parents and what their timeline is – how fast they want to achieve their goal, as it has been reported that when learning online, the progress is slightly slower, in which case, a face-to-face approach would be recommended.

In summary, satisfaction with online lessons depends on all three parties – the teacher's abilities and attitudes, the student's readiness and the level of parental support. Generally, teachers were

less positive about starting a young beginner student in an online setting and would advise either substantial parental input at first or having a few lessons face-to-face before transitioning online. It also has been noticed that online teaching might be more challenging for novice teachers than experienced teachers, based on the self-reports in the interviews.

7.3 Parents' interview analysis

Same as in the teacher's interview thematic analysis, the analysis is based on the Code Matrix Browser generated on MAXQDA (Appendix 10.2), demonstrating how each participant responded regarding the themes and codes. For example, the theme 'Difficult for the teacher to notice mistakes/to correct' has 4 segments attached to the code. However, the code which is more valuable for the analysis is 'Point out to the score/mistakes' because three participants mentioned this theme, and to the previous theme, only two participants mentioned it, but they mentioned it twice in the course of an interview. Nonetheless, all the themes will be discussed in the analysis, but the emphasis will be on the themes that have been mentioned by the majority of the respondents (3 out of 5 participants). The CRB (code relations browser) was not used in this analysis due to the small number of participants.

7.3.1 The negatives

It is consistent across all the analyses that the negatives are the most significant part of the analysis, with all groups of participants. However, while teachers mainly blamed bad connection and technological issues, parents pointed out that a few aspects of teaching which could not be translated well to online piano lessons (Table 7.7). The main three aspects were 1) parents claimed that teachers' demonstrations were not sufficient: 'Even if they pointed their camera at their own piano, they still couldn't show precisely, 'You're doing it like this, but you need to do it like that,' (Parent 2) which means that students could not understand teachers' demonstrations; 2) the teacher's inability to point to the score or to point out the mistakes they were making in regards to the music score immediately, as parents felt that their children needed the visual support of the teacher showing the notes on the score as the student plays due to student's inability to track the notes by themselves (which they learnt to do with time, says Parent 5); 3) and finally parents mentioned teachers physical absence, and what that creates in a lesson:

...facial expression... you can see... you can start to feel whether how he is feeling when he plays. Online, you can only see the face, or you can only see the fingers. So it's different. You don't get the whole picture. It's like when we are having in-person, you know when we're in-person talks, you know, you can see me. You can see body language. You can see maybe I blush or maybe I looked away, maybe my fingers, my hands are, you know, all these kind of gestures. So that all contribute to the effect of the conversation. (Parent 1).

It's in the body language, is in the physical presence. I think that doesn't relay as well. Although I can see facial expressions and things, I think I don't know; there's a distance; isn't there a sort of remoteness to it? Perhaps, I think children respond really well to people being there with them. And although it can supplant a lot, I don't think in total, it can absolutely mimic the real experience of having a teacher sit down beside you and physically come to see you and that level of engagement, although you're still engaged, I don't know that. It's hard to describe why, but I do think that when, when [the teacher is] physically present, teaching them that it does go beyond the virtual, but it's hard to really encapsulate why I think so I do think that their motivation overall is higher when [the teacher is] here. It does really help and assist them. (Parent 5).

Furthermore, parents mentioned that it is difficult for the teacher to notice and correct mistakes that students make, and they believe that it is difficult for the teacher to notice everything just by looking at the camera. They also claim that it is more difficult to teach and correct the technique, just as Parent 4, who is also a pianist, expressed: 'That's never going to be the same as if you're in person with a student, and yeah, sort of checking the physical aspects, or being able to see the child's whole posture is more difficult.'

The list of the negatives related to students' learning is considerably shorter in this sample, with the main negative being that students have difficulty understanding either the teacher's instructions or demonstrations, as Parent 3 explained:

It's difficult to for the child to understand the piano concepts looking at a screen, as opposed to someone showing them physically there and then correcting them... I think the biggest thing is that young kids, their vocabulary, their understanding of what is being

told to is more limited, so it that's where the difficulty comes through, where they're not as able to express themselves and everything in terms of what they're not understanding.

This is consistent with what teachers claimed that in order for the lessons to be successful or satisfactory, students should be able to communicate and express themselves as well as have good visual and verbal understanding, which evidently is dependent on students' age and development (Section 7.2.2).

Among the final issues that parents noticed were students making less progress, being less engaged or that they learn slower online and that, in their opinion online lessons are less effective and of lower quality, as Parent 3 concludes: 'You're probably getting 70% of what you would get if you are doing it face to face, as simple as that, because there's always some, there's a... certainly lacking interaction. Because there's a barrier between you, there's a physical barrier.' Finally, parents mentioned that piano learning is about the experience as a whole; it is the energy that teacher and student create when playing, teaching, and demonstrating, and if it were that simple to translate this into technology, then no one would go to concerts and would only watch videos, which summarises the importance of the teacher's presence in the lessons.

Table 7.7 Themes from parent interviews: the negatives.

Overarching Themes	Sub-themes	Sub-sub-themes
Negatives	Negatives related to teaching	Difficult for teacher to notice mistakes/to correct
		Difficulty teaching technique
		Difficult to demonstrate
		Point out to the score / mistakes
		Teacher's physical absence
		Teacher-student communication
		Importance of non-verbal cues in teaching
		Inability to play together
	Negatives related to students	Students not understanding instructions/feedback when online
		Less progress
		Lower engagement / focus
		Less motivation
	Technical challenges	

	Piano lessons are about the whole experience	
	Slower pace	
	Missing the social aspect	
	Online lessons are less effective / lower quality	

7.3.2 Positive adaptation

Parents did see a few positives in online piano learning. However, this theme is called 'adaptation', which ultimately shows that students adapted to online teaching, but in parents' view, it was a temporary measure (Table 7.8). One of the biggest positives parents saw in their children was them becoming more independent with time in terms of setting up the cameras for the lesson, finding the right pages and bar numbers, finding the notes and taking ownership of learning in general. Parent 5 admitted to being hesitant about OPL, but it was a positive experience for the parent and the children:

'I think they were quite surprised by how successful it was. I think I was a bit unsure how it would run. But I think, I think overall, it was a success. And I think they really could move forward with their playing irrespective of the lack of a face-to-face environment.'

The same parent mentioned that their children and their classmates have noticed becoming more accustomed to technology and online learning over time as they have been exposed to a few online lessons and OPL more recently:

So I think when they were then encountering it now, I think it was a lot easier. They're more versatile. They're already quite well equipped, actually, technologically. So I think it's probably a lot easier for them to pick it up, and now that they're a bit older, and they can navigate the notes better, and you're not needing to sort of point things out so much. I think it's probably easier. I think there are still benefits to, you know, face-to-face lessons, but I think a great deal can still be obtained through the remote lessons.

Parents also acknowledge the convenience factor for the teachers, that they do not need to commute (if the teacher usually visits students at home) and can therefore schedule more

lessons. However, they also expect the online lessons to be cheaper than face-to-face lessons. Parent 4, whose online piano lessons are usually recorded, mentioned that sometimes when the parent is not at home, and the lesson takes place, they can connect to the lesson and watch it live online, something that has never been mentioned before in any of the analyses.

Parent 2 had relatively positive experiences for several reasons: right from the start of the pandemic, their child's main classroom teacher instilled in students that they must attend and be entirely focused on all online lessons: 'They were taught that if there's a lesson, you sit through it—no turning off after 15 minutes. The teacher sent reminders and emails, and the children understood that they had to participate fully.' This also helped with students' discipline in other online lessons, so this parent reported that the child understood the responsibility and would attend the lessons, practice regularly, and 'learn everything without issues'. Furthermore, some lessons were shorter, which resulted in higher engagement levels for this student, and sometimes, 'If the teacher was satisfied with the result or gave him an assignment, they might say, 'There are 15 minutes left; I'm disconnecting now, but you can keep practising'. He would stay and work on his own, and it all went smoothly.' This demonstrates that the satisfaction with OPL (especially during the COVID-19 pandemic) might even depend on how all other lessons were handled in students' schools and the discipline instilled at schools and at home.

Table 7.8 Themes from parent interviews: positive adaptation.

Overarching Themes	Sub-themes
Positive adaptation	Independence
	Positive experience
	Students became more accustomed to technology/online learning
	Convenience
	Responsibility
	Engagement / focus
	Progress
	Gained confidence
	Discipline at school

7.3.3 Parents' feelings about online piano lessons

Even though parents were not explicitly asked, unavoidable comparisons between face-to-face and online lessons were made (Table 7.9). Parent 5 states that their children's motivation is better

when the lessons occur in person (face-to-face). Parent 2 summarises the main reasons why parents (and teachers) would prefer face-to-face lessons:

I think they are more suited to in-person learning. All lessons are probably better in person than remotely. As for whether the teacher was satisfied with the quality of his playing, it's hard to say. Of course, I think it's easier for teachers when children learn in person—especially in a school setting where lessons are not just extracurricular activities but part of the core curriculum. Remote learning can work occasionally, but I think in-person lessons are much more effective. Children process information differently in person.

Alternatively, parents hypothesised that a mix of online and face-to-face lessons would be sufficient if faced with a choice. They emphasised that hybrid lessons would work better for older and more established students based on their observations of two children who have experienced OPL. Even Parent 4, whose child has predominantly online lessons, admits that face-to-face lessons sometimes positively affect learning and student-teacher relationships. Parents acknowledge that online lessons can be a good alternative if they are temporary due to an illness or if the focus of the lessons is more informal and is not focused on a child becoming a professional pianist. Parent 5 also acknowledges those living in remote areas who do not have access to face-to-face piano teachers and that technology can help with that; however, if faced with a choice, most parents would choose face-to-face lessons.

Table 7.9 Themes from parent interviews: face-to-face or hybrid lessons.

Overarching Themes	Sub-themes
Prefers face-to-face	
Online - an alternative (new opportunities)	Hybrid lessons for older, more established students
	Hybrid lessons

7.3.4 Student's age and abilities

As evident from the analysis, especially from parents who have two children of different ages, younger children have more difficulties when lessons are online⁷. Specifically, they struggle to understand the teacher's instructions and demonstrations, translate them to their piano, and communicate with the teacher. They may also have lower motivation and concentration levels due to the teacher's physical absence. A few parents made bold statements that online lessons are not suitable for young beginner students based on their experiences:

Online lessons are a good alternative. And for more advanced learners, that's okay. I mean, at least for grade five above the beginners... especially young beginners, I think it is a no-no. For younger players, you don't want to then start and then start online, and you can't pick up the good habits and then, so I think it's is a no.' (Parent 1)

They came to this conclusion in comparison to their older child who was also taking OPL at the same time and noticing that the lessons went easier and the student got more out of the lessons due to their age, ability to communicate and maturity in general:

'And I think it's easier for older kids when kids are older, but younger, I think it's particularly difficult. I mean, really, I think it's probably... as the kids get older, it is easier and probably almost as good... when the kids are, you know, in their teens, I think that you probably have far fewer problems.' (Parent 3).

This summarised that older and more established piano students are more satisfied and can get more out of online learning than young beginner students. As seen in the teachers' interview analysis, student's age and developmental abilities play an essential role in the success of OPL and if most of the teachers agreed that if the student lacks any of these abilities due to their developmental age, a parent should assist the student in supporting them throughout the lesson

⁷ The theme of 'student's age/level' in parent interviews did not generate sub-themes, so no table was produced.

with finding the right page, bar numbers or making sure that the student understands the instructions.

7.3.5 What is the role of a parent?

This theme has received much attention from the teachers in both phases. Thus, it is crucial to understand how parents themselves view their role in online piano lessons. From the quantitative part of the survey analysis and interview analysis with teachers, it was clear that teachers find parental support and involvement invaluable, and from open-ended questions analysis, it was confirmed that parents help teachers when students are not able to focus or are distracted. However, parents in the survey sample concluded that their involvement does not affect their satisfaction or dissatisfaction with online lessons. The open-ended questions concluded that their satisfaction depends more on the teacher, the teacher's adaptability, and the communication and relationship they built with the student.

Consequently, when asked in the interviews if they were involved in the lessons and what their role was, parents would often say that since they are not pianists themselves, they could not get involved in the lessons too much.⁸ Parents 2, 3 and 5 claimed that they helped with technological setup, Parent 1 remembered helping the younger student with annotations and ensuring that the child played the right bar/passage because her child was very young (6 years old). In one case, the parent was a pianist and would fully support the child in the Suzuki approach lessons. However, the same parent (4) admitted that sometimes there is friction between her and the child regarding playing and a parent giving advice, so a teacher needs to be a role model for the student to listen and learn.

As seen in the teachers' interview analysis, teachers do appreciate parental support, and Teacher 4 stated that not all teachers know how to work with parents or how to use them in the best way. Additionally, Teacher 6 shared that having a negative impact on parents who knew how to play the piano and were interfering with the teacher's instruction. Thus, it could be concluded that *it takes*

⁸ The theme of 'parental involvement' in parent interviews did not generate sub-themes, so no table was produced.

two to tango, and the teachers and parents need to find the right balance that would support the child in the best possible way. (The suggestions on how parents can support their children in OPL and how much are suggested by the teachers in the section '7.2.5 Parental support'.)

7.3.6 What parents suggest to teachers

While three parents claimed that there was no difference in teaching compared to online and face-to-face lessons, they did have a few tips or noticed what worked better in online teaching (Table 7.10). Parent 1 suggested that the teacher would notice the mistakes and correct the student's playing better if the student sent recorded video performances to the teacher. This would also overcome the video and audio issues that one might have during an online lesson. Parent 4 reported satisfaction with receiving recorded lessons from the teacher and finding it beneficial to re-watch them and help the child with the practice.

Parent 4 has a positive experience with OPL and claims that it is also down to the teaching: the teacher is always clear about requirements and demonstrations, and does not overload the student with too much information all at once, since online lessons require conciseness to stay on track. Parent 5 also agrees that the teacher's explanations and ensuring that students understand their instructions play an essential role in OPL, as well as the teacher being patient with the students. Two parents also reported that it was easier for students to understand instructions because they already knew the teacher, as they had had face-to-face lessons before moving online.

However, parents did criticise the teacher's lack of equipment. They said having multiple cameras might have been more beneficial (even though they only had a phone on their end, which would make it even more difficult to see the teacher and the piano if it had several cameras). Parent 4, whose child is having online piano lessons most of the time, mentioned that the teacher has 3 cameras and a speaker, and they have also invested in equipment, so it can be concluded that those who are either teaching or receiving online piano lessons should have more advanced equipment to get the best out of the lesson.

Table 7.10 Interviews with Parents, What Parents Suggest to Teachers Themes.

Overarching Themes	Sub-themes
Technological setup	Student's setup
	Teacher's lack of equipment
	Teacher's setup
The teaching	Teaching tips - video performance
	Teaching - the positives
	Teaching adjustments
	Having f2f lessons before moving online
	Depends on the teacher
	Assessment methods / feedback
No change	No difference in terms of practice
	No difference in teaching

7.3.7 The aims and goals of the parent

Finally, the most significant discovery, which ties up all loose ends in the search for factors that determine satisfaction with online lessons it is students' or parents' aims and goals, which can be the catalysts in the success of OPL (Section 7.2.6). To the biggest surprise, from the parents' interview analysis, it is clear that parents support this notion. It is important to note that neither parents nor teachers were asked about the aims of their child's piano learning, and the participants who mentioned the aims did so voluntarily, without being prompted, because of the flexibility of the semi-structured interview approach.⁹ Parent 1 summarises:

So this so I think it depends on the aim of learning if, for example, I'm just learning for pleasure, and I don't aim to perform to become a pianist professional. So as long as I can make the sound and I feel I'm playing well, and the teacher says it's of relatively good quality, that's fine.

Parent 2, who saw online piano lessons more positively, also mentioned that the piano is only a secondary instrument, as the main instrument the child was specialising in was the cello. Therefore, they were happy with the lessons and the student's progress. Furthermore, it has been noticed that parents who base their children's learning on more formal measures, such as exams,

⁹ The theme of 'It all depends on aims and goals' emerged in parent interviews but did not generate sub-themes, so no table was produced.

saw online lessons less positively, mentioned that online lessons are less effective and that they would prefer face-to-face lessons if they were ever faced with a choice.

7.3.8 Summary of interview analysis with parents

Certain conclusions and comparisons have already been made within the analysis; thus, it is important to summarise what the parents focused on in their interviews and what their experiences were of online piano lessons. Amongst the negatives, the most significant issues that parents noticed were the teacher's inability to demonstrate, correct the mistakes or point to the music score that students might have been accustomed to. Additionally, the negatives related to their children were not understanding the teacher's instructions (this is particularly relevant to young children) as, according to Parent 3, their vocabulary and understanding are limited. Parents also stressed the teacher's physical absence during online lessons and that students focus better and are more motivated when the teacher sits beside them. In general, parents concluded that children's progress is slower and lessons are less effective when they are held online.

Even though parents did see a few positives, those were seen as a temporary measure; if they were faced with a choice between online or face-to-face lessons, they would always choose the latter. Parents acknowledged that students became more independent in setting up cameras, preparing for lessons, finding bar numbers, and taking ownership of learning. Some parents who experienced online learning on several occasions - during COVID-19 and more recently, claimed that children have become more accustomed to online learning; however, they would still prefer face-to-face lessons over online ones. Finally, they acknowledge the convenience factor and that it is a good substitute in case of illness or for those who live more remote and do not have access to a local teacher.

However, as seen in the teachers' interview analysis, most teachers see parental involvement as helpful in terms of helping the student to focus or expressing the student's questions or concerns if the student is not able to do so; 3 parents in this interview sample, claimed that they only helped with the technological setup at the beginning of each lesson, 1 parent would help with annotations and 1 parent, who is also a professional pianist, would help with more physical aspects of playing, such as technique and posture. The latter parent admitted that sometimes

there could be ‘friction’ between a child and a parent, and the teacher needs to be a role model the students should listen to.

Lastly, parents confirmed what teachers concluded in the interviews, that satisfaction or dissatisfaction with online lessons might depend on the student’s or parent’s goals and why they want to learn piano – a) is just for fun, in which case the teacher could use a more informal approach and would not focus on results as much; or b) are they more focused on formal assessments and perhaps playing the instrument professionally, in which case, parents concluded that online lessons might not be suitable for young beginner students as they might develop wrong playing habits. However, they claim that online lessons might be more suitable for older and more established students, and this conclusion is more apparent from the parents with two children of different ages who took OPL at the same time.

7.4 Students’ interview analysis

It is important to note that since piano students were not included in the first phase of the research, meaning that no open-ended questions were coded for this group, the codes for this analysis were built from the ground up and were not pre-determined, as opposed to the codes in teachers’ and parents’ interview analyses. Also, the interviewer’s questions or comments were coded in some cases since children sometimes responded with yes or no answers. Additionally, CRB was used in this analysis as there were more participants, and a few overlapping themes helped explain the coding and the analysis (Appendix 10.3).

Due to a smaller number of themes, they are presented in one table (7.11):

Table 7.11 Themes from student interviews.

Overarching Themes	Sub-themes	Sub-sub-themes
Negatives (7.4.1)	Difficult to see/understand the demonstrations and explanations	
	Bad connectivity	Time wasted because of connectivity
	Harder online	
	Teacher not seeing what student is playing	
	Hard to sight-read without a teacher pointing	

	It takes longer to learn	
	Can't hear (dynamics)	
	Not as effective	
Lessons are the same (7.4.2)	Practice was the same	
Prefers face-to-face (7.4.3)	Easier to learn face-to-face	
	Teachers can correct more easily	
	Easier to focus f2f	
	Having someone in the room increases the pressure	
Benefits of online lessons (7.4.4)	Knowing 'musical geography'	
	Playing duets	
	Progress	
	More relaxed	
	Better for introverted people	
Parental involvement (7.4.5)		
Compassionate about the teacher (7.4.6)	It's harder for teachers to teach	
	The teacher does not need to travel	

7.4.1 The negatives

Similar to parents' interview analysis, the most significant negative children saw in OPL was difficulty seeing and understanding the teacher's demonstrations. In the CRB table (Appendix 10.3), this code is paired with bad connectivity, which shows that it might have been the fault of technology and not necessarily the teacher's demonstrations; it is also paired with 'harder online' and 'prefers face-to-face' codes which shows that it is difficult for students to comprehend teacher's instructions (especially if their verbal and visual understanding has not been developed, as concluded by teachers and parents) and more difficult to translate teacher's demonstrations onto their own piano as explained by Teacher 1 (Section 7.2.2).

It can be noticed that students who took part in this research who were younger than their siblings when they experienced online lessons complained that it was difficult for them to find the notes or follow the score by themselves and they would prefer that visual input – teacher either demonstrating (playing) on the piano in front of them or pointing at the score as they play if they are unable to track the music with their eyes.

The second most significant negative that students pointed out was connectivity issues, which affected them more than parents realised, as it would disturb the lesson flow. Some students mentioned that they would lose 'precious lesson time' (Student 1) if the issues were not resolved quickly, as their teacher had another lesson booked up right afterwards, so they could not stay to make up for the lost time. Student 1 also acknowledged that it is more difficult for the teachers to teach due to technical issues.

Students complained that learning online was more challenging because they had to do everything themselves. Student 6 summarised why that might be the case: 'It's easier when the teacher sits next to you, like, is it easier to find all of the numbers, but you can still find it when you're online, but it's easier when the teacher sits next to you'. Additionally, Student 3, who has been taught by two different teachers while learning online, mentioned that the teacher would not correct the fingering of one hand as it was not that visible in the camera (as the camera was on the side) and that it would be generally difficult to hear the dynamics, be it from students and from the teacher's side. These themes indicate that younger students generally found it harder to learn piano online.

7.4.2 Online lessons are the same

In contrast to previous findings, 5 students, 18 number of times mentioned that online lessons were the same, with remarks such as: 'Well, it's pretty much the same. So it's like, yeah, it's fine to play piano. You still got to play the piano, and yeah. So it's like, it's just the same, but on the screen...' (Student 3) or 'It seems basically just like a normal lesson' (Student 1) or

'You had a camera and you looked at the piano while I was playing so you could see what I was doing, and I you could still teach me while being online and not virtually here... it seemed like different at first, but in the end, you got used to it, and it was actually like mostly the same' (Student 5).

However, maybe the students did not notice the subtleties in how lessons were delivered, or did not see them as important? They could also have been used to the teacher's style from face-to-face lessons, which might explain why the online format seemed almost the same.

This contradicts what parents were saying, that they would prefer face-to-face lessons, when students actually say that they still play the piano during the lesson, which has not changed, and they still listen to the teacher's instructions. The only part that is uncomfortable for the students is finding the notes and bars by themselves and trying to correct the mistakes according to the teacher's demonstrations. However, as teachers and parents concluded, this process of finding everything and problem-solving makes the students more independent and confident, and they learn 'musical geography' better.

7.4.3 Preference for face-to-face lessons

Students followed their parents' adage, saying that they preferred face-to-face lessons. Some of them also listed the reasons why. They said they needed the visual input of demonstrations directly in front of them. It felt easier to learn that way, and the lesson seemed more interactive. They liked the teacher pointing at the score, and they noted that there were no glitches face-to-face. In person, the teacher could also move around to correct different parts of the body, such as hands or posture. Additionally, two students pointed out that they focus better when the teacher sits next to them. This was conclusive with what teachers have been saying — that some students cannot focus well online — and with what parents concluded, that children need someone's physical presence for them to concentrate and stay motivated.

At the same time, these views contrast with the students who said the lessons were 'the same' online and offline. It seems that what mattered most was not just the activity of playing the piano, but the sense of closeness, presence, and guidance that younger learners often rely on. This also raises the question of whether age and level made a difference — perhaps older or more independent students were less affected by the switch online, while beginners depended more on immediate demonstration and correction. In this way, the students' accounts fit with both the teachers' and parents' perspectives, showing how perceptions of lesson quality were tied to developmental readiness as much as to the online format itself.

7.4.4 Benefits of online lessons

The single biggest benefit that students pointed out was learning what teachers called the ‘musical geography’. This meant being able to find bar numbers, locate notes on the page, and follow the score when the teacher asked them to start from a certain passage. At first, this was more difficult, but with time, they learnt how to do it on their own. Several students felt that this made them more independent, as they could not rely on the teacher leaning over and pointing things out for them, which is also confirmed in teachers' and parents' interviews.

Another interesting point was that some students felt different emotionally in online lessons. Student 2 mentioned feeling more relaxed, and Student 1 even suggested that introverted children might enjoy online lessons more than extroverted ones. This shows that satisfaction with OPL is not only about age or ability, but also about personality. It is something that neither teachers nor parents highlighted, but it came directly from the students themselves. Perhaps this also indicates that students notice different things than adults do, and that they may value aspects such as comfort and atmosphere in ways that adults overlook.

7.4.5 Parental involvement

When asked if their parents supported them during OPL and in what way, most children said that parents would help them with the technology; one parent would help with annotations, and another would just be nearby during the lessons, which is consistent with what parents claimed as well. However, when asked if they would have wished for more help sometimes, they conclusively said that they would not. This contradicts what the teachers have been saying — that parental involvement is needed when the students are young. As confirmed by the teachers, it might be that parents affect the dynamics of the lesson (Section 7.2.5). It might also be because they were accustomed to the teacher, they knew the teacher from face-to-face lessons, and therefore felt comfortable not having a parent present. This also confirms what parents were saying, that online lessons work better if the child already knows the teacher from face-to-face situations. Why students might not want their parents to be present in the lessons is a question that needs to be explored further.

7.4.6 Students' expressions of compassion

An unexpected theme emerged from students' interview analysis, which is their understanding and compassion toward their teacher, which has not been apparent in parents' interviews as they were so focused on comparing how much learning can be done online and face-to-face, almost like a business deal. Student 1 noticed that it is harder for the teacher to teach due to technical difficulties, and they need to put more energy into guiding the students online. Furthermore, Students 2 and 5 recognised that online lessons make it easier and more convenient for the teacher as they do not have to commute or get stuck in traffic on the way to the face-to-face lesson.

7.4.7 Summary of interview analysis with students

Interviews with students have highlighted some of the essential themes that teachers and parents discussed, and showed some interesting results in comparison between online and face-to-face lessons. Students, like teachers, recognise that connectivity issues negatively affect the lesson flow. Furthermore, such problems also make it difficult for students to see and understand the teacher's instructions and demonstrations and hear the dynamics. Additionally, students acknowledged that it was more challenging to find the bar numbers or the notes on the music sheet, as there was no one to point to the sheet for them.

Surprisingly, most students claimed that online lessons were the same as face-to-face lessons, pointing out that they still got to play the piano and follow their teacher's instructions. However, they also concluded that they would prefer face-to-face lessons as they felt it would be easier for them to learn, it is more interactive, the teacher could point to the score, and there would be no glitches. They also claimed they would not wish for their parents to sit or help during the lessons, and just having their technological support was sufficient.

Students brought different insights as well; for example, they think that online lessons are better for introverted people, some said that they felt more relaxed during online lessons, and a few students demonstrated compassion towards their teacher, saying that it is probably more

challenging for the teachers to teach online and it is more convenient as the teachers do not have to commute to the lessons.

7.5 Comparisons and conclusions among teachers', parents' and students' perceptions

The analysis points to the need for a flexible, individualised approach considering the student's age, skill level, the parent's role, and the teacher's adaptability. It shows that while online learning has potential, it is not a one-size-fits-all solution in music education. Below is the summary and comparisons made among all three groups of respondents. Negatives in regards to OPL have dominated every analysis in this project; however, while teachers and students predominantly focused on the technological side, such as issues with connectivity or the things they cannot do, such as teach how to use sustaining pedal, parents focused more on the effect of teaching and what has been missing in online lesson situation such as teacher's inability to demonstrate, to point out at the score and teacher's physical absence which makes students less focused, interested and motivated in general.

Parents, as well as students, reported that students (especially younger children if they had two children taking piano lessons) had difficulty understanding the teacher's instructions and demonstrations. This confirms what teachers have reported, that in order for the students to get the most out of OPL, they have to have a good visual and verbal understanding, and they have to be able to communicate well, which is dependent on students' age and development, according to teachers and parents in this sample. Further, teachers conclude that active parental involvement, such as translating to the teacher what the student means and what they might not understand, as well as translating to the student what the teacher is asking them to do, is the key to young students' learning and OPL as a whole.

The lack of focus was yet another significant negative that teachers pointed out. Teachers concluded that involving a parent or making the lesson shorter but having the lessons more often were solutions that worked. Students, together with parents, pointed out that they were more focused when the teacher sat beside them, which suggests that face-to-face lessons might suit those who have difficulty focusing better than having OPL. Among other negatives was the

inability to teach certain playing aspects or play duets, which the parents also noticed. However, all three groups agreed that progress can be slower when having the lessons online when it comes to young beginner students, and, according to parents, online lessons are less valuable than face-to-face.

Teachers also listed the abilities and characteristics that students should possess if they want to get the most out of online lessons, such as having visual and verbal understanding, being curious, being organised and being emotionally independent, and if some of these skills are not developed in a child, a parent should support the student during the lessons. However, one of the conclusions by the teachers and parents was that younger students should begin their learning journey face-to-face before moving online, which would not only help when reading the notes or finding the piano keys but also help with teacher-student relationships and building rapport. The parents have also supported this, as most of them experienced OPL after having the lessons face-to-face.

The data suggest that one of the reasons parents and students choose online lessons today relates to their specific aims and goals. Additionally, teachers who focus on preparing students for exams and giving a solid start—especially for young beginners—tend to feel more frustrated with the online format. They feel that progress can be slower than they would like, and some concepts, like playing together or pedalling, may be missed. On the other hand, teachers who emphasise a more informal learning approach, focusing on improvisation, composition, and other non-exam-based skills, tend to be more satisfied with online lessons.

Furthermore, the majority of the teachers and parents concluded that online piano lessons are not suitable for those who want to learn the instrument professionally and more responsibly when talking about young beginner students. However, as reported by Teacher 3, it works well for established students. According to the same teacher, those aged 10 and above who already have some playing skills and want to maintain playing, learning, or excel at it can get a specialised teacher from anywhere in the world. The findings, according to all three groups, also suggest that online lessons work well for older or more experienced students who already have foundational skills and can benefit from remote access to specialised teachers.

Among the positives, all groups acknowledged that online lessons make students more independent. According to this sample, independence is about students finding bar numbers, understanding terminology and phrases—what some teachers call 'musical geography'—and generally being more self-reliant. It can be concluded that students did become independent because no one was sitting next to them, and they had to solve problems themselves. Thus, most students complained that having lessons online was more challenging. On the other hand, teachers prefer students to have a certain level of independence before starting online lessons, or else they should receive strong parental support.

While most teachers stressed that parental involvement helps students to focus and could be a helping hand when teaching specific techniques, the majority of parents in this sample were not involved in lessons apart from setting up the technological side. Ultimately, when asked if students wished to have received more help from their parents, they denied it, which comes down to teacher-parent-student dynamics and, sometimes, what teaching approach is being used, as the Suzuki method requires parents to help their children during the lesson and practice.

Finally, teachers and parents acknowledged that online lessons are a good substitute when one of the parties is ill or for those who live in remote areas. All three groups acknowledged the convenience factor. However, some teachers were more positive about teaching online exclusively than others, and typically, those who used a tactile approach and physical demonstrations or focused on formal assessment methods were less satisfied with OPL. Furthermore, four out of five parents would prefer face-to-face teaching if they were faced with a choice, and six out of seven students mentioned that they would also prefer face-to-face lessons as it is more interactive, easier to learn, and help them focus. On the other hand, five students claimed that online lessons are the same, meaning that they still need to practise, play for the teacher, and listen to the teacher's instructions, but they also said that they would prefer for the teacher to sit next to them.

In summary, satisfaction with online lessons depends on all three parties – the teacher's abilities, flexibility and approach to teaching, the student's readiness and abilities and the level of parental support, as well as their aims and goals regarding playing piano. Generally, teachers were less

positive about starting a young beginner student in an online setting and would advise either substantial parental input at first or having a few lessons face-to-face before transitioning online.

Chapter 8 Integration of Findings: Bringing the Data Together

8.1 Introduction

This chapter presents an integration of findings drawn from all three analyses conducted in this study—quantitative (descriptive and multiple regression), content, and thematic. While each phase of analysis was presented separately to preserve methodological clarity, it is important to reflect on how the findings interconnect and to point to the original contribution of this thesis. A data integration approach (Creswell, 2015; Creswell & Plano Clark, 2018; Miles et al., 2014) was employed to examine the overlapping perspectives of teachers, parents, and students, highlighting patterns of agreement, divergence, and complementary insight.

During this process, themes from both the content analysis (Phase 1) and the thematic analysis (Phase 2) were revisited and, in some cases, reorganised. While the original qualitative analyses were guided by a bottom-up approach (thematic analysis used pre-determined codes from content analysis, but also a bottom-up approach (Sections 4.8.1-4.8.2) —allowing themes to emerge organically from the data—it became evident that some restructuring was necessary during the data integration process. This was primarily to align qualitative insights more clearly with the variables from the quantitative phase, making the relationships between the phases easier to interpret. In other words, the reorganisation was not to alter the meaning of the data but to help draw clearer connections across the findings and to place the emerging themes in conversation with the original variables.

To explain this process, figures or joint displays, according to Creswell (2015), have been created that bring together the key variables from the quantitative phase and the codes and themes from both qualitative phases (Appendix 14 and Figures 8.1-8.15). The figures serve not only to illustrate which variables remained prominent across all phases but also to demonstrate how some themes evolved or gained importance as the data collection progressed. In keeping with the mixed-methods design, this integration allows a more nuanced view of how teachers, parents,

and students conceptualise the factors that affect their satisfaction as well as experiences with OPL.

- The first column of the table represents the main variables tested in the regression analysis. Where latent variables were used (Section 4.4.3), individual statements were included to track whether these ideas surfaced again in the open-ended and interview responses. Although the significance of individual statements was not tested statistically, the inclusion of all statements helps to contextualise later qualitative findings.
- The second column presents the results from the content analysis of open-ended responses from teachers and parents. It is organised to align with corresponding variables from the quantitative analysis to allow comparisons. Where participants introduced new themes beyond the predefined variables—such as broader reflections on satisfaction or general challenges—these were also added but not linked with the previous statements.
- The third column includes findings from the thematic analysis of interviews conducted in Phase 2. As outlined in the methodology chapter (Section 4.6), the qualitative phase aimed to explain and extend the survey results. As the table shows, many themes from the earlier analyses were reinforced in the interviews, while several were further developed or reframed in light of new perspectives. Importantly, this phase introduced a third group—students—whose responses offered additional insight. Their reflections appear in a fourth column of the table when they differ meaningfully from those of teachers or parents.
- In some cases, the figures consist of two columns only – content analysis from phase one and thematic analysis from phase 2, showing that these are the themes that emerged and further developed in qualitative analyses.

The chapter is organised according to the research questions in order to display the variables highlighted by the study. It is worth noting that, while in the content and thematic analyses the theme of ‘Negatives’ spanned multiple aspects of OPL (technology, teaching, student behaviour, parental involvement), in the integration these had to be separated according to the relevant variables or themes. The text explains how the codes and themes were defined and interpreted. Although code frequency is central to content analysis, but less so in thematic analysis, the

number of times each code appeared is also shown in the tables, with reference to the participants (e.g. Teacher 18), meaning that this code was mentioned by 18 teachers. This helps to indicate the relative importance of a code. To reinforce this visually, a grey background is used for higher-frequency codes. The figures are intended to illustrate how the themes developed; however, as noted in the qualitative analyses, many of the themes are interconnected. The accompanying text, therefore, provides context about these themes and their relationships.

8.1.1 The overview of teachers', parents', and students' experiences of online piano lessons

Participants across both phases shared a range of experiences with online piano lessons. These were grouped into negative, positive, and neutral impressions, with students offering a few additional reflections that added further perspective. Even though the main aim of this project was to find out which factors influence teachers', parents', and students' satisfaction (or dissatisfaction) with online piano lessons (OPL), it was hard not to notice how much their feelings and experiences came through. It seemed that participants were more open and emotionally expressive in the open-ended survey responses than in the interviews. This may be because writing gave them more time and space to reflect, and perhaps it felt easier to be honest without someone listening or reacting in real time (Braun & Clarke, 2013; Friborg & Rosenvinge, 2013).

Preference for face-to-face lessons

Even though the participants were not directly asked to compare lesson formats, many still shared their preferences. In both phases of the qualitative analyses, participants stated that they preferred face-to-face lessons (Fig. 8.1). They mentioned the value of physical presence, being able to demonstrate something on the spot or to correct posture and technique more easily. Students also echoed this, elaborating on the topic even further than teachers and parents, explaining that face-to-face lessons felt clearer and more interactive, making it easier to stay focused.

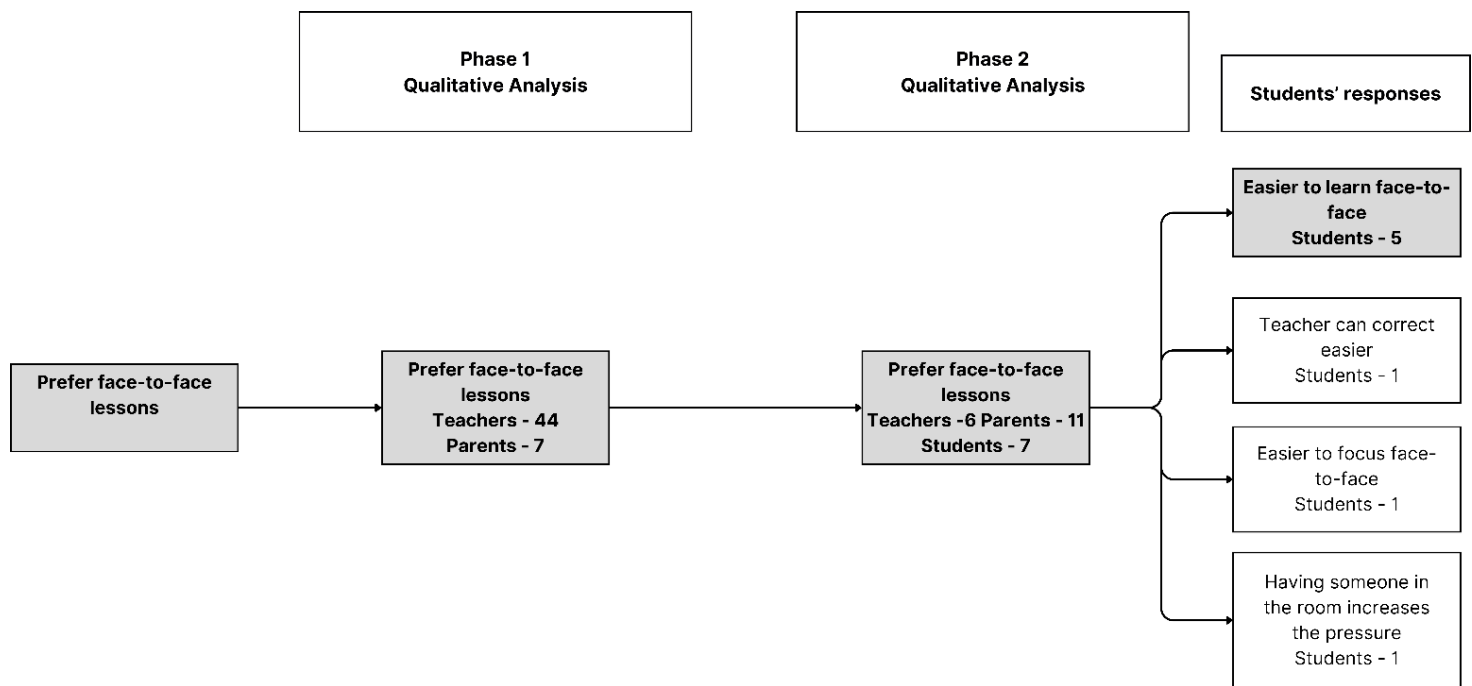


Figure 8.1 Data integration – preference for face-to-face lessons.

Neutral experiences

Another group of participants seemed to have more neutral feelings throughout both qualitative analyses (Fig. 8.2). Many of them said they had no other option at the time—especially during the pandemic—and used phrases like ‘better than nothing’, which came up quite a lot in the parents’ responses. A significant theme emerged in the interviews, mostly from the teachers’ side, that there was ‘no difference in teaching’. While some felt lessons were comparable across formats, this could be interpreted in two ways: either they adapted well and experienced little disruption, or the teachers had not significantly adjusted their methods to fit the online environment. Interestingly, a majority of students (5 out of 9) said online lessons felt ‘the same’ as in-person, which may reflect their familiarity with the teacher or limited awareness of pedagogical differences.

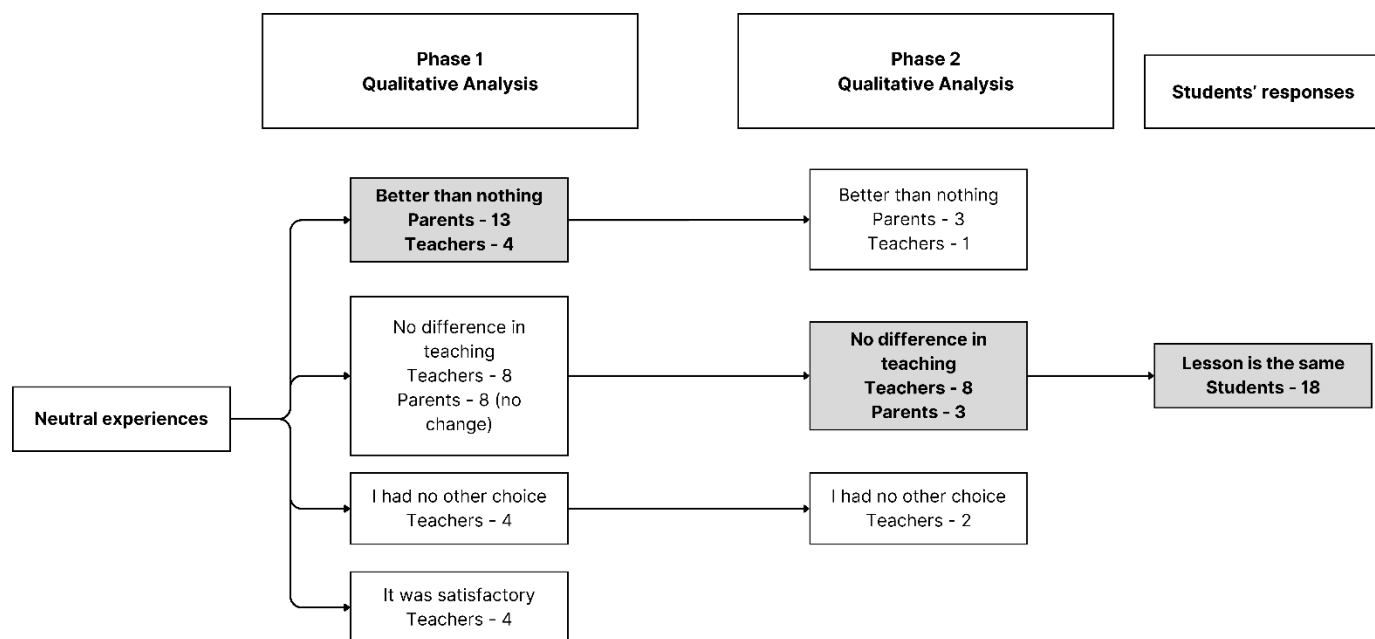


Figure 8.2 Data integration – neutral experiences.

Negative experiences

As mentioned earlier, the theme of ‘negatives’ dominated both qualitative analyses. However, Figure 8.3 reflects participants’ feelings and perceptions rather than specific reasons such as technological problems, teaching challenges, or student behaviour, which are discussed in later sections. A smaller but vocal group of teachers described OPL as challenging or ineffective, particularly with younger beginners. Teachers reported difficulties maintaining engagement, increased workload, and burnout. Some mentioned students dropping out or making slower progress, especially when parental support was limited. These frustrations were more often raised in survey comments than interviews, suggesting written responses may have provided a freer space to express dissatisfaction.

Parents frequently questioned the effectiveness of OPL, with some estimating that lessons delivered only 50–70% of the value of in-person instruction. The most common reasons cited included reduced interaction, sound or video quality, and distractions in the home environment. Teachers also reported that lessons took longer, were less efficient, and made it harder to correct bad habits. However, some acknowledged that the slower pace could foster independence and deeper musical understanding in the long run.

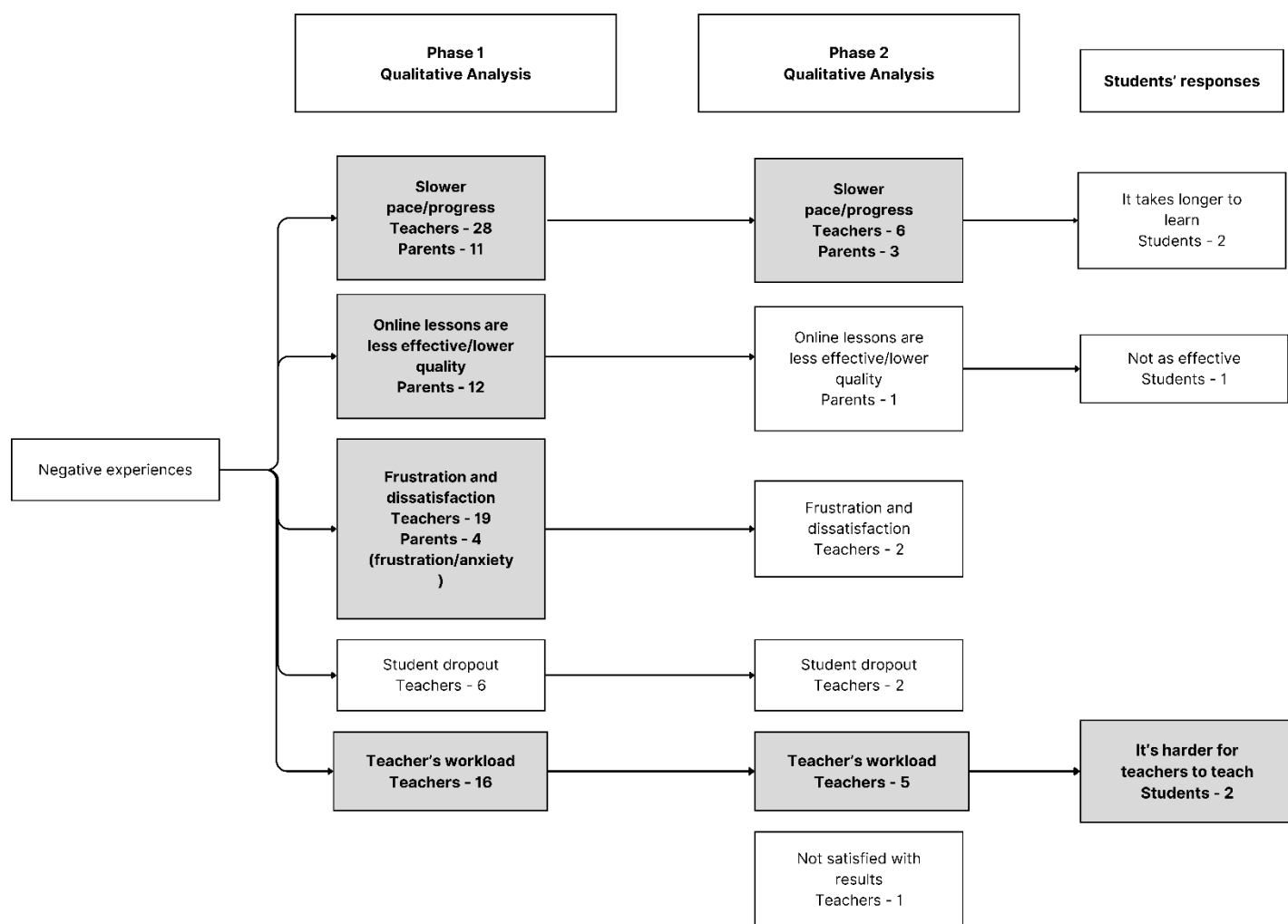


Figure 8.3 Data integration – negative experiences.

Positive experiences

Although online piano lessons came with their share of challenges, a number of teachers described them in a positive light. They spoke about students becoming more independent, sight-reading improvement, and the chance to make creative use of digital tools (Fig. 8.4). A few teachers also appreciated being able to see the students' home environments and found that screen sharing and informal chats helped strengthen their relationship with the students. Several reported that their students progressed just as well or even better online—particularly when parents were involved and technological setups were adequate. Parents who expressed satisfaction pointed to the visible progress of their children. In interviews, teachers who had

adapted well to online teaching described their methods as essentially the same in both formats, with additional preparation and clear visual communication compensating for physical absence. Additionally, students acknowledged that they became more independent in knowing ‘music geography’ (i.e., musical terms, bars, phrases).

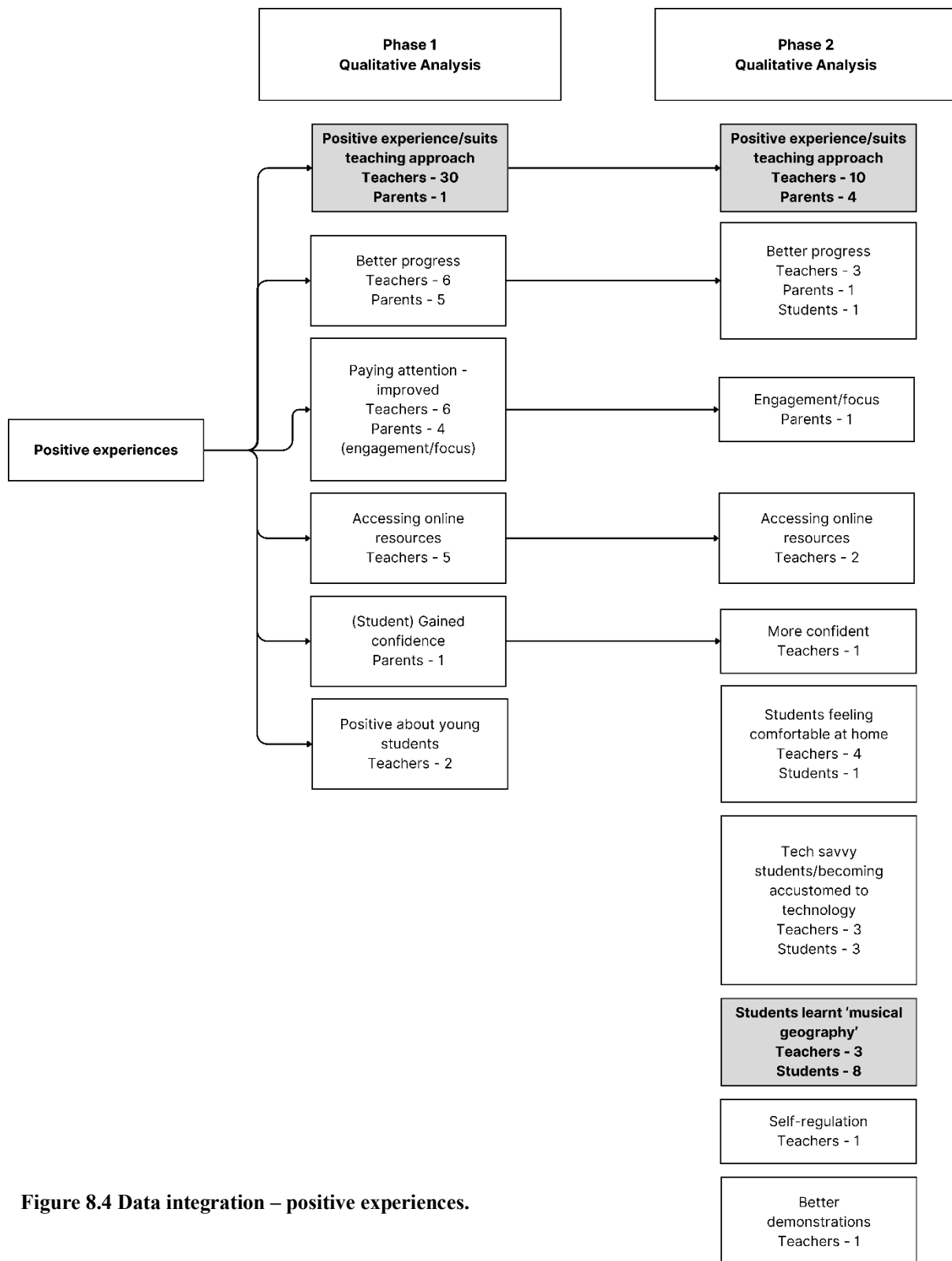


Figure 8.4 Data integration – positive experiences.

Additional insights from students

One theme that stood out in the student interviews—but was not echoed by parents—was a sense of empathy towards their teachers. A few students recognised how much effort it took for the teachers to guide them through lessons online. They also pointed out that remote teaching was likely more convenient for the teachers as they did not have to travel (if the teacher usually visits the student at home). Their observations—though often brief—highlighted how children perceive the changes in ways that differ from adult reasoning.

Overall, the views on OPL are mixed; however, the themes remained consistent throughout the qualitative analyses (Fig. 8.1-8.4), with some saying they would never go back to online teaching, while others praise this teaching mode. It seems that the satisfaction or dissatisfaction with OPL depends on many factors involving all groups: teachers' teaching approach and preference, students' age and abilities, the level of parental support and parental views on learning an instrument, which will be discussed in further detail in this chapter. However, it seems that there is no one-size-fits-all solution, and many circumstances have influenced the participants' experience.

8.2 How do student independence, skill acquisition, motivation and parental support affect teachers', parents' and students' satisfaction with online piano lessons

The following section aims to investigate how the four pre-determined variables affect teachers' and parents' satisfaction with online piano lessons. The variables are pre-determined as they are derived from the literature review as the most significant ones that can affect OPL. As the quantitative analysis was based on multiple regression analysis, the variables had to be pre-determined before conducting the analysis (Section 4.5.1). However, as the purpose of this chapter is to integrate the results from all three analyses, this section will not only be based on the quantitative but also the qualitative findings.

8.2.1 Student Independence

In this study, the concept of independence was explored through a latent variable tested in the quantitative analysis. This variable was constructed from seven statements, reflecting students' behaviour in one-to-one instrumental lessons and drawing on previous work by Roesler (2017) and Kupers et al. (2014). The statements from the latent variable are represented in the first column (Appendix 14). The figure (Appendix 14) demonstrates that student independence was not only the most significant variable in the quantitative analysis, but that the significance of this variable was reinforced in the content analysis and explored in greater depth in the thematic analysis, adding substantial weight to its importance.

Independence, as analysed in the multiple regression analysis (Section 5.2), emerged as the most significant variable for both teachers and parents. Notably, student independence was also one of the most prominent themes in the qualitative data—across open-ended responses and interviews—triangulating the quantitative findings and confirming the relevance of the Likert-type statements used to construct the latent variable. Participants referred to nearly all the statements included in the quantitative measure, along with several related ideas, thereby reinforcing the validity of the construct and supporting its central role in online lesson satisfaction. However, in the thematic analysis (column three, Appendix 14), this theme became even more prominent and was further explained in relation to student abilities and characteristics—supporting the broader idea of student independence—such as maturity, curiosity, and organisational skills.

However, in open-ended questions and interviews, most of these statements were mentioned negatively, meaning that the lack of student focus is mainly associated with teachers' dissatisfaction with OPL. Some statements were not even mentioned, such as 'asking questions' or 'responding to the teacher's feedback', but instead, 'students' not understanding instructions or feedback' was brought up by parents in open-ended questions. As seen in the third column (Appendix 14), this theme gained more importance and developed into another code – 'communication skills'. Nevertheless, teachers and parents agree that this variable is the most significant, as seen in the regression analysis (Section 5.2), and it is supported by both qualitative analyses (Appendix 14).

One of the most significant negatives that teachers reported affecting their satisfaction with OPL was students' lack of focus, which was mainly associated with younger children. They explained that these students were more easily distracted by background noises, siblings, or even pets—making it difficult to maintain attention during lessons. Secondly, teachers and some parents observed that limited communication skills and a lack of general developmental readiness could become stumbling blocks for young students. Teachers mentioned that good reading and writing skills, as well as general organisation, are essential for those who are learning online. Furthermore, parents reported that students often struggled to understand teachers' instructions, whereas teachers suggested that difficulties arose mainly when students lacked sufficient verbal communication skills. However, some teachers in the interviews, as well as parents who also had an older sibling taking OPL at the same time as the younger one, reported not having such problems with older students, which means that younger (especially beginner) students would benefit more from face-to-face instruction if they are not developmentally ready to learn independently. Therefore, a new theme emerged in the interviews – 'Independence as a pre-requisite', meaning that teachers are more satisfied teaching students who are already independent and can navigate the notes and the keys.

Notably, most themes representing student independence in both qualitative analyses have been associated with young students (5-9 years old). Therefore, it is important to include the initial question that prompted teachers to list the factors affecting their satisfaction when teaching young students online. Teachers' in the survey were asked if they had at least one 5-9-year-old student who struggled during online piano lessons, with the majority of the teachers - 76% (79 respondents)- answering 'yes' to this question. Then, if they said they had at least one student who struggled, they were invited to explain in an open-ended question why they might struggle more than other students and what helped them overcome their struggles. This is marked as a variable in the quantitative analysis, column one (Appendix 14) as 'students who struggled while having online piano lessons', which in turn generated additional codes relating to students' age and development, which are interconnected with some 'student independence' themes (see Sections 6.2.2, 6.2.4 and Appendix 9.1 for correlations between the codes).

In both qualitative analyses, it was concluded that if there is no other choice other than having online lessons, young children would benefit the most if a parent would be directly involved, supporting the child not only physically (translating teacher's demonstrations and feedback into

their own ‘dimension’), but also emotionally, as it was noted that sometimes children are not able to express themselves as their communication skills have not been developed yet or even understanding teacher’s feedback. The increase in student independence was also noted, especially students learning the ‘musical geography’, showing that levels of independence can develop during OPL when appropriate support and guidance are provided. However, there was also a sense that older and more advanced students benefit more from OPL, as they tend to be more independent.

8.2.2 Parental Involvement

The results of this research consistently point to the importance of parental support. As seen in Figure 8.5, this theme remained significant throughout all 3 analyses. First of all, parental involvement was a latent variable in both analyses. While it ranked as the second most significant variable in teachers’ multiple regression analysis, it was also a very significant theme in both qualitative teachers’ analyses. However, it was the least significant in all three parents’ analyses, showing a controversial view of how parents saw the importance of their involvement in OPL. On the other hand, it is also possible (as reported in the limitations, Section 10.3) that most parents who responded to the survey experienced OPL only during the pandemic. During the lockdowns, extra pressure was added on parents who had to juggle the transition to remote work. They were not allowed to get help from nurseries, nannies, or relatives due to restrictions on socialising, and they also had to support their children in doing their schoolwork online. The survey statistics show that 47.5% of the parents who responded have two children, and 5% of families have three children, which means additional pressure to support several children. Thus, it is possible that parents were not present or involved during OPL, which took place during the pandemic, as they had to juggle other duties.

Teachers reported several scenarios concerning parental involvement in OPL. The first and one of the most significant ones was the lack of parental involvement. Teachers would often say that involving a parent would help students focus, meaning that without their support, students would struggle to make meaningful progress in OPL. In contrast, when a parent was involved—helping the student stay on task, explaining instructions, or simply being present—the lesson generally ran more smoothly. In some cases, parents acted as an intermediary when children were too shy

or lacked the communication skills to interact confidently. Parental support was also valued in working with neurodiverse students, where extra assistance could be especially beneficial.

However, the teacher-parent dynamic varied. Some teachers described positive, collaborative relationships, while others found that parents disrupted the lesson by talking on the phone, caring for siblings, or—if they were musicians themselves—contradicting the teacher's guidance. Preferences differed; Suzuki-trained teachers welcomed parental involvement, whereas others preferred students to take more ownership without constant oversight. Interestingly, despite the importance teachers placed on parental involvement, this was not reflected in how parents themselves viewed their role. In both surveys and interviews, parents tended to downplay their contribution. Most said they helped only with setting up technology or being nearby if needed. Students, when asked whether they would have wanted more help during lessons, all of the students said no. This might mean that, as time went on, they felt more capable and no longer saw a need for extra support.

In summary, many teachers felt more satisfied when young students had parental support during OPL, especially for maintaining focus and translating instructions. Parents were often helpful with tasks such as setting up the technology, ensuring the student stayed on track, or explaining what the teacher meant, especially when demonstrations were difficult to follow. Still, most parents in this study viewed their role as limited, and the students did not express a desire for

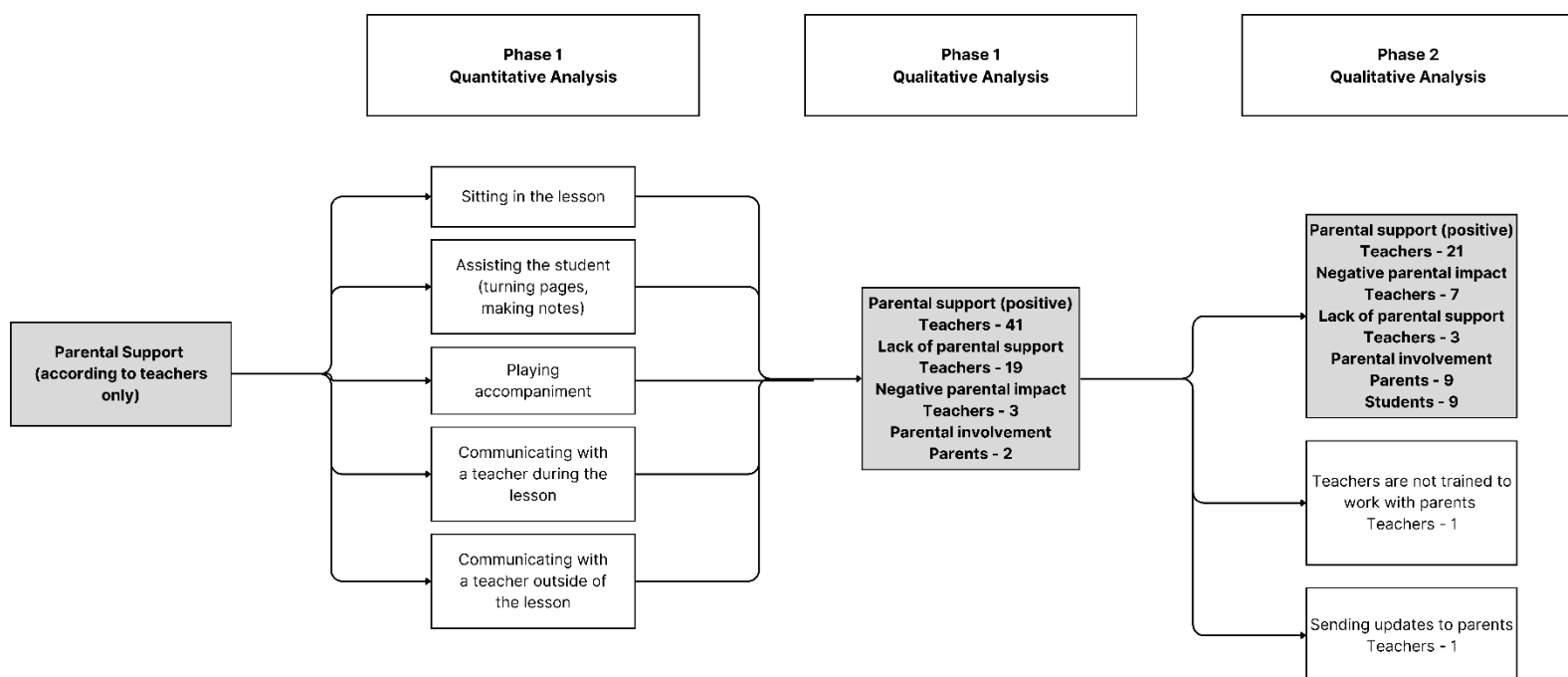


Figure 8.5 Data integration – parental involvement and support.

more involvement either. This contrast implies that while teacher satisfaction with OPL may be linked to parental engagement, families do not always see—or accept—that role in the same way. If such support is not available, online teaching is still possible, but it may be slower and less effective, particularly for very young beginners. Practical strategies suggested by teachers—such as tutorial videos, camera adjustments, or reminders to have materials ready—can also help when parents are not directly involved (Section 7.2.5).

8.2.3 Skill acquisition

This section explores the theme of skill acquisition, which was initially measured through multiple regression analysis in the teachers' survey only, where it emerged as the third most significant factor (Section 5.2). In the open-ended survey responses, difficulties around correcting posture and hand position came up most frequently, followed by challenges in teaching technique more generally and explaining notation. These comments tended to be framed negatively, with teachers expressing frustration when they found it harder—or in some cases impossible—to teach these technical aspects online. However, teachers did not discuss much of the skill acquisition aspects in the interviews, as shown in Figure 8.6.

It became particularly evident that teachers who rely on tactile, hands-on approaches found online teaching more restrictive when guiding students' hand positions and posture. These difficulties were most often mentioned concerning young beginners, whom teachers felt needed more physical and hands-on support for the student to understand and adopt the correct technique (Section 6.2.2 and Appendix 9.1). Teaching notation—such as recognising notes on the score and finding the correct keys on the piano—was also identified as a challenge, especially with students who had not yet built a strong foundation in these skills. Additionally, difficulty in teaching technique has been prominent in both analyses; however, this theme is quite broad, as it does not specify which aspects of technique were difficult to teach (Sections 6.2.2 and 7.3.1).

Most of these issues around skill acquisition, particularly concerning young beginner students, were presented by the teachers in open-ended questions of the survey, showing the triangulation of the pre-determined variable. However, some of these challenges were addressed by teachers

who continued teaching online after the pandemic, as they found ways to work around the difficulties they had faced earlier (Section 7.2.3).

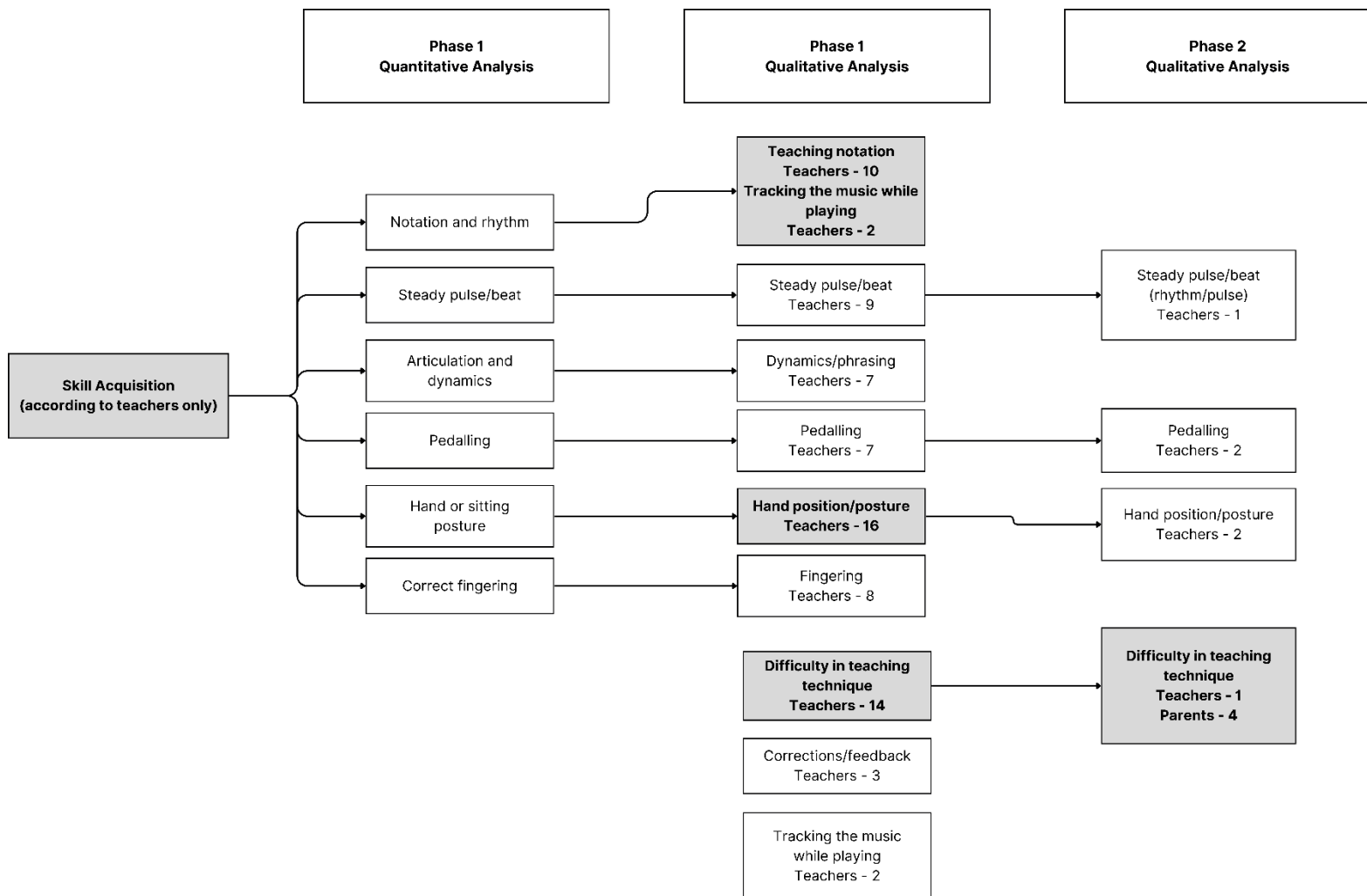


Figure 8.6 Data integration – skill acquisition.

8.2.4 Motivation

Student motivation was one of the latent variables included in the parents' survey which derived from the literature review as one of the most significant variables in music education overall (Section 2.6.2). However, the purpose of measuring motivation in this survey as a factor was not to identify what kind of motivation the students had when they were having OPL (e.g., intrinsic,

extrinsic (Ryan & Deci, 2000) but to determine if student motivation played any role in parents' satisfaction with online lessons (Section 4.4.3). Multiple regression analysis showed a positive trend that motivation might impact parents' satisfaction, however, only slightly (Section 5.2). As seen in Figure 8.7, this theme has not been further developed in any qualitative analyses with any group of participants.

That said, the data from this project suggests that motivation may not be the strongest factor shaping satisfaction with OPL. It is consistent in quantitative and qualitative analyses that teachers and parents focused more on practical challenges, student readiness, and parental involvement. While a few teachers shared strategies they used to keep students motivated—like sending certificates or encouraging student-led repertoire choices—these were mentioned only briefly (Section 7.2.3).

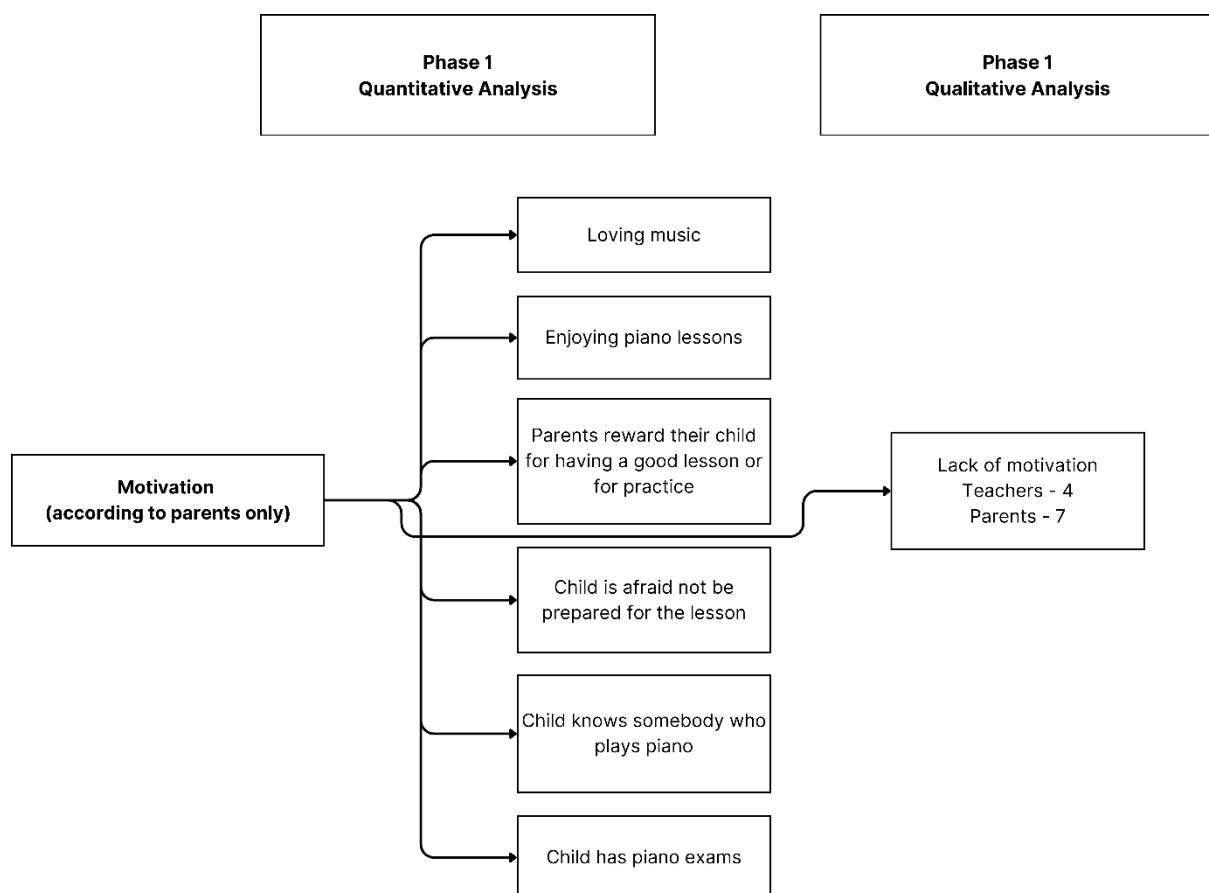


Figure 8.7 Data integration – motivation.

8.3 Additional factors that might have an impact on online piano lessons

This section focuses on the additional variables tested through multiple regression analysis (Section 5.3), alongside key themes that emerged from both qualitative datasets. These variables and themes provide important insights that contribute to the overall understanding of the research questions and were found to be particularly significant in shaping the study's conclusions.

8.3.1 Prior experience having online piano lessons, connectivity issues, teacher confidence and asynchronous learning

Several additional factors were explored through regression analysis to examine whether they played a role in teacher and parent satisfaction with online piano lessons. These included prior experience with online teaching or learning before the pandemic, confidence in using technology while teaching online (teachers only), connectivity or broadband issues, and, in the parents' survey, whether the teacher provided video recordings (Section 5.3). Among these, the only variable showing a notable pattern was connectivity: those who never experienced technical problems reported slightly higher satisfaction than those who always did. Similarly, teachers who felt very confident using technology tended to report higher satisfaction, although this trend was not statistically significant. Prior online teaching experience appeared to have some influence, with those teaching mainly online before the pandemic reporting higher satisfaction than others, but again, the differences were not strong enough to draw firm conclusions.

That said, the qualitative findings offer a more nuanced perspective (Fig. 8.8). Connectivity problems were frequently mentioned by teachers and students alike, particularly in relation to latency, call dropouts, and distorted audio (see Sections 6.2.2, 7.2.1, 7.4.1). While not flagged as significant in the statistical model, these issues clearly affected participants' day-to-day experiences. For students, especially younger ones, this often led to frustration or confusion, particularly when they could not clearly see demonstrations or hear instructions in real-time. Some students said they lost valuable lesson time waiting for the connection to stabilise, and others expressed that it was more difficult to understand what was being shown or asked of them.

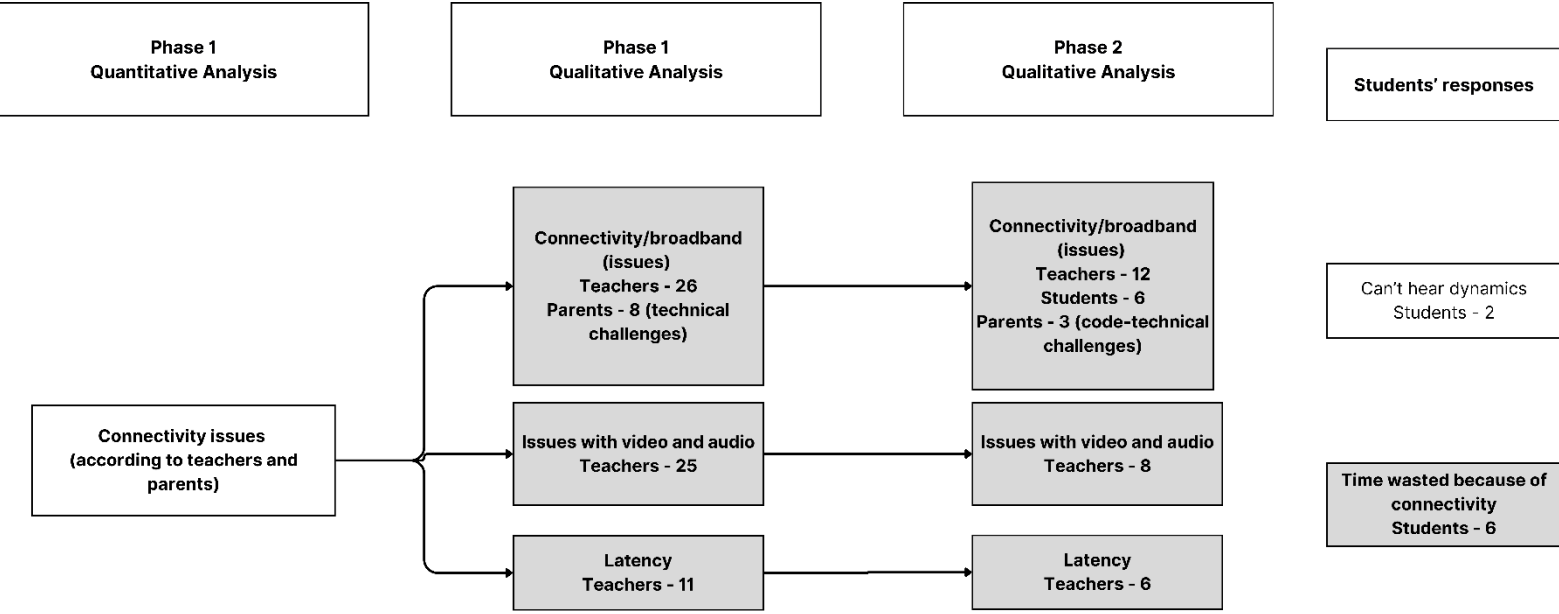


Figure 8.8 Data integration – connectivity issues.

Neither asynchronous teaching, prior experiences of teaching or learning online, nor teachers' confidence with technology emerged as strong predictors of satisfaction in the regression analysis (Section 5.3); these themes were not significant and did not develop in qualitative analyses either (Fig. 8.9). Video recordings were not widely used among the participants, and this practice was rarely mentioned in qualitative responses, suggesting that asynchronous methods were not a central feature of most participants' experiences with OPL in this sample. A few teachers described using short video tutorials to support their students' learning (Section 7.2.3), and one parent suggested that student video submissions could be a practical workaround for poor real-time connections (Section 7.3.6). However, there was no separate code created for teachers using video recordings, as it was considered a part of the teaching approach and adaptation.

While teacher confidence in using technology is widely discussed in the literature as a relevant factor (Merrick and Joseph, 2023; Mishra et al., 2020; Pozo et al., 2022), it did not emerge as a significant theme in this project's data—either quantitatively or qualitatively. Only one teacher expressed interest in learning more about teaching piano online (Fig. 8.9). Additionally, 23% of teachers and 17.7% of parents reported having prior experience of teaching and learning online

(Section 5.4); this variable was not significant in either of the analyses. On the contrary, it was noticed that a small number of parents who began online lessons post-pandemic appeared more satisfied overall, possibly because their teachers were already experienced with OPL by that point, or because they avoided the disruptions and stress of the early transition period during COVID-19 (Section 6.3.6). Overall, most of these additional factors did not appear significant in any of the analyses, except for the connectivity issues, which were very prominent in both qualitative analyses.

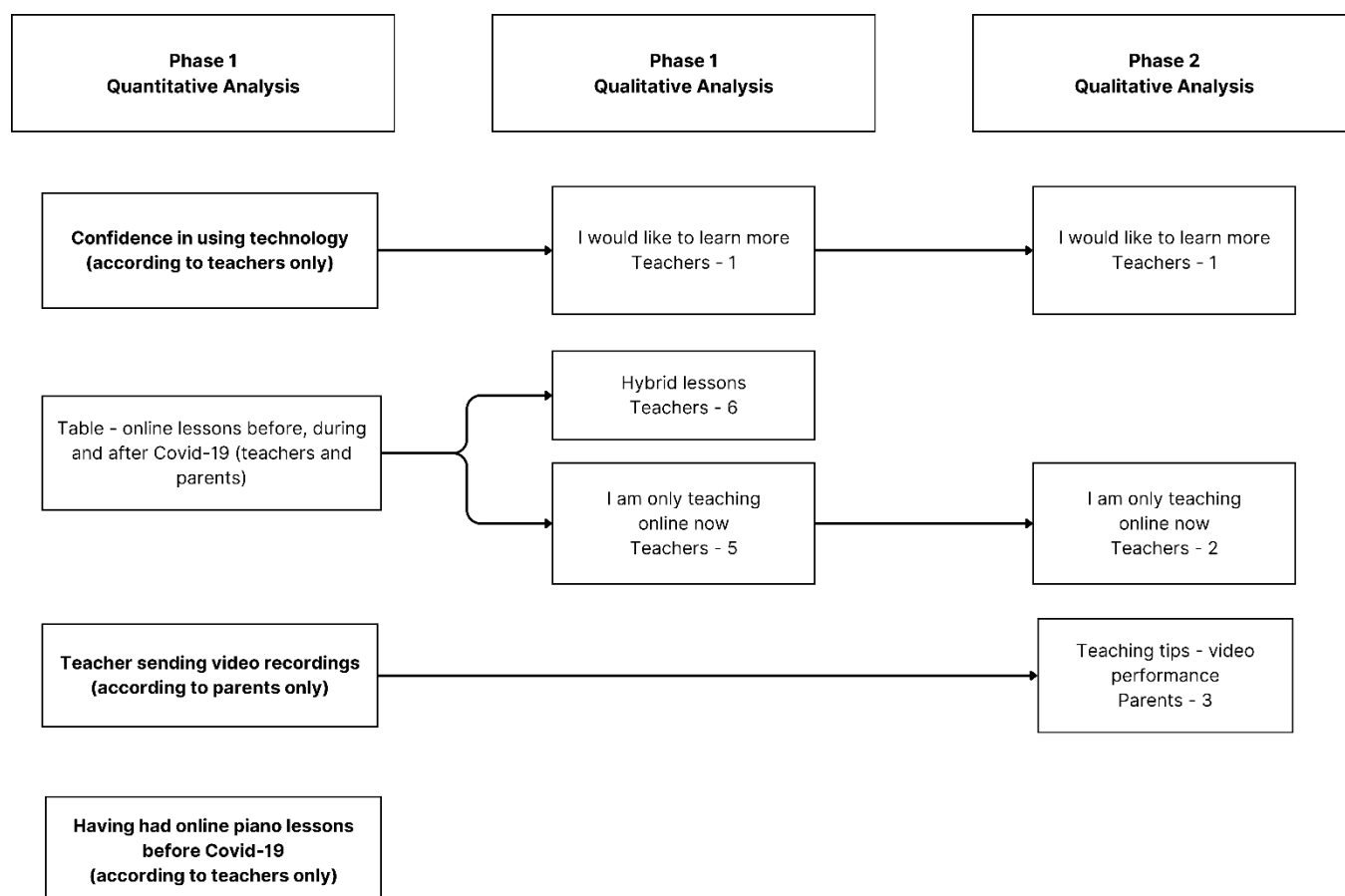


Figure 8.9 Data integration – teachers’ confidence, prior experience of teaching/having online lessons, and asynchronous teaching.

8.3.2 Teacher-student relationship

This theme first appeared in the open-ended responses and was further developed in the interviews (Fig. 8.10). However, the codes within this theme do not capture the full picture, as

they are interconnected with other themes, such as teaching approach and style (Section 8.3.3, Fig. 8.11) and teacher's physical absence (Section 8.3.4, Fig. 8.12). To provide a broader understanding, these interrelated codes are also considered in this section.

The data highlight the difficulties teachers face in maintaining relationships with students during online lessons compared to face-to-face teaching. Some of the challenges include difficulty maintaining eye contact, an inability to read nonverbal cues, and the loss of spontaneous moments that often help build trust and rapport. Teachers also noted that simple gestures, like handing out stickers or reacting naturally to small musical mishaps, were harder to recreate online. A few teachers expressed frustration over the sense of reduced authority when teaching students in their home environment. According to them, students were more likely to test boundaries and behave less cooperatively simply because they were on their own turf—something that might not happen in a school or studio setting.

On the other hand, it appeared that both parents and students felt more at ease with online lessons when a face-to-face relationship had already been established (Sections 7.2.3, 8.4.2, Fig. 8.14). Some teachers who continue to work exclusively online mentioned arranging in-person meetings—such as outdoor chats or short visits—as a way to strengthen the teacher-student (and parent) relationship. Other teachers offered creative ways to connect with students despite the distance, such as deliberately looking into the camera rather than at the screen to create a better sense of connection or sending gifts and certificates through the post (see section 7.2.3 for teaching suggestions).

In short, the separation created by screens and the limitations of technology made it harder for many teachers to build the kind of warm, responsive relationships that support musical learning—especially with young beginners. However, teachers who teach online exclusively have found other ways to build a relationship with a student and with a parent.

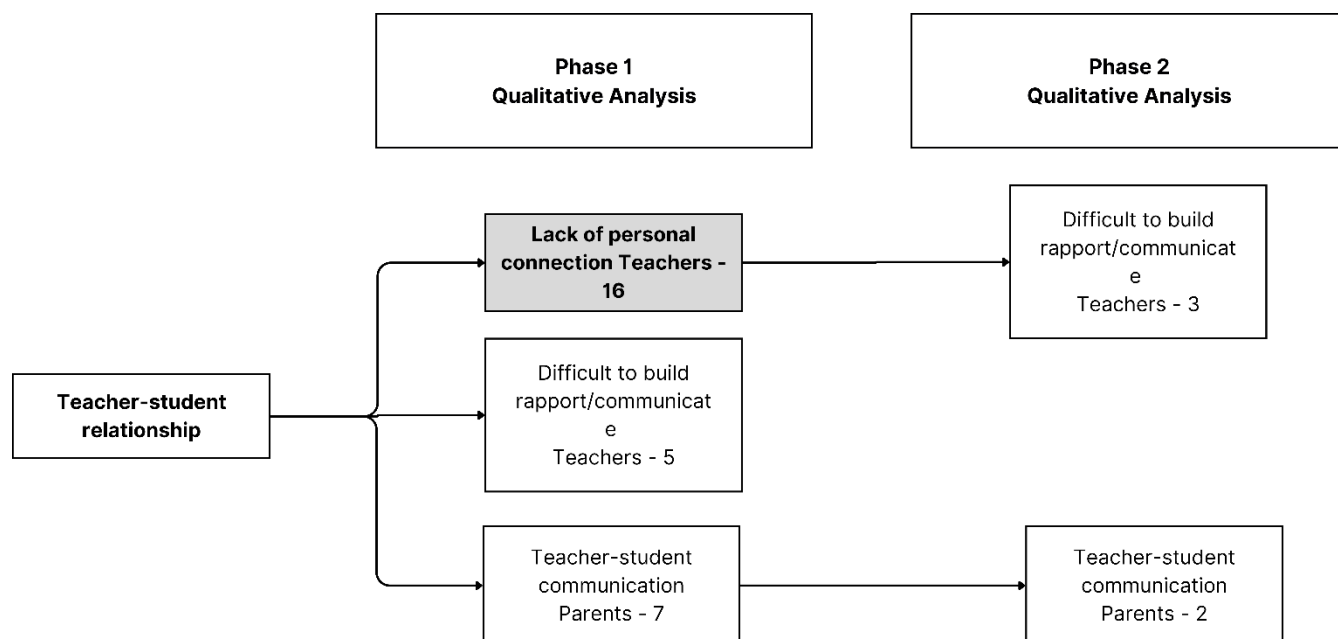


Figure 8.10 Data integration – teacher-student relationship.

8.3.3 The teaching approach and methods

Teaching approaches (sometimes also referred to as ‘methods’) include broader frameworks such as Suzuki, Dalcroze Eurhythmics, and Kodály, while teaching methods in this thesis refer to the specific techniques or strategies applied within lessons, such as repetition, modelling, scaffolding, call-and-response, or tactile methods (Section 2.3.1). However, an approach to teaching is not just about categorisation—it is shaped by individual factors, including a teacher’s personality, the student’s abilities and needs, and the relationship between the teacher, parent, and student (Creech, 2012).

While the literature explores these aspects in depth, this study focuses on the technical elements of piano instruction—such as demonstrations, duet playing, and the teacher’s physical absence—and how teachers adapted (or struggled) in the online setting. The themes related to teaching approaches emerged as a negative in open-ended questions and were further explored in the interviews (Fig. 8.11). One of the most common difficulties mentioned was the inability to play in time with the students. Some teachers mentioned using backing tracks, imitation games, or having the teacher and student play at the same time despite latency issues (see section 7.2.3

for teaching suggestions). Other common challenges included difficulty with demonstrating technique, especially for hand position and posture, and the loss of multisensory activities typically used with young beginners. Teachers also reported not being able to point to the music or guide students in the moment as they normally would, a teaching technique commonly used with young beginners (Section 2.3.1). This was further highlighted by students' comments, which indicated that reading notes without this support was more challenging.

Tactile approaches—those involving direct physical guidance and interaction—were particularly hard to replicate. These are often crucial in early-stage learning when students are still developing muscle memory and fine motor skills. Teachers who relied heavily on such methods expressed frustration with online lessons. This highlights how the online environment can limit spontaneity and the responsive, moment-to-moment teaching that many educators value. Parents, however, were generally more critical. While teachers often attributed difficulties to poor internet or limited equipment, parents focused on what they saw as shortcomings in the teaching itself. Three main areas stood out:

- Some parents felt that the demonstrations were not clear or detailed enough. Even when the teacher adjusted the camera, it did not always help students understand exactly what to change.
- Others noted that the teacher could not point to the score or visually correct mistakes in real-time—something that helped their child follow along in face-to-face lessons.
- Finally, some parents believed teachers missed mistakes more often online and found it harder to assess or adjust the student's posture or hand position.

These observations may be explained by a few key factors reported in teachers' interviews:

- Distorted audio or video quality, which can obscure both playing and communication;
- Latency, which forces teachers to delay corrections rather than interrupt while the student is playing;
- Limited camera angles or poor equipment on either side;
- In some cases, students' developmental stage—some beginners simply do not yet have the skills to follow instructions independently (Sections 7.2.2 and 7.3.4).

To sum up, although certain teaching methods used in face-to-face lessons do not translate easily to online settings, many teachers have found ways to adjust. For those whose approach depends more on physical interaction, flexibility, or spontaneous responses, teaching online proved especially challenging. But for others, particularly those willing to adapt their approach and with supportive technological setups, it offered a viable—sometimes even preferred—alternative. Overall, teaching approach and method seemed to depend on several factors, including a teacher’s problem-solving skills, philosophy, style, and character, but also on the requirements of the student and the goals or expectations of the parent (see Section 8.5.1).

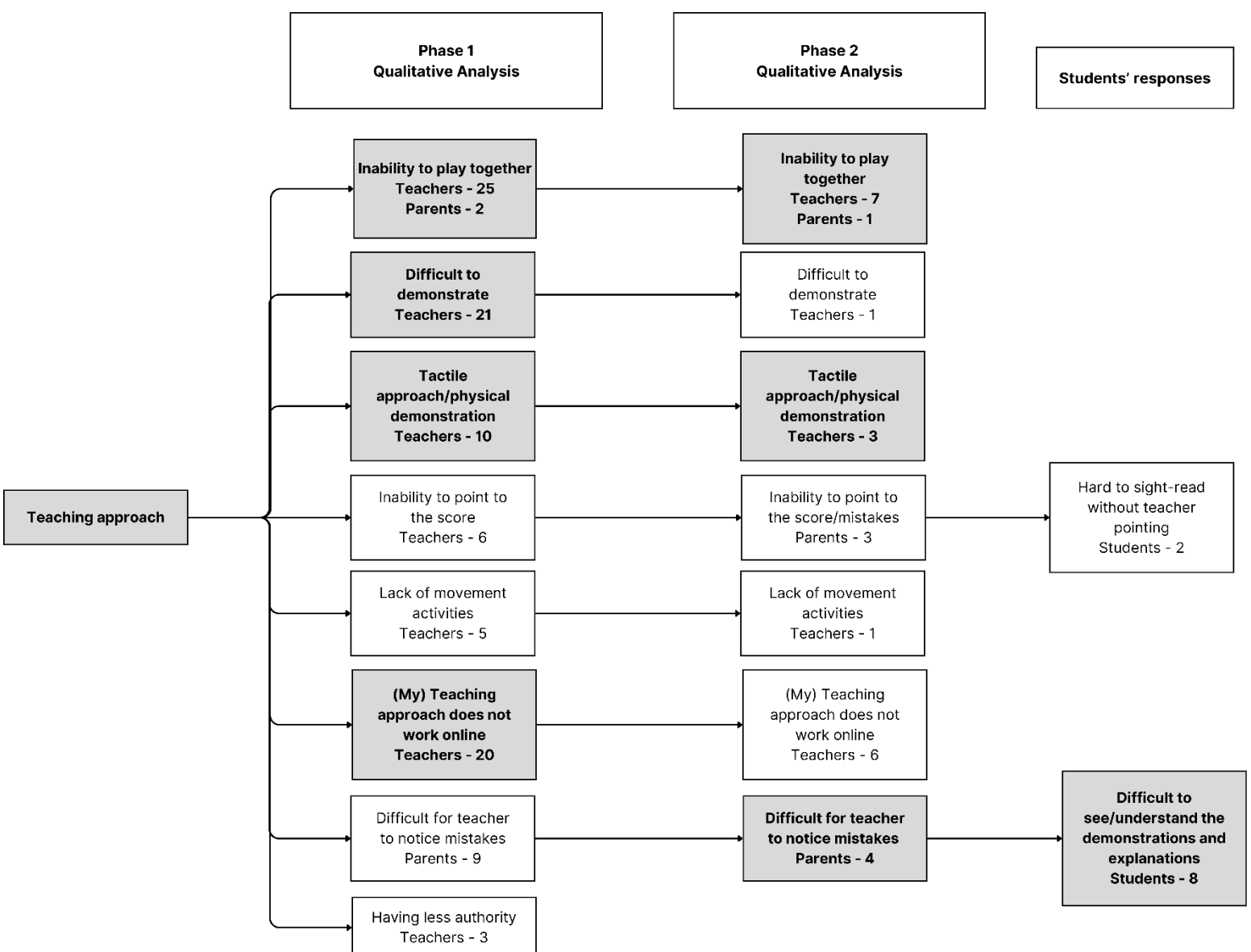


Figure 8.11 Data integration – teaching approach.

8.3.4 Teacher's physical absence

Physical presence or absence is quite challenging to pin down, and in the literature, it is reflected across topics ranging from the teacher's non-verbal communication and emotional support during lessons to the use of tactile approaches and physical demonstrations (Akyol & Garrison, 2008; Bremmer and Nijs, 2020; Johnson, 2017; Simones et al., 2015). This theme emerged in open-ended responses and became more significant and strongly articulated in the interviews (Fig. 8.12). Many respondents found that younger children (5–9 years old) had difficulty focusing, maintaining attention, and understanding instructions through a screen. The lack of physical presence from the teacher was a significant challenge, making it harder to correct posture, hand placement, and other technical aspects. While the theme of 'teachers' physical absence' encompasses a range of meanings and experiences, particularly highlighted in the interviews (Sections 7.2.2, 7.3.1, 7.4.3), it is closely interconnected with the preceding theme of teaching approach, where participants referred to the lack of movement activities and the inability to point at the score (Section 8.3.3, Fig. 8.11).

Many teachers emphasised that face-to-face lessons offer more engaging, multisensory experiences for young children. Several commented that younger students depend on physical corrections and in-person feedback, which are difficult to replicate online. The added teacher workload and preparation required for online teaching did not always translate into meaningful progress. Teachers described how the absence of physical presence limited their ability to use movement-based activities or respond spontaneously during lessons. Some parents also felt that without a teacher physically present beside the child, it was more difficult for their child to stay engaged or fully grasp the material being taught. Some highlighted the importance of being able to see full-body movements—both from the student and teacher—as essential for musical expression. Others felt that online lessons lacked the emotional depth and spontaneity of in-person interaction, making them feel distant or less inspiring.

A teacher's physical absence also ties in with the emotional connection that the teacher and the student can build while having face-to-face lessons. There were mixed views on this, as some

parents in this study claimed that it is only possible if they had known the teacher in person and having face-to-face lessons before moving to online settings (Section 7.3.6). Others who have never met their teacher in person did not complain about this issue as much, so it might be a matter of what they are accustomed to. For instance, if they really enjoyed face-to-face lessons, they would not be happy with online alternatives.

Overall, physical presence proved difficult to define, as it spans technical, behavioural, and emotional dimensions (Section 2.5.3). Teachers and parents agreed that young beginners struggled more without it, particularly with posture, attention, and communication. Interviews

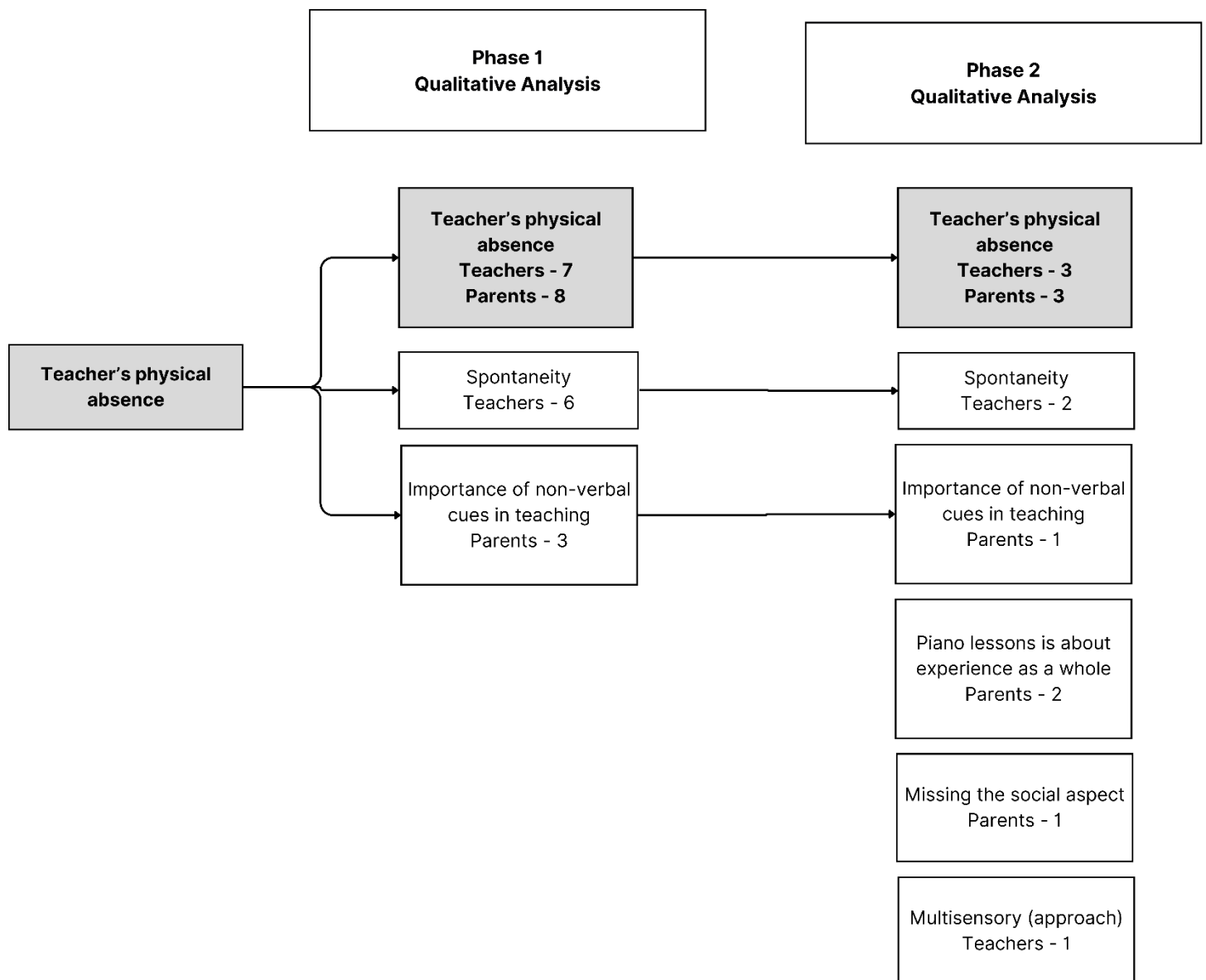


Figure 8.12 Data integration – teacher's physical absence.

highlighted this theme most strongly, suggesting that while statistical measures cannot easily capture it, physical presence remains central to how online lessons are experienced.

8.4 The teaching methods that teachers and parents find helpful when teaching young students online

8.4.1 Technological setup

This theme concerning technological configurations is prominent in all analyses (Fig. 8.13). Initially, teachers and parents were asked what technological setups and videoconferencing platforms they used (and were satisfied with) (Sections 5.6.1-5.6.2). However, teachers continued talking about technological setups and discoveries in open-ended questions even without being prompted to. This theme was mostly associated with adaptation to online piano teaching and discovering new ways and tools of teaching (Section 6.2.6). This tendency continued into the interviews as well (Fig. 8.13).

The findings suggest that the type of device and platform used for online piano lessons can shape the teaching experience in many ways. Most teachers reported using laptops, tablets, or mobile phones, and some improved their setup with additional tools like USB microphones or cameras to get better sound and visuals. Those who taught primarily online tended to use multiple devices to capture different angles—usually a camera above the keyboard and one from the side to show hand position and posture (Section 7.2.3, Fig. 7.1). Teachers often highlighted the need for better equipment to improve demonstrations and communication, and some noted that parents also expected a certain level of professionalism in this regard.

At the same time, students' technological setups were not always adequate. A substantial number of students took lessons using only a mobile phone, which made it difficult for teachers to see their hands or give accurate feedback. Several teachers reported that this limited view affected their ability to spot mistakes, especially if the camera only captured one side of the keyboard (Section 6.2.2). Poor sound and video quality on the student's end also contributed to misunderstandings and reduced lesson effectiveness. Several teachers reported that lessons were harder when students lacked appropriate equipment at home, such as a proper bench or a

full-sized keyboard (Section 7.2.1). While some teachers were able to advise parents on better camera angles or more suitable setups, the lack of resources on the students' side continued to be a barrier. At the same time, a few teachers appreciated the chance to observe the students' home environment and offer practical suggestions for improving practice conditions—something not possible in face-to-face lessons at school or in studios.

Even though these issues persisted, teachers who continued teaching online after the pandemic found ways to adjust by upgrading their equipment, adding extra cameras, or experimenting with different software to enhance communication. Still, the success of these efforts often depended on whether the student had a suitable setup on their end. If the student's camera does not show their hands, posture, or feet clearly, the teacher can only do so much.

In short, while some technological limitations can be worked around with better tools and communication, they still represent a core obstacle for many. The overall findings suggest that both teacher and student need adequate resources—and at least a basic level of technical

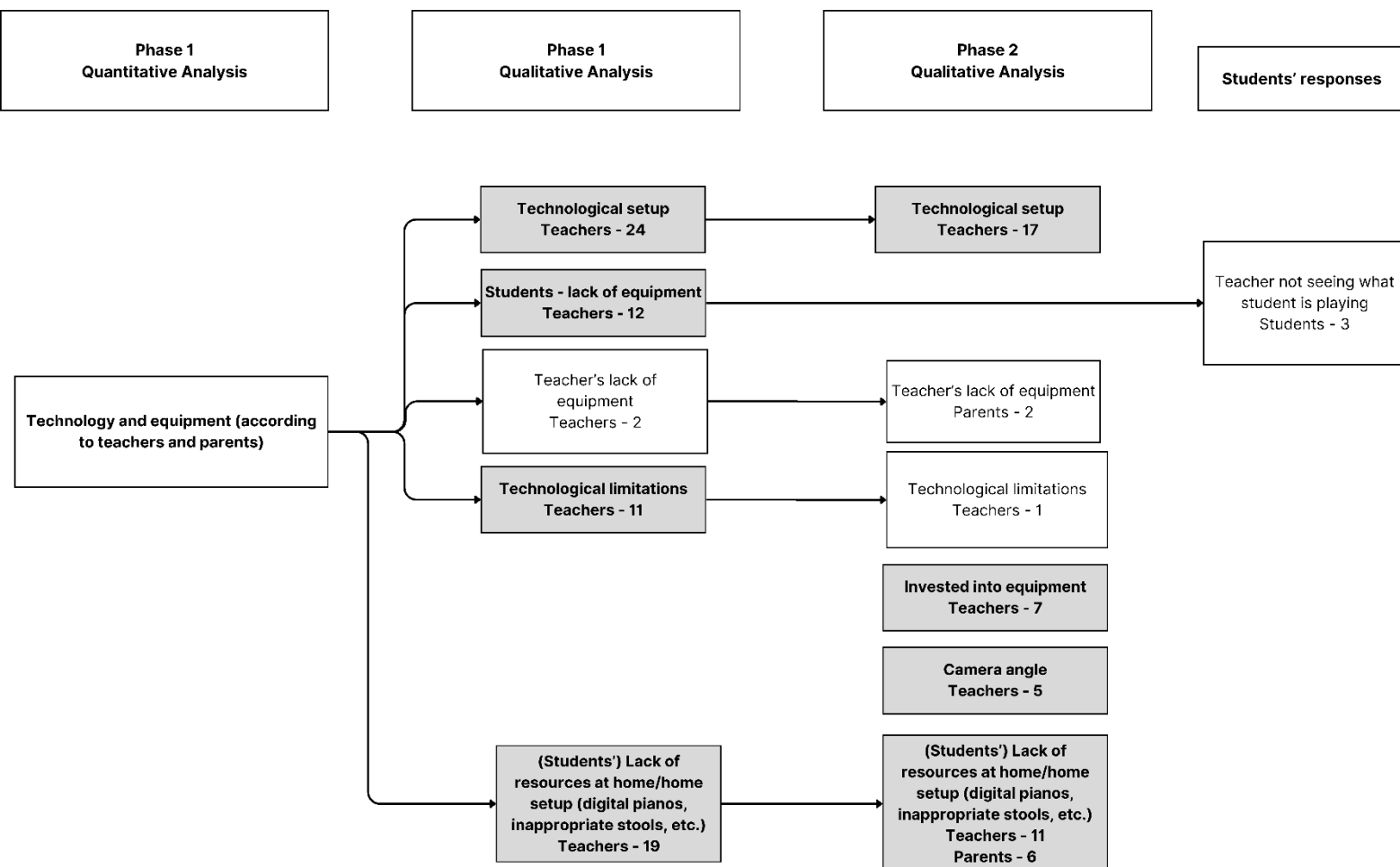


Figure 8.13 Data integration – technological setup.

confidence—for online lessons to be successful. Without these, the lesson experience is likely to be compromised, particularly when it comes to clarity, engagement, and effective communication.

8.4.2 Teaching suggestions in an online lesson setting

This theme emerged in the open-ended responses and was developed further in the interviews (Fig. 8.14), with the majority of its codes presented in Section 7.2.3. Teachers were reflective about their teaching practice, and all the positives and negatives they had listed were often paired with solutions or discoveries they made while teaching online. The transition to virtual teaching forced piano instructors to create new methods and teaching strategies. Teachers needed to become more structured, organised, and transparent in their demonstrations so that the activities would be more interactive and keep students engaged.

Sometimes, it is not just about the teaching strategies, but also the teacher's qualities and abilities, that matter most in the online format. Many teachers reflected that strong communication skills, the ability to explain and demonstrate clearly, as well as good aural awareness—such as recognising notes without needing to see students' hands—are essential for making lessons run smoothly and knowing the material well to help the student navigate passages seamlessly.

Beyond personal abilities, teachers shared a wide range of practical suggestions they found effective, such as breaking down tasks into smaller, manageable chunks, designing interactive games (often focused on theory or rhythm) to keep students engaged, and improvisation, either through taking turns with the student or using backing tracks. One of the biggest challenges raised across all phases of the project was not being able to play in time with the student. However, teachers who continued working online offered workarounds (Section 7.2.3). Nevertheless, knowing the student (in-person) before moving to an online setting was seen as an advantage, and as stated by teachers, it helped to continue building rapport.

The shift to online teaching challenged many piano teachers to reflect on their practice, adjust their methods, and discover new strategies to meet students' needs. While not all of them found

the transition easy or satisfying, most interviewed demonstrated a strong willingness to adapt and problem-solve. Their reflections reveal a great deal of resilience and creativity, whether through finding new ways to keep students engaged, rethinking communication, or reimagining what a lesson could look like. Despite the technical and pedagogical limitations of online platforms, many teachers found workarounds that supported students' progress and contributed to their professional growth. At the same time, it is clear that for some, the lack of physical presence and hands-on interaction remained a significant barrier—one that, in their view, online teaching could not fully overcome.

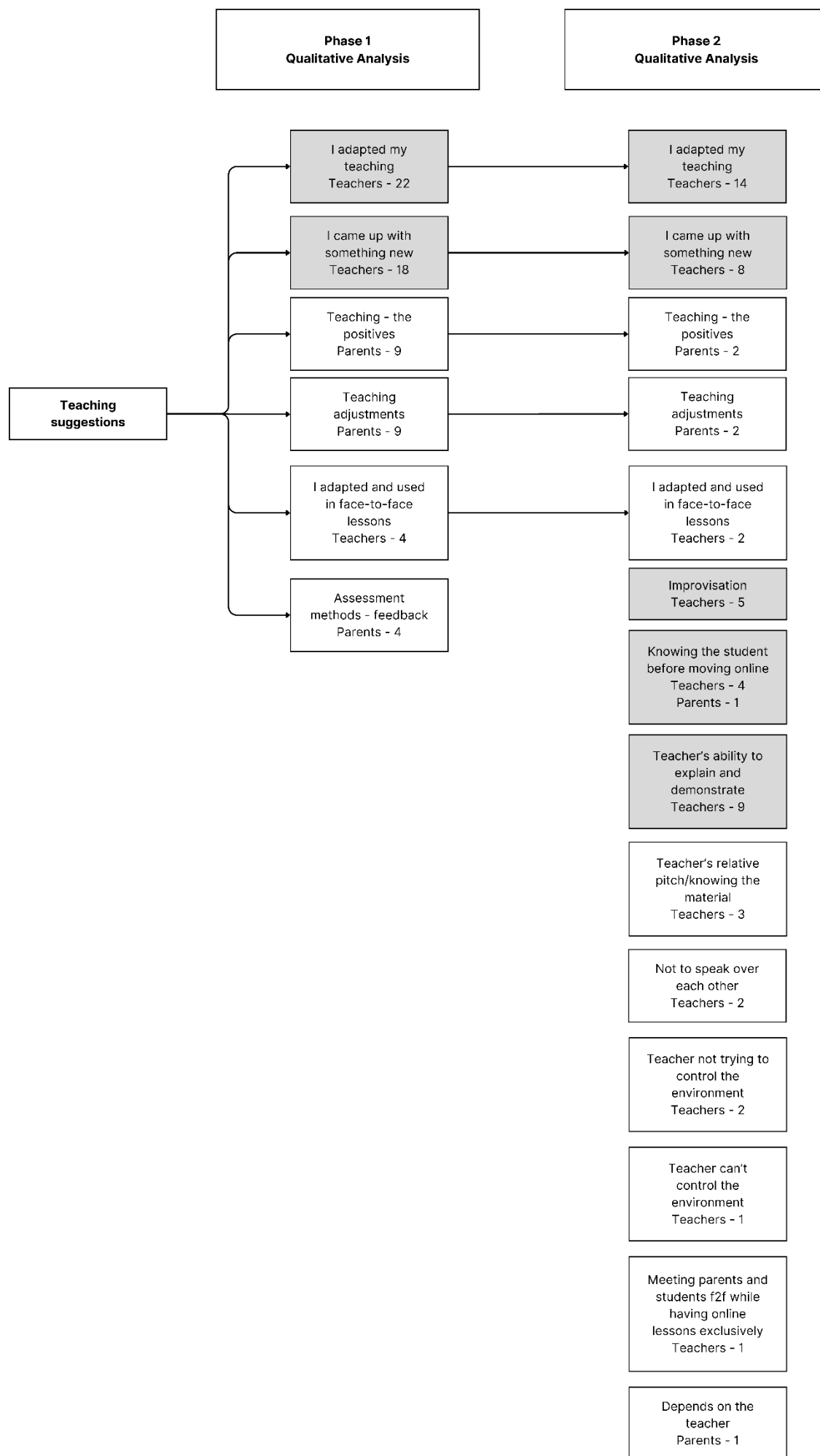


Figure 8.14 Data integration – teaching suggestions.

8.5 The main motives why teachers and parents choose online piano lessons nowadays

Although the compulsory shift from face-to-face to online teaching took place during the COVID-19 pandemic, research on online music education remains highly pertinent today. Section 5.4 shows that online piano lessons are more common after the pandemic than before and that more teachers have recently moved to teach exclusively online. Teachers mostly explained their reasons for conducting OPL in the present day, first in the open-ended survey responses and later in the interviews (Fig. 8.15).

Many teachers highlighted the practical benefits of online piano lessons, including the flexibility of scheduling, not having to travel, and being able to teach from home. Online teaching has also enabled teachers to reach students who live further away or require specialised instruction, and several teachers mentioned that they now offer online lessons as a backup option due to illness, bad weather, or transport problems. Some appreciated the increased privacy and reduced risk of illness. A few have even used it to run group classes or theory lessons, which would be harder to organise in person.

From the parents' side, many viewed online piano lessons as a practical short-term solution, for example, when rescheduling in-person lessons was not possible. Some said they expected online lessons to be cheaper, while others noted that, although the format worked for students with some foundation, it was less effective for very young beginners. However, for parents living remotely, or in cases where the teacher had moved, online lessons made it possible to continue learning.

Some teachers suggested that a hybrid model could be ideal, teaching basic concepts face-to-face and reinforcing them online. Teachers who continue to teach mainly online also reported feeling more energised and satisfied, especially without the stress of commuting or needing to prepare their homes for students. Whether teachers or parents continue with online piano lessons often comes down to practical considerations, such as the student's level of advancement, the availability of local teachers, the student's goals, and whether a teacher possesses the specific skills or expertise needed.

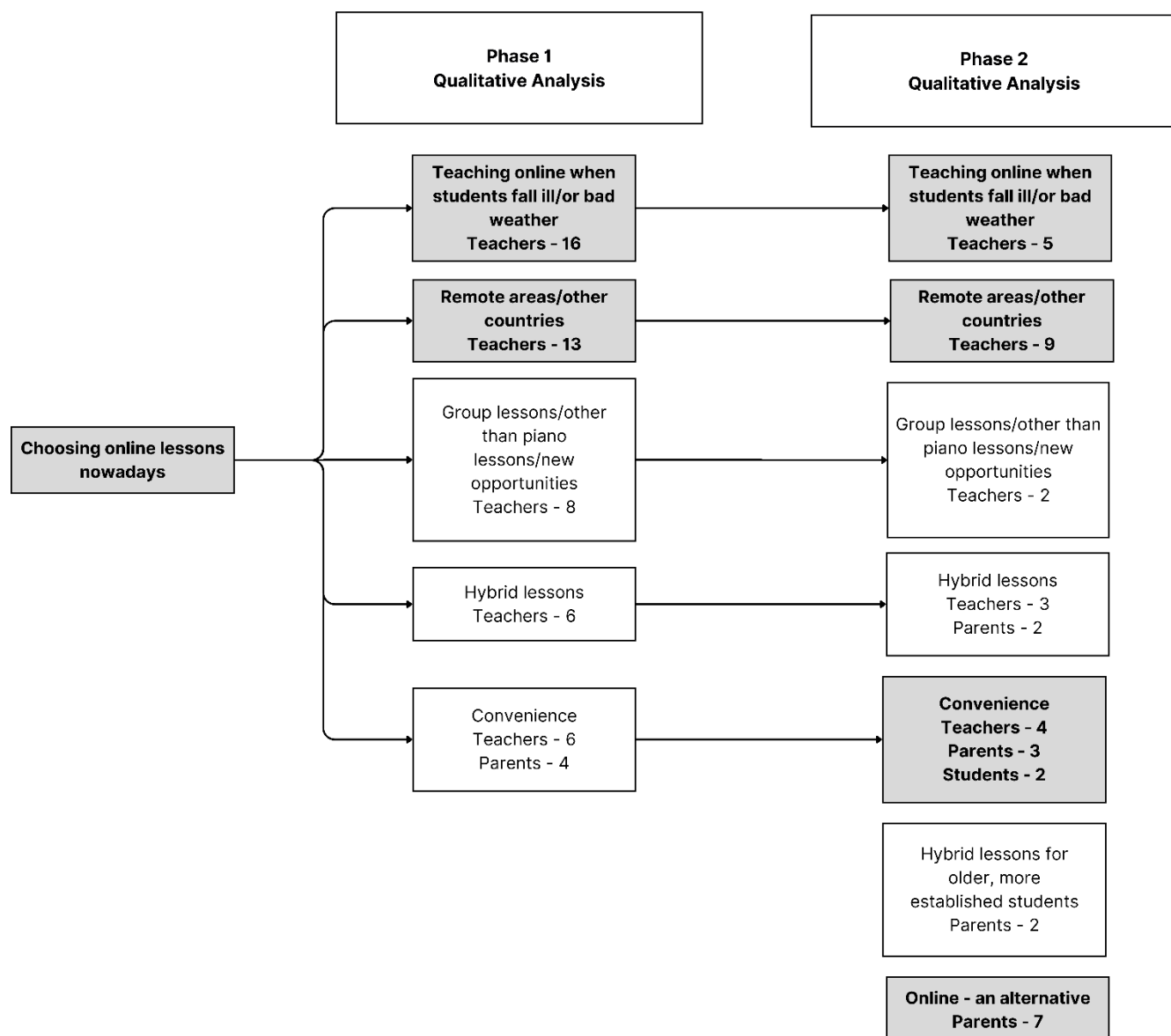


Figure 8.15 Data integration – choosing online lessons nowadays.

8.5.1 It all depends on aims and goals

Finally, one of the most unique discoveries, which ties together the search for factors determining satisfaction with online lessons, is students' or parents' aims and goals. This theme emerged only in the interviews and is not illustrated in a figure, as it was represented by a single theme (Sections 7.2.6 and 7.3.7). The results show that when parents simply want their child to enjoy music and

gain some basic skills, teachers may take a more informal approach—introducing hand positions, rhythm, and simple exploration of the instrument. Parents, as reported by the teachers, felt more positive about OPL if they only expected their children to have fun and acquire a little musical knowledge. For families aiming at exams or more formal training, both teachers and parents felt that face-to-face lessons were more appropriate, especially for young beginners who are just developing their playing habits. These findings also suggest that parents' aims for their child strongly influence how teachers structure online lessons, their teaching approach and style, and what they choose to prioritise, whether that be basic enjoyment and exploration or preparation for exams and formal progress.

There was also a sense from the teachers that those who focused on exams would get more frustrated with online lessons than those who focused on other parts of musical training, such as improvisation, composition, and history, instead of just the technicalities of piano playing. Thus, there are some specific examples from parents regarding the aims and the focus of lessons and if their attitudes towards online piano lessons were shaped according to the aims that either they have for their children or their children have themselves. It is important to note that neither parents nor teachers were asked about the aims of their child's piano learning, and the participants who mentioned the aims did so voluntarily, without being prompted, because of the flexibility of the semi-structured interview approach. Parent 1 summarises:

So this so I think it depends on the aim of learning if, for example, I'm just learning for pleasure, and I don't aim to perform to become a pianist professional. So as long as I can make the sound and I feel I'm playing well, and the teacher says it's of relatively good quality, that's fine. (meaning that it is acceptable to have online lessons if you are not aiming to become a professional pianist).

Other parents, who saw online piano lessons more positively, also mentioned that the piano is only a secondary instrument, as the main instrument the child was specialising in was the cello. Therefore, they were happy with the lessons and the student's progress. On the other hand, parents who base their children's learning on more formal measures, such as exams, saw online lessons less positively and mentioned that online lessons are less effective and that they would prefer face-to-face lessons if they were ever faced with a choice. Thus, it can be concluded that

parents', teachers', and students' satisfaction also depends on the aims and goals of the parent–student, which in turn shape the teacher's approach, though always within the teacher's own philosophy, skills, and willingness.

Chapter 9 Discussion: Interpreting Teacher, Parent, and Student Perspectives

9.1 Introduction

The mixed-methods design proved highly effective in this study, as it not only addressed the research questions comprehensively but also brought to light several unanticipated themes which enhanced the understanding of the topic. These form the original contribution of this study and will be discussed later in this chapter. The inclusion of teachers, parents, and students—as well as the international scope of the participant group—supported data triangulation and enabled the identification of both shared and divergent perspectives across these groups. While Chapter 8 integrates the data by bringing the findings together in relation to the research questions, this chapter steps back to discuss the overarching themes that cut across the study. These themes do not aim to reproduce every detail but rather to synthesise the most significant patterns, offering a broader perspective that speaks directly to issues of satisfaction with online piano lessons and their overall feasibility.

Firstly, the theme of student developmental level (9.2) highlights how it can affect students' ability to engage with online piano lessons. Teachers reported difficulties with young students' attention and focus, and many parents felt that online piano lessons may be more appropriate for older or more advanced learners. Secondly, the ongoing debate around the necessary degree of parental support in online education was especially prominent in this research (9.3). Thirdly, although it was challenging to isolate the role of the teacher's physical presence in the data, many responses indirectly pointed to the consequences of its absence—particularly in terms of how children engage and respond during online lessons (9.4). The fourth theme relates to the goals and expectations of the three participant groups (9.5). These often shaped how teachers, parents, and students evaluated the success of online lessons, influenced their reported satisfaction, and framed their perspectives on what online piano learning should achieve.

Finally, the theme of teachers' practices (9.6) offers a broader view of participant experiences. It contrasts those who expressed frustration with online teaching and how they responded with those who embraced it enthusiastically—and explores why these differences might have

emerged. The following sections discuss these five themes in more depth, showing how they underlie much of the satisfaction, dissatisfaction, and experience expressed by participants.

9.2 Student developmental level

One of the strongest themes emerging from the data across all three groups was the importance of the student's developmental level, particularly age, communication abilities, and independence, in determining the effectiveness of online piano lessons (Ivanova et al., 2025). The single primary age-related challenge teachers and parents mentioned was students not focusing during online lessons, as it has been reported in previous studies (Daugvilaite, 2021; Papatzikis, 2021; Salvador et al., 2021); however, in this study, students' lack of focus is one of the major factors. Some teachers claimed that they found different away-from-the-piano activities to keep students engaged, while others required them to involve parents in the lessons, and still others would draw an age limit and not teach students under 10.

However, qualitative findings revealed that 'independence' is understood in multiple ways: the ability to stay focused, follow instructions, communicate clearly, demonstrate reading and writing skills, or be organised. Several teachers in this study even reported discontinuing lessons with young students who were unable to manage without substantial support. A useful perspective is McPherson and Zimmerman's (2011) theory, which explains that self-regulated learning depends on the learner's ability to plan, monitor, and evaluate their own progress. These skills are still developing in younger children, which may explain why beginners in this study often had trouble following instructions or staying focused. In an online setting, where teachers cannot provide the same level of direct support, these gaps become even more apparent and highlight the need for parental scaffolding.

Existing research often suggests that students become more independent over time through online learning (e.g., Daugvilaite, 2021; Dumlavwalla, 2017; Pike & Shoemaker, 2015; Váradi et al., 2024), while the current study suggests that a lack of independence at the outset can lead to dissatisfaction. Independence also emerged as both a challenge and a benefit in this study. On one hand, teachers found it significantly easier to work with students who were already independent—those who knew the basics of piano playing, could navigate bar numbers and

phrases, and understood verbal instructions. On the other hand, online learning often exposed these gaps for students who were not yet independent. However, independence also became an outcome in some cases, especially when the teacher, parent, and student worked together consistently. Several students mentioned that they had to work more independently during online lessons, such as finding the correct notes or locating the bar numbers, which, although difficult at first, helped them become more self-reliant over time.

This study is also unique as it involved parents from diverse backgrounds from around the world. Parents have brought a different perspective to this study, which has not been discussed in the existing literature. While they complained that their children did not understand the teacher's instructions, initially suggesting a problem with delivery, teachers acknowledged that young children may lack the verbal and cognitive maturity to communicate effectively or follow complex instructions online. In addition, teachers mentioned that technical issues such as latency or connectivity would make matters even worse for students to see teachers' demonstrations or feedback. However, the theme that children do not understand teachers' instructions while learning online has not been reported in the literature before.

Whilst skill acquisition has been widely studied in music education (e.g., Dumlavwalla, 2017; Pike & Shoemaker, 2013; Koutsoupidou, 2014), there remains a gap in the literature regarding its significance for young beginner students taking OPL. The findings of this study highlight that students' skill acquisition is one of the most significant factors influencing teachers' satisfaction with OPL (Ivanova et al., 2025). Teachers and students in this study also pointed out that the inability to point directly at the score was one of the biggest challenges when teaching young students notation online. Although this may appear to be a small detail, it has important implications for very young children, whose developmental level makes them more dependent on visual cues and physical guidance. As a result, students often needed more time to find their place in the score, became confused, and lost valuable lesson time.

Additionally, teachers reported that it was more challenging to teach young beginners who lacked strong fundamentals of playing the instrument; in the words of one teacher, students who were on the cusp of learning to read music did not manage to do so via online lessons. Previous studies of sight-reading in online settings have often relied on advanced tools such as MIDI keyboards or

Disklavier pianos (e.g., Pike & Shoemaker, 2013), whereas the current study presents the reality of home-based lessons where such technology is rarely available. The data further show that young beginner students found it harder to follow instructions on changing hand position, locating notes and keys, and understanding rhythms compared to older or more advanced students.

The broader range of the literature on students' developmental level confirms that young students' communication skills, general knowledge, and self-regulation are not yet fully developed, and their concentration span can be shorter than that of older and more mature students (Hallam, 1998; Harter, 1999), which might affect how students learn as it has been demonstrated in this study. According to Vygotsky (1978), the most effective learning occurs within the learner's zone of proximal development (ZPD)—the space between what a child can do independently and what they can achieve with the guidance of a teacher or parent. This highlights the importance of interaction, scaffolding, and adult support, which can be particularly challenging in online settings.

Similarly, Piaget's theory of cognitive development suggests that younger children, particularly those in the preoperational stage, still develop logical thinking and may struggle with abstract instructions or multi-step tasks without direct, concrete input (Piaget, 1952). This was also evident in the data, as some students became confused when instructions were given verbally without concrete, hands-on guidance. Taken together, these theories underline that developmental readiness is not just a background factor—it directly shapes how effective online piano lessons can be and why parental involvement becomes so central for younger beginners.

The data in this project confirms the challenges of teaching young children online, their developmental limitations, and the difficulties that arise in maintaining engagement and understanding. The uniqueness of this study is that it focuses specifically on young beginners in the context of online piano lessons, examining not only the practical challenges reported by teachers, parents, and students, but also broader questions about the nature of teaching and learning in online environments and the preparation of instrumental teachers for this format. It offers a clearer picture of what teaching very young beginners online involves and what developmental capabilities may be required for success. This study also reinforces the idea that,

under the right conditions—particularly with experienced teachers and strong parental support—online lessons can help foster student independence. At the same time, younger learners risk becoming disengaged or overwhelmed without these supports.

While previous studies only briefly noted that online lessons may not suit young beginners (Dammers, 2009; Koutsoupidou, 2014; Okay, 2021; Salvador et al., 2021), this study is the first to investigate this age group in depth. The evidence from this study suggests that online piano lessons are generally unsuitable for young beginner students due to issues with concentration and developmental capabilities, unless significant adult scaffolding is in place. In practical terms, this may mean delaying online instruction until certain cognitive, emotional, or communicative milestones are reached, or introducing hybrid models such as having a few face-to-face lessons and a few online, or having strong parental support. Participants claimed that online lessons are more suitable for older and advanced piano students and that younger beginner students should have face-to-face lessons before transitioning online for the most effective learning.

9.3 The level of parental involvement

An important finding to emerge from this study is the variation in views on parental involvement in OPL. Parental support was one of the biggest positives that teachers mentioned in relation to online piano lessons (Section 6.2.3). They said that parents helped their children concentrate during lessons and acted as an extension of the teacher by helping to find notes on the keyboard, translating instructions, and even substituting for the teacher's physical absence. Parental involvement was considered crucial if the child's communication levels were lower; therefore, they would help articulate what the child meant and explain the child's teacher's instructions.

However, there were a few cases reported when parents were not helpful, and they would disturb the lesson flow, or (if they were musicians also) they would contradict the teacher's instructions. It was also described as a matter of preference, as some teachers felt that a parent's presence in the room reduced the student's agency. On the other hand, those using the Suzuki method claimed that some teachers are not trained to work with parents, unlike the Suzuki teaching

method, which involves the teacher working with the student and the parent simultaneously and teaching the parent how to support the student during practice (Section 2.3.4).

Interestingly, parents themselves did not see their role as especially important in the OPL setting. In the open-ended survey responses, only a few mentioned actively helping their children during the lesson—an observation that contrasts with the findings of the ABRSM (2021) report, which emphasised the increase in parental support in music learning during the pandemic. When interviewed, most parents reported that they had only helped with the initial technological setup. Students, when asked whether they wished their parents had helped more, almost unanimously said did not. This discrepancy can be understood in several ways:

1. Contextual constraints – the majority of parents in this study experienced OPL during the COVID-19 pandemic. As seen in section 4.3, many were working from home while also caring for children, with limited external support due to social distancing measures. They were likely unable to attend every lesson, even if they had wanted to.
2. Established trust and routine – many of the parents already knew the teacher before the shift to online learning. They were familiar with the lesson structure and trusted the teacher's methods. It is possible that the teacher did not require ongoing parental presence, and so parents felt it unnecessary to intervene.
3. Lesson formats and cultural variation – In the UK and the US, piano lessons are typically delivered in different formats. In schools, teacher-parent contact is often minimal and mediated via reports or email. In contrast, private studio or home-based teaching may allow for more parental involvement. It is possible that teachers who had little prior interaction with parents before moving online may have been surprised by their support during online lessons, which might have made a positive impact on their teaching. These differences could influence both teacher and parent expectations; however, further investigation is needed in this area.

What has not been explored, either in this study or in existing literature on online music education, is that parental involvement may also take place outside of lesson time. Support can

show up in practice supervision or relationship-building rather than during the lessons themselves. Uptis et al. (2017) pointed out that much of the parental involvement happens between lessons. This may explain why, even when parents in this study said they were not present during lessons (Section 5.2), they could still have been supporting their children outside of the lessons. A few parents reported that they intentionally stayed out of lessons, believing the session should be solely for the child and teacher. This highlights the need for a deeper understanding of the positive role parents can play, particularly for young beginners. As Creech (2010) and Hallam and Creech (2010) have demonstrated, appropriate parental involvement is a significant contributor to success in instrumental learning, particularly at the early stages. Creech (2012) described the ‘harmonious trio’—a student-centred teacher-parent-student relationship model—as the most effective configuration for long-term musical development.

More recent online music education studies also support the value of parental presence, particularly in group settings or early years contexts. For example, Calderón-Garrido and Gustems-Carnicer (2021) found that parental involvement in online music-making fostered emotional bonds and learning engagement. Joseph and Lennox (2021) reported similar effects in virtual classroom settings. In the early years of music education, Papatzikis (2021) highlighted how parent-child co-participation in music activities promoted both musical and emotional development. However, this study adds further nuance by illustrating how teacher-parent dynamics in OPL can be both enabling and problematic. Some teachers reported that parents interrupted or contradicted their instructions, while others felt pressured by being monitored, echoing findings by Cheng and Lam (2021), who also reported increased tension and scrutiny in online music lessons. Yet, this study presents an even broader range of parent–teacher scenarios, suggesting that much depends on mutual expectations, communication style, and the existing relationship between the two parties.

Ultimately, the level of parental involvement appears to be influenced by a combination of factors, which have not been explored in studies of online music education before: the teacher’s pedagogical preferences, the quality of parent–teacher communication, cultural expectations, and the child’s individual learning needs. As reported in this study, teachers can foster appropriate involvement through clear communication from the start—outlining expectations, inviting questions, and explaining how parental support can enhance the learning experience without undermining the student’s autonomy. This study suggests that teachers may also benefit

from training in parent–teacher communication, especially in online contexts, where boundaries and roles can feel less defined. Offering brief feedback to parents after lessons or occasional check-ins via email or messaging can also help establish rapport and shared goals.

Overall, this study has shown that encouraging a collaborative mindset in online music lessons—where parents see themselves as supporters—can make a significant difference in the effectiveness of online learning for young beginners. This aligns with Creech’s (2012) concept of co-agency, in which all three members of the teaching triangle contribute to the child’s musical journey in age-appropriate, coordinated ways. One of the most significant findings to emerge from this research is that the most effective level of parental involvement depends on the unique dynamics between teacher, student, and parent. In addition, this study has uncovered new scenarios of the teacher–parent–student triad in the online setting that have not been addressed in the existing literature on online music education.

9.4 Perceptions of presence: emotional proximity and pedagogical trust

One of the most significant points to arise from this study is the impact of the teacher’s physical presence—or its absence—in online piano lessons. This was often difficult for participants to articulate, as it can consist of different components and reflect different perceptions of what ‘physical presence’ means. Teachers and students alike stated that online lessons felt less interactive, less ‘hands-on’, and that it was more difficult to build rapport, especially when the teacher and student had not met in person before transitioning online. While Pike and Shoemaker (2013) reported that they were able to build strong teacher–student relationships without meeting in person, the majority of participants in this study did not share that view. This could be related to the fact that the difficulties in building and maintaining relationships with students in online settings are more challenging with young children, and this has important implications for online pedagogy in the early years. The strongest advocates for the importance of physical presence were the parents, many of whom claimed that their children learned better when someone was physically present.

As reported in the data, teacher presence encompasses real-time demonstrations, pointing directly at the score, correcting mistakes as they occur, eye contact, and subtle non-verbal cues

—all of which are challenging to replicate in an online format, all of which has been reported in the existing literature (Dammers, 2009; Daugvilaite, 2021; Dove, 2006; Dumlavwalla, 2017; Jorgensen, 2014; Salvador et al., 2021; Schiavio et al., 2021). The challenges, such as difficulty in showing or reading non-verbal cues, teaching posture, and using spontaneous gestures, have been concluded in this study, which is consistent with Duffy & Healey's (2017) findings. This absence may be particularly difficult for young beginners who often rely on physical modelling, guided motion, and touch-based cues (Bremmer & Nijs, 2020; Simones et al., 2015). Although some students acknowledged that doing more work by themselves helped them become more independent, many still expressed that online lessons felt more challenging.

Existing online music education literature usually frames teacher absence in terms of the loss of tactile approach or physical demonstration (Dumlavwalla, 2017; Duffy & Healey, 2017; Okay, 2021). Some teachers reported compensating with verbal cues, while Vaizman (2022) even notes that some students discontinued lessons due to the absence of physical interaction. Yet this study challenges the idea that physical presence is not simply about teaching techniques. As reported by many parents, students responded differently when someone, especially an authoritative figure like a teacher, was physically present. The teacher's presence appeared to regulate not only learning but also behaviour, attention, and engagement.

This aligns with Daniel J. Siegel's (2020) theory of interpersonal neurobiology, which posits that learning is not only a cognitive process but also a relational one. His concepts of interpersonal resonance and limbic attunement emphasise how the presence of a calm, emotionally attuned adult can regulate a child's autonomic nervous system (ANS). In short, children focus better when they are relaxed, and they are more likely to be relaxed if their lower limbic functions (associated with anxiety or alertness) are soothed by another regulated nervous system nearby. In a face-to-face lesson, this form of regulation often happens unconsciously. The teacher's presence provides a form of emotional scaffolding that is difficult to replicate through a screen. What appears to be missing, then, is not only physical demonstration but also this limbic co-regulation—a sense of being with, which builds safety, trust, and cognitive openness.

From the teachers' perspective, the most common substitute for their physical presence was to involve parents. However, this came with its complications, such as unclear parent–teacher

communication, differing levels of parental involvement, or even tension between parent and child or parent and teacher during the lesson (Section 9.3). Parents, too, acknowledged that online lessons worked better if their child had met the teacher in person first and already had a working relationship with them. This highlights the role of routine, familiarity, and trust in making online lessons successful.

An important finding to emerge from this study, which has not been covered in the existing literature on online education, is that some teachers felt they lost their authority when teaching online. Since students were in their home environment, they sometimes behaved less cooperatively. This connects directly to the idea that teacher physical presence (in face-to-face situations) can reinforce authority, while online, that authority is harder to maintain. As discussed in upcoming chapters, this may also depend on teaching style—student-centred or teacher-centred—but it could equally relate to the child’s developmental level or the child’s understanding that behaviour at home can be different from behaviour at school, which should be addressed by parents.

While some teachers found ways to adapt their teaching to the online format, this study shows that not everything can be adapted, particularly when it comes to very young beginners. It seems that the teacher’s physical presence influences student learning in ways that go beyond instruction, touch, or gestures. The teacher’s presence also acts as a regulatory and relational anchor for the student, which is particularly important in early-stage learning. This aspect has been underexplored in the literature and should not be underestimated, especially at a time when artificial intelligence and automation are beginning to encroach on professions such as teaching. While technology may replace certain technical aspects of instruction, it cannot replicate the neurobiological and emotional connection that exists between humans in shared physical space. All of this suggests that teacher presence—both physical and emotional—plays a far more important role in young children’s learning than previously accounted for, and this should be carefully considered in future studies, teacher training, and the design of online music instruction.

9.5 When goals shape perceptions of online lessons

The theme of parent, student, and teacher goals offered a useful lens through which to re-examine the data. The analysis showed that satisfaction with OPL was greater when parents wanted their child simply to enjoy exploring the instrument. In these cases, teachers could draw on more informal, student-led approaches such as improvisation or songwriting, which suited the online setting. By contrast, when parents or teachers were more exam-focused, dissatisfaction was more common. They often felt that students progressed more slowly than in face-to-face lessons. Lessons were therefore seen as less valuable, with the same outcomes requiring more time and, from the parents' perspective, higher costs.

Student-centred, informal approaches often lead to higher satisfaction across the teacher–student–parent triad—particularly when parents are not overly focused on exams and allow teachers a degree of pedagogical freedom. While this observation is consistent with existing research in general music education (e.g., Kupers et al., 2014; Roesler, 2017; Bonneville-Roussy et al., 2020), Pike (2021) similarly found that teachers who embraced a student-centred teaching philosophy were generally more effective and more satisfied with online teaching. However, the present study extends this understanding by involving all three parties—teachers, parents, and students—and demonstrates that parental pressure or flexibility plays a mediating role in the success of teachers adapting student-centred approaches in online settings. When parents emphasise exam preparation or structured progress, teachers often feel they need to adjust their methods accordingly. In contrast, when parental goals are more open-ended, teachers have greater freedom to explore creative and adaptive methods. This reflects Creech's (2010, 2012) observations that parents' expectations and values play a decisive role in shaping the nature of instrumental learning.

Additionally, parents commented that their children enjoyed lessons more when they played pop songs instead of graded pieces, and teachers also seemed more enthusiastic when teaching harmony, songwriting, or improvisation. This aligns with findings in the literature on face-to-face lessons, where informal teaching has been linked to higher engagement and enjoyment (Andrews, 2013; Baker & Green, 2013; Green, 2002; Hallam, Creech & McQueen, 2017). Based

on the data from this study, the same appears to be true for online piano lessons: informal, flexible approaches enhance satisfaction for all parties involved.

That said, the broader consensus—reflected in comments from teachers, parents, and students—is that learners who aim to pursue formal training (even if not at a professional level) benefit from beginning with face-to-face lessons or at least as a hybrid situation (a few lessons online and a few face-to-face). Where this is not feasible, online instruction can still be effective. However, it tends to require greater parental involvement, particularly in the early stages of learning, depending on the student's developmental level. On the other hand, when students and parents prefer a more relaxed approach to piano learning—one that draws on informal and student-centred practices—they tend to be more satisfied with online lessons, provided this aligns with the teacher's expertise and philosophy.

9.6 Teacher practices and characteristics in online lessons

Some teachers welcomed the transition from face-to-face to online teaching back in 2020 with open arms, embracing the change, challenging themselves, and adapting their teaching methods. In fact, some are still teaching online exclusively or offering hybrid lessons. Others, however, either stopped teaching altogether or returned to face-to-face teaching as soon as it was allowed and never looked back. A part of this study explores what might explain why some teachers feel more satisfied with online teaching than others. Previous research (Pike, 2021) linked satisfaction with online teaching largely to mindset, distinguishing between teachers who adapted and those who resisted. While this was also visible in the data, the interviews suggested additional dimensions that shaped teachers' experiences, particularly their pedagogical approach, personal characteristics, and perceptions of workload.

As discussed in the previous section (9.5), informal and student-centred approaches were often linked with higher satisfaction. However, the teaching approach could vary for many reasons: some teachers followed their own preference or training, sometimes it depended on the child's age or goals, and in other cases it was influenced by parents' expectations. The data suggest that informal, flexible approaches aligned with the aims of students and parents tended to work better in online lessons—a pattern also noted in the face-to-face context, where parental goals strongly

influence teaching focus (Creech, 2010, 2012; Creech & Hallam, 2011) and informal, student-centred learning has been shown to support motivation and autonomy (Green, 2002; McPherson & Zimmerman, 2011). Importantly, this dynamic between parental expectations, informal approaches, and satisfaction has not previously been documented in the literature on online music education, making it a novel contribution of this study.

Pozo et al. (2022) found that teachers with prior experience in online teaching before the pandemic were more versatile in responding to the challenges of remote learning, using digital tools more efficiently and flexibly. In contrast, teachers with no prior experience tended to stick with more traditional, face-to-face models or simplified their instruction, often maintaining a master-apprentice or teacher-centred approach (Pozo et al., 2021, 2022). In this study, even though the participants were asked about the previous experiences of teaching online, as well as their age and teaching experience overall, no generalisations could be drawn in this regard, as those who did not have experience of teaching online prior to the pandemic reported being satisfied with the change. However, it was noticeable that teachers who continued teaching online after the pandemic were those who stayed flexible in their approach. They often used student-centred methods such as improvisation or song writing, invested in equipment to improve lesson quality, and in some cases learnt how to involve parents more effectively. These patterns reflect the core ideas of TPACK (Mishra & Koehler, 2006), where positive teaching outcomes are linked to a teacher's ability to align their pedagogical approach with technological tools and musical content in a meaningful way.

The data indicate that teachers who followed formal, exam-focused approaches often found online lessons more tiring, as these methods required more effort to adapt to the screen, reported increased workload and burnout, previously pointed out in the literature (e.g., Joseph & Lennox, 2021). Tasks required to prepare students for exams demanded extra time and energy, and even students noticed that lessons seemed harder for the teacher. While this study was not designed to measure teacher burnout directly, teachers in this study said teaching young beginners online was just harder, expressing their frustration and dissatisfaction. Research also confirms that teaching young children demands energy-intensive strategies (e.g., movement and visual support) (Mafuraga & Moremi, 2022). Needless to say, teaching online can be stressful for some teachers, and teaching young students online might be even more challenging for educators. In contrast, when teachers used more informal methods, such as improvisation or

song writing, and a student-centred approach, lessons tended to run more smoothly and feel less exhausting. This suggests that teacher workload in OPL is closely tied to the type of approach used, with exam-focused methods proving harder to sustain online.

This study also shows that a teacher's preferred pedagogical method plays a critical role in shaping their perceptions and experiences of teaching online. The way teachers prefer to work—particularly their use of a tactile approach—can influence how they experience OPL. Those who relied more heavily on hands-on approaches often described feeling more frustrated online, where they were unable to guide or correct their students physically. This points to a deeper interaction between mindset and method, suggesting that satisfaction with online teaching depends on the compatibility of one's teaching style with the digital medium and if the teacher is willing to adapt their methods to the online format. This does not mean that successful online teaching requires ignoring piano pedagogy or correct playing techniques; rather, it concerns the way these are delivered.

This study also suggests that teachers may need to possess additional characteristics that contribute to greater satisfaction with online lessons for all involved. One such characteristic is having relative pitch, which allows teachers to recognise notes without needing to see the student's hands—an ability that has not previously been mentioned as a prerequisite for successful online teaching in existing research. Other traits, such as the ability to explain and demonstrate musical concepts clearly, were also highlighted, consistent with findings by Pike and Shoemaker (2013) and Dumlavwalla (2017). Perhaps most notably, teachers with a positive and open mindset—one oriented toward problem-solving, adaptability, and innovation—tended to report more successful online teaching experiences, echoing Pike's (2021) emphasis on a growth mindset.

Taken together, these findings show that the satisfaction with OPL depends on how well their teaching approach fits the online format, on their individual skills and characteristics, and on the extra workload that comes with teaching young beginners. Student developmental level and parental support may still be more important overall, but this section highlights that teachers' approaches and personal qualities are also significant in shaping the online lesson experience.

Chapter 10 Conclusions

10.1 Introduction

The aims of this research were to identify the most significant factors that influence teacher, parent, and student satisfaction with online piano lessons. A secondary aim was to explore which teaching practices work best when working online with young beginner piano students aged 5–9. Finally, since this project took place after the pandemic—when online teaching is no longer mandatory (unlike much of the research conducted during the pandemic)—it was important to investigate the current motivations of teachers, parents, and students who continue to choose online piano lessons today.

The mixed-methods design helped to answer these research questions through both quantitative and qualitative data collection. The first phase of the research consisted of a survey which identified the main factors contributing to participant satisfaction with online piano lessons (OPL), and also touched on the latter two research questions. The second phase involved semi-structured interviews, which delved deeper into the key factors identified in the first phase, and explored teaching approaches and present-day motivations for choosing OPL more in-depth. The second phase also included students (under the age of 18), due to the nature of the data collection method and ethical considerations. Responses were received from across the world and, despite differences in background and circumstance, showed a notable degree of consistency.

As highlighted in the literature, online music education continues to generate mixed reactions—some praise the flexibility and innovation it offers, while others, having tried it, have returned to face-to-face teaching without reconsidering online options. Moreover, the majority of existing research was carried out during the COVID-19 pandemic, when the abrupt move to online formats—often described as ‘emergency teaching’ (Hodges et al., 2020)—meant that many participants had little time to prepare and were relying on home-based equipment. These unusual circumstances likely influenced their experiences and views. Therefore, it was necessary to conduct more up-to-date research that reflects current, voluntary engagement with online piano lessons.

This study focused specifically on young beginner students aged 5–9 who have either taken or are still taking piano lessons online, the reflections of their parents, and the teachers who work with this age group in an online setting. While most recent studies have centred on teachers' experiences, parents' and students' voices have often been overlooked. This study aimed to correct that imbalance. It was also evident from the literature that no research has directly investigated students under the age of 8, and only a few passing comments have been made about teaching this age group online. This study, therefore, addresses a clear gap in the current literature and contributes new knowledge to the field of online music education.

10.2 Summary of findings

As noted earlier, online education continues to receive mixed views in terms of its effectiveness and feasibility—and this study was no exception. While some participants shared positive experiences and stated that they explicitly chose to teach online, more than half of the participants either preferred face-to-face lessons, raised multiple concerns about the online format, or expressed frustration with it. Interestingly, in this cohort, parents and students tended to favour face-to-face teaching even more than the teachers—something that has not been revealed in previous literature.

The key finding of this study is that student developmental level appears to be the strongest predictor of satisfaction in online piano lessons for young beginners. This includes independence, the ability to stay focused, communicate clearly, read notation (instrumental education specific), and self-regulate. It was clear that it is more difficult to teach young beginners who are not yet independent when starting OPL, but not impossible, provided that consistent parental support is in place. Skill acquisition for young beginners was hindered, as teachers reported that young children often need more hands-on support and may not fully understand verbal instructions. However, some teachers adapted their methods or involved a parent to support the learning process.

Parental involvement was found to be especially significant in this study. While many participants associated it with positive outcomes, the results highlighted situations where parental behaviour or the teacher-parent dynamic hindered the lesson. Interestingly, most parents did not view their

own involvement as essential, or their support was mainly outside of the lessons, and the children interviewed generally felt comfortable working independently with their teacher, suggesting that many had already developed independence and were familiar with the teacher when taking OPL. Furthermore, parents were often the key decision-makers in setting their child's learning goals, which in turn led teachers to adjust their approach—whether towards a more formal or more informal style.

This study places special emphasis on the teacher's physical absence and the effects it can have. What may be missing online, therefore, is not just physical demonstration, but also this subtle emotional attunement—something that helps build trust and cognitive openness. Parents in this study often said their child learns better when someone is next to them, and students echoed that preference, even if they struggled to explain why. Teachers also noted the absence of spontaneity and the limits to a multisensory approach when teaching online.

Importantly, this research took place after the pandemic, when teaching online was no longer compulsory. It showed that OPL is now often a deliberate choice, and motivations for choosing it vary—from convenience, distance, and scheduling flexibility to health reasons. This marks a shift from emergency teaching to more intentional forms of online learning. Teachers who were adaptable and with a problem-solving mindset managed to find workarounds to overcome technical challenges while teaching online; however, there were many more teachers and parents who claimed that online lessons do not suit their needs or preferences.

There was a strong consensus that online piano lessons are more suitable for older and more advanced students. It can be concluded that the success of online piano lessons depends on individual characteristics of the teacher and student, the level of support the student needed from a parent, and how well all three—teacher, parent, and student—worked together. This triad plays a central role in setting goals, shaping expectations, and determining the success of the learning experience.

10.3 Limitations

Phase I

Although the survey was piloted, revised and validated (Section 4.2.1), the survey also has some limitations that could be revised for future studies. During the data cleaning process, it became evident that the inclusion of non-compulsory Likert-type scale questions and the response option '*I am not sure*' contributed to a number of missing values. These had to be manually addressed before proceeding with the analysis. To streamline future data processing, it may be worth removing the '*I am not sure*' option altogether. Additionally, aligning scale responses with ascending numerical values—such as assigning '*Strongly Agree*' a value of 5 instead of 1—would improve data handling and eliminate the need to transform the values of the variables during analysis (Section 4.4.3, Table 4.2).

There were misunderstandings regarding two survey questions. 1) Question on how many students teachers had met face-to-face before transitioning online was frequently misinterpreted. While it aimed to capture information about the shift to online formats, many respondents understood it as referring to the total number of students ever taught in person. Due to this confusion, the question had to be excluded from the analysis. 2) Questions about student level addressed to parents were designed to identify outliers, with a focus on young beginners. It was unclear whether parents fully understood their child's level, resulting in inconsistencies.

Regarding the quantitative survey analysis, while the teacher sample was sufficient to carry out multiple regression analysis, the parent sample was much smaller and risked producing less stable results. Recruiting parents proved to be very challenging. Nevertheless, the qualitative results pointed in the same direction as the quantitative, showing that the numbers, even if less significant, reflected what parents described in their responses.

Another limitation is that participants' responses were not categorised by their age, teaching experience, or number of students taught. Although MAXQDA allows for incorporating such variables into the analysis, no clear trends emerged from these groupings, and the sample size was too small to run comparative statistical analysis across different sub-groups. Therefore, the information about participants' demographics was used to describe the population only. Additionally, the survey included other questions for screening purposes, rather than analysis, such as the number of young pupils each teacher taught or their level (answers from teachers who did not teach any young pupils were deleted).

Phase II

Given my professional role as a piano teacher, prior familiarity with some participants may have shaped how they responded during the second phase of data collection. On one hand, during interviews, I was able to relate to the teachers, and in several cases, I already knew the parents or children. This familiarity may have helped participants feel more at ease and more open in their responses. However, this may also have influenced their responses, either consciously or subconsciously. In one case, a child who was not familiar with me felt too shy to respond to the questions, and the parent answered on their behalf. This highlights how familiarity and trust can play an important role in interviews with young children. On the other hand, when interviewing teachers I did not know personally, my professional background enabled me to engage more effectively in the conversation and supported a more in-depth discussion.

Although thematic analysis is flexible and can be applied to a range of sample sizes, the number of interviews in this study was relatively small (nine teachers, five parents, and seven children). This means the aim was not to generate an exhaustive thematic map of all possible experiences, but rather to deepen and contextualise the patterns identified in the survey phase. A larger number of participants might have expanded the thematic scope or allowed for greater nuance within certain themes. Thus, the choice of thematic analysis was pragmatic: the approach aligned with the explanatory purpose of the study and allowed the interview data to illuminate how and why particular factors influenced satisfaction with online lessons. Williamon et al. (2021) note that thematic analysis is often used with larger samples than Interpretative Phenomenological Analysis (IPA). The present study remained within an acceptable range for thematic work, but the smaller sample inevitably limits the breadth of thematic development. Nonetheless, the limited sample size means that the findings should be interpreted with caution, and future studies with larger samples could strengthen, refine, or extend the themes identified here.

In the interviews with children, it is possible that some of their responses echoed their parents' opinions, especially about preferring face-to-face lessons, even when the children themselves had just mentioned that online lessons felt no different. Children may not always be fully aware

of the subtleties of the learning experience, and can be easily led or say what they think an adult wants to hear (Hill, 2006).

10.4 Implications for practice and policy

By examining the perceptions and experiences of teachers, parents, and students who have participated in online piano lessons, this study sought to identify the key factors that influence both successful and less effective experiences in online music education. It also looked at the teaching strategies and common challenges encountered when working with young beginners in an online format. The findings are particularly relevant for piano and instrumental teachers, both for those already teaching remotely or those considering it, as well as for parents weighing whether online lessons are a good fit for their child. The study highlights not only the benefits and drawbacks of online learning but also the essential role parents play, particularly during the early stages. For novice teachers or those with limited online teaching experience, insights gathered from more experienced colleagues may offer a helpful starting point before engaging in remote tuition themselves.

Parents in this study often said that their children felt more at ease and the lessons were more effective if they had already met or knew their teacher face-to-face. This finding has important pedagogical implications for online piano teaching with very young children. One possible approach is for teachers who intend to work online to include an initial face-to-face meeting, or—when this is not possible—to arrange online sessions dedicated to socialising and building rapport before lessons begin. Hybrid options could also be considered, where occasional in-person meetings supplement online lessons, helping younger children sustain focus and motivation. Another possibility is to involve parents more actively in the early stages.

Regarding future implications, as Johnson (2018) and Pike (2021) have noted, both current and future teachers need training in the practical aspects of online teaching. This study supports that view and suggests that such training should be embedded in teacher education programmes and extended through ongoing professional development. A further step could be to develop certified programmes or seminars that inform teachers not only about effective online pedagogical practices and technologies, but also about how to work with parents in the online setting. Since

this study showed how important parents are in supporting young beginners, teacher education should also include guidance on working with parents—for example, how to involve them in lessons, set clear boundaries, and build a cooperative relationship. Such initiatives would ensure that teachers are not only prepared for emergency situations but are also equipped for long-term, intentional use of online and hybrid teaching.

Additionally, this study also has the potential to inform policy-making bodies, which could result in improved online music education. Policies could, for example, outline recommended minimum technical standards for online instrumental lessons, including audio quality, camera placement, and latency requirements, so that teachers and families know what is needed for lessons to run effectively. Clearer safeguarding guidelines for remote lessons with young children may also be required such as having a parent or carer in the lesson at all times. Policy could further address expectations for teacher training by encouraging accreditation or CPD pathways in online instrumental pedagogy, with a particular emphasis on working with parents and supporting very young learners in remote settings.

10.5 Future research

The study also raised further questions, which, although beyond the scope of this project, point to important directions for future research. In this project, participants were from different countries and backgrounds, they used a variety of equipment, and might have had different expectations of what an online lesson should be. Future studies could look more closely at how different teaching contexts shape experiences of online lessons. For example, it might be useful to compare teachers with high-quality technical setups to those working with only a single device, or to look at whether views differ depending on the country or educational system. Treating these groups individually may help to clarify which experiences are widely shared and which depend more on the teaching environment.

It is possible that some respondents experienced online teaching before or during the pandemic, while others continued working online afterwards. This meant that the study captured a wide range of experiences, each shaped by different pressures at the time. The pandemic years brought high levels of stress for many families and teachers, which may have impacted how some

participants viewed online lessons. Because this study included responses across these periods, it is not always possible to separate general attitudes toward online teaching from reactions that were specific to the circumstances of lockdown. Future research could look more closely at the experiences of children, parents, and teachers who began online lessons outside the emergency-teaching context, and, perhaps, compare these with learners who first encountered online lessons during the pandemic. This would help clarify which patterns seen here relate to online teaching more generally and which may have been shaped by that particular moment in time.

The findings also point to several lines of inquiry that future work could investigate, such as:

- Should teachers assess student suitability or clarify expectations before accepting them into an online format?
- Is online learning equally appropriate for all types of learners, or are some children at a disadvantage based on their learning styles or needs?
- And if so many factors influence the success of online piano lessons for young beginners, should this format be approached more cautiously when a child aims to pursue music professionally?

Longitudinal research is also needed to examine the lasting effects of online instrumental education compared to face-to-face instruction. This includes identifying the most effective long-term teaching strategies, particularly as education becomes increasingly digital and younger students begin their musical journeys in online environments. Such research could also track how new technologies shape children's learning over time, which may differ substantially from the pandemic-era experiences that frame much of the existing research.

The project opens the door to interdisciplinary work, particularly with neuroscience and psychology, and future research could explore the cognitive or developmental effects of learning an instrument online versus in person. This study indicated that some aspects of teacher–student interaction, such as attunement and shared attention, may be affected when lessons take place online. Siegel's work on interpersonal neurobiology provides one possible framework for examining this more closely. Future research could use physiological or behavioural measures—for example, looking at heart-rate responses, eye-gaze patterns, or other indicators of

engagement—to compare how these relational processes unfold in online and face-to-face lessons. Similar questions could be explored through developmental psychology or music cognition: for instance, whether the reduced physical presence of the teacher affects how children internalise pulse, gesture, or technical movements, or whether screen-based interaction changes the way children process visual–spatial information in notation. Such interdisciplinary work would extend this study's findings and offer a more detailed understanding of how different modes of lesson delivery shape the early stages of musical development.

Future research could also explore how insights from studies of online instrumental teaching might guide the development of digital tools specifically designed for music education. As technology continues to evolve, there is substantial potential for collaborations between educators, researchers, and software developers to create platforms that better support the pedagogical and developmental needs of young beginners—for example, tools that address latency, provide interactive feedback, or facilitate teacher–student communication in ways current systems do not.

Given the rapid evolution of digital tools, further work is needed to explore how new technologies might support or complicate online instrumental learning. For instance, screen ubiquity has changed how children interact, attend, and learn; these changes may have implications for the design of online lessons. Future studies could examine how children engage with interactive platforms, AI-supported practice tools, multi-camera setups, or augmented-reality interfaces.

Finally, projects that look more closely at specific parts of a piano lesson—such as sight-reading, aural work, or technical development—would help to build a clearer picture of how individual skills are shaped by the online format. The current study focused on general experiences rather than individual lesson components; however, understanding these distinctions would make it easier to judge which aspects of instrumental teaching are well-suited to online delivery and which continue to require in-person contact.

10.6 Contribution to knowledge

This study makes a unique contribution to the field of online music education by offering a triangulated view of one-to-one piano lessons with young beginner students—an area that has been largely overlooked. Unlike most studies that focused either on technology, teaching behaviours, or participant experiences (especially during the COVID-19 pandemic), this project examined the current landscape, where online lessons are often a deliberate choice rather than an emergency measure.

There are three main areas where this research adds new knowledge:

- **Participant focus:** To date, no published research has explored online instrumental lessons with children aged 5–9 using both survey and interview methods. This study not only centres on this underrepresented group but also includes the perspectives of parents and students, who are often left out of academic discussions. Giving parents and students a voice—particularly in a context where their support is often essential—sheds light on how their expectations and attitudes shape the lesson experience.
- **Integrated analysis of satisfaction factors:** Rather than examining just one or two elements of online teaching, this study explored a broad range of potential factors influencing satisfaction—such as student independence, skill acquisition, technological issues, parental involvement, and teacher confidence. The qualitative analyses also brought out other factors that participants considered significant, such as teaching approach and style, teacher's physical absence, and student developmental level. This shows that the study offered a well-rounded analysis, addressing not only pre-determined variables but also new themes that emerged and were triangulated across different participant groups and through two stages of data collection and analysis.
- **Post-pandemic perspective:** Much of the current literature on synchronous online music or instrumental lessons still refers to data gathered during the pandemic, when teaching online was not optional. This project brings a more up-to-date perspective, showing how online piano lessons are approached today and why families and teachers continue to choose this mode of instruction. This shift from 'emergency teaching' to choosing online

lessons intentionally is important, as it highlights the need for new pedagogical frameworks, teacher training, and tools tailored for long-term online use.

The discussion around the issues and factors that arose from the findings is also unique in itself. A key strength of this study is that it brings to light areas of online music education that have so far remained underexplored. It shows that a teacher's usual approach—particularly when relying on tactile or hands-on methods—can be difficult to apply online, and that the teacher's physical absence affects how children engage with lessons. Findings also showed that a child's stage of development—how well they can focus, communicate, and follow instructions—matters a great deal in OPL. The study also pointed out that the personalities and expectations of both teachers and parents, and how they work together with the student, can shape the whole lesson experience.

This study included the voices of teachers, parents, and children, and it showed how complex the online lesson environment can be. This research brings new depth to the understanding of how very young students experience online piano learning and what factors truly shape satisfaction in this setting. It highlights that not only technology, but also student developmental readiness, parental support, and the teacher's approach can shape the experience of an online lesson. The findings could be useful for shaping teachers' training, curriculum design, and the development of digital tools. Online piano lessons can be effective, but only if they match the child's developmental level and if the teacher, parent, and student work together in a supportive way.

● References

“ABRSM: News and Articles.” Accessed February 9, 2022. <https://gb.abrsm.org/en/about-us/news/articles/>.

Aaberg, Morganne. “Virtual Teaching in the Applied String Studio During the COVID-19 Pandemic.” *String Research Journal* 13, no. 1 (July 2023): 51–71. <https://doi.org/10.1177/19484992221121759>.

Adolph, K. E., & Hoch, J. E. (2019). Motor development: Embodied, embedded, encultured, and enabling. *Annual Review of Psychology*, 70(1), 141–164. <https://doi.org/10.1146/annurev-psych-010418-102836>

Andrews, Kathryn. “Standing ‘on Our Own Two Feet’: A Comparison of Teacher-Directed and Group Learning in an Extra-Curricular Instrumental Group.” *British Journal of Music Education* 30, no. 1 (March 2013): 125.

Antonini Philippe, R., Schiavio, A., & Biasutti, M. (2020). Adaptation and destabilization of interpersonal relationships in sport and music students during the COVID-19 lockdown. *Heliyon*, 6(10), e05212.

Apostolis, Aristeidis, and Antonis Ververis. “Online Music Education in the Era of COVID-19: Teaching Instruments in Public Music Secondary Schools of Greece During the 2020 Lockdown.” *Proceedings of ICSES 2020 -- International Conference on Studies in Education and Social Sciences*, January 1, 2020. https://www.academia.edu/45060978/Online_Music_Education_in_the_Era_of_COVID_19_Teaching_Instruments_in_Public_Music_Secondary_Schools_of_Greece_During_the_2020_Lockdown.

Arshinova, I. (2022). Elements of piano education and the evolution of piano pedagogy. *Journal for the Interdisciplinary Art and Education*, 3(2), 81–97.

Baker, David, and Lucy Green. “Ear Playing and Aural Development in the Instrumental Lesson: Results from a ‘Case-Control’ Experiment.” *Research Studies in Music Education* 35, no. 2 (December 1, 2013): 141–59. <https://doi.org/10.1177/1321103X13508254>.

Bastien, J. (1985). *Bastien piano basics*. Kjos.

Bastien, J. (1988). *How to Teach Piano Successfully* (3rd ed.). General Words & Music.

Baur, Nina, Udo Kelle, and Udo Kuckartz, eds. *Mixed Methods*. 1. Aufl. 2018 edition. Wiesbaden Heidelberg: Springer VS, 2017.

Beirnes, Sean, and Clint Randles. “A Music Teacher’s Blended Teaching and Learning Experience during COVID-19: Autoethnography of Resilience.” *International Journal of Music Education* 41, no. 1 (February 1, 2023): 69–83. <https://doi.org/10.1177/02557614221091829>.

Bennett, Dawn. “A Gendered Study of the Working Patterns of Classical Musicians: Implications for Practice.” *International Journal of Music Education* 26, no. 1 (2008): 89–100. <https://doi.org/10.1177/0255761407085925>.

Berger, R. (2015). *Now I see it, now I don't: Researcher's position and reflexivity in qualitative research*. *Qualitative Research*, 15(2), 219–234.

Biasutti, Michele, Roberta Antonini Philippe, and Andrea Schiavio. "Assessing Teachers' Perspectives on Giving Music Lessons Remotely during the COVID-19 Lockdown Period." *Musicae Scientiae*, March 8, 2021, 1029864921996033. <https://doi.org/10.1177/1029864921996033>.

Biasutti, Michele. "Strategies Adopted during Collaborative Online Music Composition." *International Journal of Music Education* 36, no. 3 (August 1, 2018): 473–90. <https://doi.org/10.1177/0255761417741520>.

Blackburn, Alana. "Performing Online: Approaches to Teaching Performance Studies in Higher Education within a Fully Online Environment," n.d., 10. 2017

Blackwell, J., Miksza, P., Evans, P., & McPherson, G. E. (2020). Student Vitality, Teacher Engagement, and Rapport in Studio Music Instruction. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.01007>

Blair, Johnny, Ronald F. Czaja, and Edward A. Blair. *Designing Surveys: A Guide to Decisions and Procedures*. SAGE Publications, 2013.

Bonevski, B., Randell, M., Paul, C., Chapman, K., Twyman, L., Bryant, J., Brozek, I., & Hughes, C. (2014). Reaching the hard-to-reach: A systematic review of strategies for improving health and medical research with socially disadvantaged groups. *BMC Medical Research Methodology*, 14(1), 42. <https://doi.org/10.1186/1471-2288-14-42>

Bonneville-Roussy, Arielle, Emese Hruska, and Hayley Trower. "Teaching Music to Support Students: How Autonomy-Supportive Music Teachers Increase Students' Well-Being." *Journal of Research in Music Education* 68, no. 1 (April 1, 2020): 97–119. <https://doi.org/10.1177/0022429419897611>.

Braun, V. and Clarke, V. (2013) *Successful Qualitative Research: A Practical Guide for Beginners*. SAGE Publication, London.

Bremmer, M., Nijs, L., & Nijs, L. (2020). The Role of the Body in Instrumental and Vocal Music Pedagogy: A Dynamical Systems Theory Perspective on the Music Teacher's Bodily Engagement in Teaching and Learning. *Frontiers in Education*, 5. <https://doi.org/10.3389/feduc.2020.00079>

Bruin, Leon R. de. "Instrumental Music Educators in a COVID Landscape: A Reassertion of Relationality and Connection in Teaching Practice." *Frontiers in Psychology* 11 (2021): 3995. <https://doi.org/10.3389/fpsyg.2020.624717>.

Calderón-Garrido, Diego, and Josep Gustems-Carnicer. "Adaptations of Music Education in Primary and Secondary School Due to COVID-19: The Experience in Spain." *Music Education Research* 23, no. 2 (March 15, 2021): 139–50. <https://doi.org/10.1080/14613808.2021.1902488>.

Carey, G., & Grant, C. (2015). Teacher and student perspectives on one-to-one pedagogy: Practices and possibilities. *British Journal of Music Education*, 32(1), 5–22. <https://doi.org/10.1017/S0265051714000084>

Carmichael, A. (2014). Learning to play: Cognitive and physical development of children and the requirements of playing the piano. *Musical Offerings*, 5(1), 17–32.

<https://doi.org/10.15385/jmo.2014.5.1.2>

Cheng, L., and C. Y. Lam. “The Worst Is yet to Come: The Psychological Impact of COVID-19 on Hong Kong Music Teachers.” *Music Education Research* 23, no. 2 (March 15, 2021): 211–24.

<https://doi.org/10.1080/14613808.2021.1906215>.

Chronister, R. (1995). *A piano teacher’s legacy: Selected writings by Richard Chronister*. Frances Clark Center.

Chrysostomou, Smaragda, and Angeliki Triantafyllaki. “Transitioning to Online Music Teacher Education: Challenges and Opportunities for Knowledge Development.” 443–48, 2020.

Chua, Siew Ling, and Leonard Tan. “Examining Online Video-Based Professional Development for Music Teachers.” *Music Education Research* 23, no. 5 (October 20, 2021): 580–93.

<https://doi.org/10.1080/14613808.2021.1977786>.

Clark, A., & Moss, P. (2017). *Listening to Young Children, Expanded Third Edition: A Guide to Understanding and Using the Mosaic Approach*. National Children’s Bureau.

Clark, F. (1976). *Questions and answers: Practical advice for piano teachers*. Alfred.

Cohen, Louis, Lawrence Manion, and Keith Morrison. *Research Methods in Education*. Routledge, 2017.

Colley, B. (1987). A Comparison of Syllabic Methods for Improving Rhythm Literacy. *Journal of Research in Music Education*, 35(4), 221–235. <https://doi.org/10.2307/3345075>

Comeau, G., Huta, V., Lu, Y., & Swirp, M. (2019). The Motivation for Learning Music (MLM) questionnaire: Assessing children’s and adolescents’ autonomous motivation for learning a musical instrument. *Motivation and Emotion*, 43(5), 705–718. <https://doi.org/10.1007/s11031-019-09769-7>

Concina, E. (2023). Effective music teachers and effective music teaching today: A systematic review. *British Journal of Music Education*, 40(3), 381–396.

<https://doi.org/10.1017/S0265051723000108>

Costa-Giomi, Eugenia. *Music Instruction and Children’s Intellectual Development: The Educational Context of Music Participation*. Music, Health, and Wellbeing. Oxford University Press.

<https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780199586974.001.0001/acprof-9780199586974-chapter-023>.

Creech, A., & Hallam, S. (2010). Learning a musical instrument: The influence of interpersonal interaction on outcomes for school-aged pupils. *Psychology of Music*, 39(1), 102–122.

<https://doi.org/10.1177/0305735610370222>

Creech, Andrea. “Interpersonal Behaviour in One-to-One Instrumental Lessons: An Observational Analysis.” *British Journal of Music Education* 29, no. 3 (November 2012): 387–407.

<https://doi.org/10.1017/S026505171200006X>.

Creech, Andrea. "Learning a Musical Instrument: The Case for Parental Support." *Music Education Research* 12, no. 1 (March 1, 2010): 13–32. <https://doi.org/10.1080/14613800903569237>.

Creswell, J. W (2015). *A Concise Introduction to Mixed Methods Research*. (2025, September 11). SAGE Publications Ltd.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). SAGE

Dammers, Richard J. 'Utilizing Internet-Based Videoconferencing for Instrumental Music Lessons'. *Update: Applications of Research in Music Education* 28, no. 1 (November 2009): 17–24. <https://doi.org/10.1177/8755123309344159>.

Damon, Minty, and Amanda J. Rockinson-Szapkiw. "Online and Face-to-Face Voice Instruction: Effects on Pitch Accuracy Improvement in Female Voice Majors". In *Pedagogy Development for Teaching Online Music*, ed. Johnson, Carol, and Virginia Christy Lamothe, 21 - 44. Hershey PA: Information Science Reference, 2018. <https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1782037&authtype=shib&site=eds-live&scope=site&authtype=ip,shib>.

Daubney, Alison, and Martin Fautley. 'Editorial Research: Music Education in a Time of Pandemic'. *British Journal of Music Education* 37, no. 2 (July 2020): 107–14. <https://doi.org/10.1017/S0265051720000133>.

Daugvilaite, Dainora. "Exploring Perceptions and Experiences of Students, Parents and Teachers on Their Online Instrumental Lessons." *Music Education Research* 23, no. 2 (March 15, 2021): 179–93. <https://doi.org/10.1080/14613808.2021.1898576>.

Davidson, J. W., & Correia, J. S. (2002). "Developing competency and artistry in musical performance: Perceptions of learning and teaching." *British Journal of Music Education*, 19(2), 157–172.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

DeCuir-Gunby, J. T., & Schutz, P. A. (2014). Researching race within educational psychology contexts. *Educational Psychologist*, 49(4), 244–260. <https://doi.org/10.1080/00461520.2014.957828>

DeCuir-Gunby, Jessica T., and Paul A. Schutz. *Developing a Mixed Methods Proposal: A Practical Guide for Beginning Researchers*. SAGE Publications, 2016.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed mode surveys: The tailored design method*, 4th ed (pp. xvii, 509). John Wiley & Sons, Inc.

Duffy, Sam, and Patrick Healey. 'A New Medium for Remote Music Tuition'. *Journal of Music, Technology & Education* 10, no. 1 (May 2017): 5–29. https://doi.org/10.1386/jmte.10.1.5_1.

Dumlavwalla, Diana. 'Transitioning From Traditional To Online Piano Lessons: Perceptions Of Students, Parents And Teacher'. *MTNA E-Journal* 8, no. 3 (February 2017): 2–20.

- Dwyer, S. C., & Buckle, J. L. (2009). The space between: On being an insider-outsider in qualitative research. *International Journal of Qualitative Methods*, 8(1), 54–63.
<https://doi.org/10.1177/160940690900800105>
- Dye, Keith. “Student and Instructor Behaviors in Online Music Lessons: An Exploratory Study.” *International Journal of Music Education* 34, no. 2 (May 1, 2016): 161–70.
<https://doi.org/10.1177/0255761415584290>.
- Einarson, Kathleen M., Eun Cho, and Patricia D’Ercole. “The Parent Role in Suzuki Music Lessons: Experiences and Perspectives Shared by Novice Suzuki Parents.” *Music Education Research* 24, no. 5 (October 20, 2022): 638–50.
<https://doi.org/10.1080/14613808.2022.2105828>.
- Ernst, S. M. (2012). The Legacy of Master Piano Teacher Marvin Blickenstaff: His Pedagogy and Philosophy. <https://hdl.handle.net/11244/319302>
- Evans, P., & Bonneville-Roussy, A. (2016). Self-determined motivation for practice in university music students. *Psychology of Music*, 44(5), 1095–1110.
<https://doi.org/10.1177/0305735615610926>
- Faber, N., & Faber, R. (1993). Piano Adventures. Faber Piano Adventures.
- Fancourt, Daisy, and Andrew Steptoe. “Present in Body or Just in Mind: Differences in Social Presence and Emotion Regulation in Live vs. Virtual Singing Experiences.” *Frontiers in Psychology* 10 (2019). <https://www.frontiersin.org/article/10.3389/fpsyg.2019.00778>.
- Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs—principles and practices. *Health Services Research*, 48(6 Pt 2), 2134–2156.
<https://doi.org/10.1111/1475-6773.12117>
- Fraser, A. (2011). *The Craft of Piano Playing* (2nd ed.). Scarecrow Press.
- Friborg, O., & Rosenvinge, J. H. (2013). A comparison of open-ended and closed-ended questions in psychological research. *Quality & Quantity*, 47(3), 1391–1405.
- Gaunt, H. (2010). One-to-one tuition in a conservatoire: The perceptions of instrumental and vocal students. *Psychology of Music*, 38(2), 178–208.
<https://doi.org/10.1177/0305735609339467>
- Gaunt, Helena. "Apprenticeship and Empowerment: The Role of One-to-One Lessons." In *Musicians in the Making: Pathways to Creative Performance*, edited by John Rink, Helena Gaunt, and Aaron Williamson, 48–63. Oxford: Oxford University Press, 2017.
<https://doi.org/10.1093/acprof:oso/9780199346677.003.0004>.
- Gibson, Sarah-Jane. “Shifting from Offline to Online Collaborative Music-Making, Teaching and Learning: Perceptions of Ethno Artistic Mentors.” *Music Education Research* 23, no. 2 (March 15, 2021): 151–66. <https://doi.org/10.1080/14613808.2021.1904865>.
- Goffi-Fynn, Jeanne. “Applying Student-Centered Strategies in the Applied Teaching Music Studio.” *Visions of Research in Music Education* 45, no. 1 (June 27, 2024): 99–113.
- Gordon, E. (2007). Learning sequences in music: Skill, content, and patterns. GIA Publications.

- GOV.UK, A. S.-L. D. M. for, & Service, G. D. (2022, July 25). *2 Years of COVID-19 on GOV.UK – Government Digital Service*. <https://gds.blog.gov.uk/2022/07/25/2-years-of-covid-19-on-gov-uk/>
- Green, L. (2002). *How popular musicians learn: A way ahead for music education*. Ashgate.
- Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco, CA: Jossey-Bass.
- Guest, G., MacQueen, K. M., & Namey, E. E. (2012). *Applied thematic analysis*. SAGE Publications, Inc., <https://doi.org/10.4135/9781483384436>
- Guetterman, T. C., Creswell, J. W., & Kuckartz, U. (2015). Using joint displays in mixed methods research: An interactive approach. *Journal of Mixed Methods Research*, 9(4), 295–319. <https://doi.org/10.1177/1558689815575861>
- Hall, P. (1983). *Piano Time 1*. Oxford University Press.
- Hallam, S. (2016). The impact of practicing on musical achievement. In S. Hallam, I. Cross, & M. Thaut (Eds.), *The Oxford handbook of music psychology* (2nd ed., pp. 331–342). Oxford University Press.
- Hallam, S., Rinta, T., Varvarigou, M., Creech, A., Papageorgi, I., Gomes, T., & Lanipekun, J. (2012). The development of practising strategies in young people. *Collected Work: Psychology of Music: 40 Years of Multidisciplinary Innovation*. (AN: 2012-05689)., 40(5), 652–680.
- Hallam, Susan, Andrea Creech, and Hilary McQueen. “Teachers’ Perceptions of the Impact on Students of the Musical Futures Approach.” *Music Education Research* 19, no. 3 (January 1, 2017): 263–75.
- Hallam, Susan. “Instrumental Teaching: A Practical Guide to Better Teaching and Learning.” Edited by Gwyn (Reviewer) Parry-Jones. *British Journal of Music Education* 16, no. 2 (1998).
- Harris, P. (2013). *The virtuoso teacher: The inspirational guide for instrumental and singing teachers*. Faber.
- Harter, Susan. *The Construction of the Self: A Developmental Perspective*. The Construction of the Self: A Developmental Perspective. New York, NY, US: Guilford Press, 1999.
- Hernández, Ana Martínez. “Online Learning in Higher Music Education: Benefits, Challenges and Drawbacks of One-to-One Videoconference Instrumental Lessons.” *Journal of Music, Technology and Education* 13, no. 2–3 (December 1, 2021): 181–97. https://doi.org/10.1386/jmte_00022_1.
- Hill, M. (2006). Children’s voices on ways of having a voice: Children’s and young people’s perspectives on methods used in research and consultation. *Childhood*, 13(1), 69–89.
- Hodges, Charles B., Stephanie Moore, Barbara B. Lockee, Torrey Trust, and Mark Aaron Bond. “The Difference Between Emergency Remote Teaching and Online Learning,” March 27, 2020. <https://vtechworks.lib.vt.edu/handle/10919/104648>.
- Hornby, G., & Lafaele, R. (2011). Barriers to parental involvement in education: An explanatory model. *Educational Review*, 63(1), 37–52. <https://doi.org/10.1080/00131911.2010.488049>

Houlahan, M., & Tacka, P. (2015). *Kodály today: A cognitive approach to elementary music education* (2nd ed.). Oxford University Press.

<https://plus.google.com/+UNESCO>. (2020, March 4). Education: From disruption to recovery. UNESCO.

<https://webarchive.unesco.org/web/20220629024039/https://en.unesco.org/covid19/education/response>

Ivanova, D., Waddell, G., & Lisboa, T. (2025). Factors determining satisfaction with online piano lessons for young beginner students. *Research Studies in Music Education*.
<https://doi.org/10.1177/1321103X251389736>

Janice, Waldron. "YouTube, TikTok, and Online Music Learning Draft Chapter for Milestones in Music Education (2022). Waldron, Janice, in Clint Randles, (Ed), Routledge: UK." Accessed November 26, 2021.
https://www.academia.edu/50302217/YouTube_TikTok_and_Online_Music_Learning_Draft_Chapter_for_Milestones_in_Music_Education_2022_Waldron_Janice_in_Clint_Randles_Ed_Routledge_UK.

Johnson, Carol, and Virginia Christy Lamothe. "Sharing Our Narratives on Developing Our Practice in Online Music Pedagogy". In *Pedagogy Development for Teaching Online Music*, ed. Johnson, Carol, and Virginia Christy Lamothe, 244 – 262. Hershey PA: Information Science Reference, 2018.
<https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1782037&authtype=shib&site=eds-live&scope=site&authtype=ip,shib>.

Johnson, Carol. 'Teaching Music Online: Changing Pedagogical Approach When Moving to the Online Environment'. *London Review of Education* 15, no. 3 (1 November 2017): 439–66.

Jorgensen, Estelle. 'Face-To-Face and Distance Teaching and Learning in Higher Education: Lessons from the Preparation of Professional Musicians'. *The Richard W. Riley College of Education and Leadership Publications* 7, no. 2 (1 January 2014).
https://scholarworks.waldenu.edu/cel_pubs/113.

Joseph, Dawn, and Bradley Merrick. "Australian Music Teachers' Reflections and Concerns during the Pandemic: Resetting the Use of Technologies in 21st Century Classroom Practice." *Teachers' Work* 18, no. 2 (December 10, 2021): 109–26.
<https://doi.org/10.24135/teacherswork.v18i2.325>.

Kacen, L., & Chaitin, J. (2006). "The Times They are a Changing" 1 : Undertaking Qualitative Research in Ambiguous, Conflictual, and Changing Contexts. *The Qualitative Report*, 11(2), 209-228. <https://doi.org/10.46743/2160-3715/2006.1671>

Kibici, Volkan, and Muhsin Sarıkaya. "Readiness Levels of Music Teachers for Online Learning during the COVID 19 Pandemic." *International Journal of Technology in Education* 4 (July 28, 2021): 501–15. <https://doi.org/10.46328/ijte.192>.

King, Andrew, Helen Prior, and Caroline Waddington-Jones. 'Connect Resound: Using Online Technology to Deliver Music Education to Remote Communities'. *Journal of Music, Technology & Education* 12, no. 2 (May 2019): 201–17. https://doi.org/10.1386/jmte_00006_1.

King, Andrew, Helen Prior, and Caroline Waddington-Jones. 'Exploring Teachers' and Pupils' Behaviour in Online and Face-to-Face Instrumental Lessons'. *Music Education Research* 21, no. 2 (1 January 2019): 197–209.

Kooistra, L. (2016). Informal music education: The nature of a young child's engagement in an individual piano lesson setting. *Research Studies in Music Education*, 38(1), 115–129.
<https://doi.org/10.1177/1321103X15609800>

Koutsoupidou, Theano. 'Online Distance Learning and Music Training: Benefits, Drawbacks and Challenges'. *Open Learning* 29, no. 3 (November 2014): 243–55.
<https://doi.org/10.1080/02680513.2015.1011112>.

Kruse, Nathan B., Steven C. Harlos, Russell M. Callahan, and Michelle L. Herring. 'Skype Music Lessons in the Academy: Intersections of Music Education, Applied Music and Technology'. *Journal of Music, Technology & Education* 6, no. 1 (April 2013): 43–60.
https://doi.org/10.1386/jmte.6.1.43_1.

Kuckartz, U., & Rädiker, S. (2019). *Analyzing Qualitative Data with MAXQDA: Text, Audio, and Video*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-15671-8>

Kupers, Elisa, Jolien M. Mouw, and Marjon Fokkens-Bruinsma. "Teaching in Times of COVID-19: A Mixed-Method Study into Teachers' Teaching Practices, Psychological Needs, Stress, and Well-Being." *Teaching and Teacher Education* 115 (July 2022): 103724.
<https://doi.org/10.1016/j.tate.2022.103724>.

Kupers, Elisa, Marijn van Dijk, Gary E. McPherson, and Paul van Geert. 'A Dynamic Model That Links Skill Acquisition with Self-Determination in Instrumental Music Lessons'. *Musicæ Scientiæ: The Journal of the European Society for the Cognitive Sciences of Music* 18, no. 1 (March 2014): 17–34. <https://doi.org/10.1177/1029864913499181>.

Kupers, Elisa, Marijn van Dijk, Paul van Geert, and Gary E. McPherson. "A Mixed-Methods Approach to Studying Co-Regulation of Student Autonomy through Teacher–Student Interactions in Music Lessons." *Psychology of Music* 43, no. 3 (May 1, 2015): 333–58.
<https://doi.org/10.1177/0305735613503180>.

Lee, Kuo-Ying. "The Pedagogical Strategies for Online Music Learning of Instrumental Lessons in Higher Education," 1356–60. Atlantis Press, 2021. <https://doi.org/10.2991/assehr.k.210519.265>.

Lei, Kun. "The Effectiveness of Special Apps for Online Piano Lessons." *Interactive Learning Environments* 31, no. 10 (December 15, 2023): 7455–66.
<https://doi.org/10.1080/10494820.2022.2073373>.

Li, Ping-ping, and Bin Wang. "Artificial Intelligence in Music Education." *International Journal of Human–Computer Interaction* 40, no. 16 (August 17, 2024): 4183–92.
<https://doi.org/10.1080/10447318.2023.2209984>.

Liu, Chiao-Wei. "Rethinking Music Learning in the New Normal." *General Music Today* 34, no. 1 (October 1, 2020): 40–42. <https://doi.org/10.1177/1048371320937740>.

Maki, Jukka. Is It Possible To Teach Music in a Classroom from a Distance of 1000 Km? Learning Environment of Music Education Using ISDN-Videoconferencing. Association for the Advancement of Computing in Education (AACE), P, 2001. <https://eric.ed.gov/?id=ED466191>.

Martínez-Hernández, Ana. "Conservatory and Music Schoolteachers' Experiences with Videoconferencing Software during and after the COVID-19 Pandemic." *Distance Education* 43, no. 3 (July 3, 2022): 388–407. <https://doi.org/10.1080/01587919.2022.2088475>.

Matsuo, H., & Sakaguchi, Y. (2024). Effects of Rhythm and Accent Patterns on Tempo-Keeping Property of Finger Tapping. *Music & Science*, 7, 20592043241276959. <https://doi.org/10.1177/20592043241276959>

Matthay, T. (1932). *The Act of Touch in All Its Diversity*. London: Oxford University Press.

Matthay, T. (1947). *The Visible and Invisible in Pianoforte Technique*. London: Oxford University Press.

McLachlan, Murray. *The Foundations of Technique*. London: Faber Music, 2014.

McPherson, G. E. (2005). From child to musician: Skill development during the beginning stages of learning an instrument. *Psychology of Music*, 33(1), 5–35.

McPherson, G. E., & Gabrielsson, A. (2002). From sound to sign. In R. Parncutt & G. E. McPherson (Eds.), *The science and psychology of music performance* (pp. 99–115). Oxford University Press.

McPherson, G. E., & Zimmerman, B. J. (2011). Self-regulation of musical learning: A social cognitive perspective on developing performance skills. In R. Colwell & P. R. Webster (Eds.), *MENC Handbook of Research on Music Learning* (pp. 130–175). Oxford University Press.

McPherson, G., & Gabrielsson, A. (2002). From Sound to Sign. In *The Science & Psychology of Music Performance: Creative Strategies for Teaching and Learning* (pp. 98–115). <https://doi.org/10.1093/acprof:oso/9780195138108.003.0007>

Merriam, S. B., Johnson-Bailey, J., Lee, M. Y., Kee, Y., Ntseane, G., & Muhamad, M. (2001). *Power and positionality: Negotiating insider/outsider status within and across cultures*. *International Journal of Lifelong Education*, 20(5), 405–416.

Merrick, Brad, and Carol Johnson. "INNOVATIVE ONLINE MUSIC TEACHING: REFLECTIVE PEDAGOGY AND STRATEGIES FOR AUTHENTIC DUAL-MODE (ONLINE AND FACE-TO-FACE) DELIVERY IN MUSIC PERFORMANCE." *International Journal on Innovations in Online Education* 8, no. 1 (2024): 51–77. <https://doi.org/10.1615/IntJInnovOnlineEdu.2024052031>.

Merrick, Bradley, and Dawn Joseph. "ICT and Music Technology during COVID-19: Australian Music Educator Perspectives." *Research Studies in Music Education* 45, no. 1 (April 2023): 189–210. <https://doi.org/10.1177/1321103X221092927>.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage.

Mills, Janet. "Working in Music: Becoming a Performer-Teacher." *Music Education Research* 6, no. 3 (2004): 245–261. <https://doi.org/10.1080/1461380042000281732>.

Mishra, Punya, and Matthew J. Koehler. "Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge." *Teachers College Record* 108, no. 6 (June 1, 2006): 1017–54. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>.

Musicians' Union. (2023, July 5). Safeguarding code of conduct. Retrieved August 22, 2025, from <https://musiciansunion.org.uk/working-performing/education-and-teaching/music-teaching-essentials/safeguarding/safeguarding-code-of-conduct>

Neuhaus, Heinrich. *The Art of Piano Playing*. London: Kahn & Averill, 1993.

Nugroho, Delicia Mandy, and Michele Biasutti. "Instructors' Perspectives on Teaching Music Online after the COVID-19 Lockdown: A Qualitative Analysis in Indonesia." *Journal of University Teaching and Learning Practice* 21, no. 3 (February 29, 2024).

<https://doi.org/10.53761/3dqqzp79>.

Okay, Hasan. "Turkish Instrument Educators' Distance Education Experiences Related to Instrument Training during the COVID-19 Pandemic." *World Journal on Educational Technology: Current Issues* 13 (May 3, 2021): 201–22. <https://doi.org/10.18844/wjet.v13i2.5690>.

Onderdijk, Kelsey E., Freya Acar, and Edith Van Dyck. "Impact of Lockdown Measures on Joint Music Making: Playing Online and Physically Together." *Frontiers in Psychology* 12 (2021).

<https://www.frontiersin.org/article/10.3389/fpsyg.2021.642713>.

Palmer, M. (1976). Relative Effectiveness of Two Approaches to Rhythm Reading for Fourth-Grade Students. *Journal of Research in Music Education*, 24(3), 110-118.

<https://doi.org/10.2307/3345154>

Pamela D. Pike, and Isabelle Shoemaker. 'ONLINE PIANO LESSONS: A Teacher's Journey Into An Emerging 21st-Century Virtual Teaching Environment'. *American Music Teacher* 65, no. 1 (2015): 12.

Pan, Hanchao, and Wenliang Wu. "Online Learning to Play the Piano: Perspectives and Achievements / Aprender a Tocar El Piano En Línea: Perspectivas y Logros." *Culture and Education* 36, no. 2 (June 1, 2024): 370–93. <https://doi.org/10.1177/11356405241259599>.

Papatzikis, Efthymios. "An Infant's Question on COVID-19 and Music: Should I Attend My Online Classes?" *Frontiers in Psychology* 12 (2021).

<https://www.frontiersin.org/article/10.3389/fpsyg.2021.771050>.

Piaget, J. (1952). *The origins of intelligence in children*. International Universities Press.

Pike, Pamela D. "Improving Music Teaching and Learning through Online Service: A Case Study of a Synchronous Online Teaching Internship." *International Journal of Music Education* 35, no. 1 (February 1, 2017): 107–17. <https://doi.org/10.1177/0255761415613534>.

Pike, Pamela D. "RISKS AND REWARDS OF INDIVIDUAL ONLINE MUSIC LESSONS: TEACHERS' PERSPECTIVES." *International Journal on Innovations in Online Education* 5, no. 2 (2021).

<https://doi.org/10.1615/IntJInnovOnlineEdu.2021039378>.

Pike, Pamela D., and Kristin Shoemaker. 'The Effect of Distance Learning on Acquisition of Piano Sight-Reading Skills'. *Journal of Music, Technology & Education* 6, no. 2 (August 2013): 147–62.

https://doi.org/10.1386/jmte.6.2.147_1.

Plano Clark, V. L., & Creswell, J. W. (2015). *Understanding Research: A Consumer's Guide*. Boston, MA: Pearson.

Plano Clark, V., & Ivankova, N. (2016). *Mixed methods research: A guide to the field*. SAGE Publications, Inc., <https://doi.org/10.4135/9781483398341>

Pol, Janneke van de, Monique Volman, and Jos Beishuizen. "Scaffolding in Teacher–Student Interaction: A Decade of Research." *Educational Psychology Review* 22, no. 3 (September 2010): 271–96. <https://doi.org/10.1007/s10648-010-9127-6>.

Pozo, Juan Ignacio, María-Puy Pérez Echeverría, Amalia Casas-Mas, Guadalupe López-Íñiguez, Beatriz Cabellos, Elisa Méndez, José Antonio Torrado, and Lucas Baño. "Teaching and Learning Musical Instruments through ICT: The Impact of the COVID-19 Pandemic Lockdown." *Heliyon* 8, no. 1 (January 1, 2022): e08761. <https://doi.org/10.1016/j.heliyon.2022.e08761>.

Pozo, Juan-Ignacio, María-Puy Pérez Echeverría, Beatriz Cabellos, and Daniel L. Sánchez. "Teaching and Learning in Times of COVID-19: Uses of Digital Technologies During School Lockdowns." *Frontiers in Psychology* 12 (April 29, 2021): 656776. <https://doi.org/10.3389/fpsyg.2021.656776>.

Rädiker, S., & Kuckartz, U. (2020). *Analyzing qualitative data with MAXQDA: Text, audio, and video*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-15671-8>

Reeve, Johnmarshall, and Hyungshim Jang. "What Teachers Say and Do to Support Students' Autonomy during a Learning Activity." *Journal of Educational Psychology* 98, no. 1 (February 2006): 209–18. <https://doi.org/10.1037/0022-0663.98.1.209>.

Reeve, Johnmarshall, Hyungshim Jang, Dan Carrell, Soohyun Jeon, and Jon Barch. "Enhancing Students' Engagement by Increasing Teachers' Autonomy Support." *Motivation and Emotion* 28, no. 2 (June 2004): 147–69.

Renwick, James M., and Johnmarshall Reeve. "Supporting Motivation in Music Education." In *The Oxford Handbook of Music Education*, Volume 1, edited by Gary E. McPherson and Graham F. Welch, O. Oxford University Press, 2012. https://doi.org/10.1093/oxfordhb/9780199730810.013.0009_update_001.

Riley, Holly, Rebecca B. MacLeod, and Matthew Libera. "Low Latency Audio Video: Potentials for Collaborative Music Making Through Distance Learning." *Update: Applications of Research in Music Education* 34, no. 3 (2016): 15–23. <https://doi.org/10.1177/8755123314554403>.

Riley, Patricia E. "Video-Conferenced Music Teaching: Challenges and Progress." *Music Education Research* 11, no. 3 (September 2009): 365–75. <https://doi.org/10.1080/14613800903151580>.

Roesler, Rebecca A. "Independence Pending: Teacher Behaviors Preceding Learner Problem Solving." *Journal of Research in Music Education* 64, no. 4 (January 2017): 454–73. <https://doi.org/10.1177/0022429416672858>.

Rucsanda, Mădălina Dana, Alexandra Belibou, and Ana-Maria Cazan. "Students' Attitudes Toward Online Music Education During the COVID 19 Lockdown." *Frontiers in Psychology* 12 (2021). <https://www.frontiersin.org/article/10.3389/fpsyg.2021.753785>.

Ryan, R. M. (Ed.). (2023). *The Oxford Handbook of Self-Determination Theory*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780197600047.001.0001>

Ryan, Richard M, and Edward L Deci. 'Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being'. *American Psychologist*, 2000, 11.

Salvador, Karen, Erika J. Knapp, and Whitney Mayo. "Reflecting on the 'Community' in Community Music School after a Transition to All-Online Instruction." *Music Education Research* 23, no. 2 (March 15, 2021): 194–210. <https://doi.org/10.1080/14613808.2021.1905623>.

Sandor, G. (1981). *On Piano Playing: Motion, Sound, and Expression*. Schirmer.

Sawyer, R. K. (Ed.). (2011). *Structure and Improvisation in Creative Teaching*. New York: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511997105>

Sawyer, R. Keith. "Creative Teaching: Collaborative Discussion as Disciplined Improvisation." *Educational Researcher* 33, no. 2 (March 1, 2004): 12–20. <https://doi.org/10.3102/0013189X033002012>.

Schiavio, Andrea, and Luc Nijs. "Implementation of a Remote Instrumental Music Course Focused on Creativity, Interaction, and Bodily Movement. Preliminary Insights and Thematic Analysis." *Frontiers in Psychology* 13 (May 20, 2022). <https://doi.org/10.3389/fpsyg.2022.899381>.

Schiavio, Andrea, Michele Biasutti, and Roberta Antonini Philippe. "Creative Pedagogies in the Time of Pandemic: A Case Study with Conservatory Students." *Music Education Research* 23, no. 2 (March 15, 2021): 167–78. <https://doi.org/10.1080/14613808.2021.1881054>.

Shoemaker, Kristin, and Gertjan van Stam. *EPiano, a Case of Music Education via Internet in Rural Zambia*, 2010.

Siegel, D. J. (1999). *The developing mind: Toward a neurobiology of interpersonal experience*. Guilford Press.

Siegel, D. J. (2012). *The developing mind: How relationships and the brain interact to shape who we are* (2nd ed.). The Guilford Press.

Siegel, D. J. (2020). *The developing mind: How relationships and the brain interact to shape who we are* (3rd ed.). The Guilford Press.

Sierens, Eline, Maarten Vansteenkiste, Luc Goossens, Bart Soenens, and Filip Dochy. "The Synergistic Relationship of Perceived Autonomy Support and Structure in the Prediction of Self-Regulated Learning." *The British Journal of Educational Psychology* 79, no. Pt 1 (March 2009): 57–68. <https://doi.org/10.1348/000709908X304398>.

Simones, L. L., Rodger, M., & Schroeder, F. (2015). Communicating musical knowledge through gesture: Piano teachers' gestural behaviours across different levels of student proficiency. *Psychology of Music*, 43(5), 723.

Spiro, N., Perkins, R., Kaye, S., Tymoszuk, U., Mason-Bertrand, A., Cossette, I., Glasser, S., & Williamon, A. (2021). The effects of COVID-19 lockdown 1.0 on working patterns, income, and

wellbeing among performing arts professionals in the United Kingdom. *Frontiers in Psychology*, 11, 594086.

Successful Qualitative Research. (2025, July 20). SAGE Publications Ltd.

<https://uk.sagepub.com/en-gb/eur/successful-qualitative-research/book233059>

Tanriguden, Birce. "The Experiences of Music Teachers with Emergency Online Teaching During the COVID-19 Pandemic," 2021. (thesis, researchgate)

Tashakkori, A., & Teddlie, C. (2010). *SAGE handbook of mixed methods in social & behavioral research* (2nd ed.). Thousand Oaks, CA: Sage.

Thomas, Michelle A., Martin Norgaard, Laura A. Stambaugh, Rebecca L. Atkins, Anita B. Kumar, and Alison L. P. Farley. "Online Involvement for Georgia Student Teachers During Covid-19." *Frontiers in Psychology* 12 (2021).
<https://www.frontiersin.org/article/10.3389/fpsyg.2021.648028>.

Thorgersen, Ketil A., and Annette Mars. "A Pandemic as the Mother of Invention? Collegial Online Collaboration to Cope with the COVID-19 Pandemic." *Music Education Research* 23, no. 2 (March 15, 2021): 225–40. <https://doi.org/10.1080/14613808.2021.1906216>.

Ünlü, Levent. "A Qualitative Study of the Perspectives of Music Students on Distance Piano Education." *Education Quarterly Reviews* 5, no. 1 (2022): 353–66.

Upitis, Rena, Philip C. Abrami, Julia Brook, and Matthew King. "Parental Involvement in Children's Independent Music Lessons". *Music Education Research* 19, no. 1 (2 January 2017): 74–98. <https://doi.org/10.1080/14613808.2016.1202220>.

Upitis, Rena, Philip C. Abrami, Wynnnpaul Varela, Matthew King, and Julia Brook. "Student Experiences with Studio Instruction." *Music Education Research* 19 (2017): 410–37. <https://doi.org/10.1080/14613808.2016.1202221>.

Uszler, M., Gordon, S., & Mach, E. (2010). *The Well-Tempered Keyboard Teacher* (2nd ed.). Schirmer.

Vaizman, Tal. "Teaching Musical Instruments during COVID-19: Teachers Assess Struggles, Relations with Students, and Leveraging." *Music Education Research* 24, no. 2 (March 15, 2022): 152–65. <https://doi.org/10.1080/14613808.2022.2053512>.

Váradi, Judit, Gabriella Józsa, Adrienne Sz. Fodor, Viktória Molnár-Tamus, and Tímea Szűcs. "Investigating Music Teachers' ICT Skills and Technical Possibilities in the Field of Online Music Education during the COVID-19 Pandemic." *Heliyon* 9, no. 6 (June 1, 2023): e16463. <https://doi.org/10.1016/j.heliyon.2023.e16463>.

Váradi, Judit, J. Miklós Radócz, Ádám Mike, Zoltán Óváry, and Gabriella Józsa. "Lessons from the COVID Pandemic in Music Education the Advantages and Disadvantages of Online Music Education." *Heliyon* 10, no. 15 (August 15, 2024): e35357. <https://doi.org/10.1016/j.heliyon.2024.e35357>.

Vigl, J., Koehler, F., & Henning, H. (2024). Exploring the accuracy of musical tempo memory: The effects of reproduction method, reference tempo, and musical expertise. *Memory & Cognition*, 52(6), 1299–1312. <https://doi.org/10.3758/s13421-024-01543-6>

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Waterman, F. (1999). *Fanny Waterman on Piano Teaching and Performance*. Faber Music.

Watkins, Daphne, and Deborah Gioia. *Mixed Methods Research. Pocket Guide to Social Work Research Methods*. Oxford, New York: Oxford University Press, 2015.

Welch, Graham F., Ioulia Papageorgi, Liz Haddon, Andrea Creech, Frances Morton, Christophe de Bézenac, Celia Duffy, John Potter, Tony Whyton, and Evangelos Himonides. "Musical Genre and Gender as Factors in Higher Education Learning in Music." *Research Papers in Education* 23, no. 2 (2008): 203–217. <https://doi.org/10.1080/02671520802048752>.

Wieser, Martin, and Florian H. Müller. "Motivation in Instrumental Music Instruction Before and During the Remote Learning Phase Due to COVID-19 Crisis." *Music & Science* 5 (January 1, 2022): 20592043221132938. <https://doi.org/10.1177/20592043221132938>.

Williamon, A., Aufegger, L., & Eiholzer, H. (2021). *Performing Music Research: Methods in Music Education, Psychology, and Performance Science*. Oxford University Press.

Williamon, Aaron, Jane Ginsborg, Rosie Perkins, and George Waddell. *Performing Music Research: Methods in Music Education, Psychology, and Performance Science*. New York: OUP Oxford, 2021.

Yilmaz, Huseyin, Gul Sakarya, Serif Gayretli, and Onur Zahal. "Covid-19 and Online Music Education: A Qualitative Study on the Views of Preschool Teacher Candidates." *Journal of Qualitative Research in Education* 21, no. 28 (October 30, 2021). <https://doi.org/10.14689/enad.28.12>.

Yin, Robert K. *Case Study Research and Applications: Design and Methods*. Sixth edition. Los Angeles: SAGE Publications, Inc, 2018.

Zhang, Pinqi, and Jin Gao. "Interactive Piano Teaching in Distance Learning." *Innovations in Education and Teaching International* 61, no. 2 (March 3, 2024): 251–62. <https://doi.org/10.1080/14703297.2022.2105379>.

- Appendices

Appendices

Appendix 1 - Ethics Applications

Appendix 1.1

(The file has been removed.)

Appendix 1.2

(The file has been removed.)

Appendix 2 – Survey questions and analysis

Appendix 2.1

Teachers' survey questions

Start of Block: Screening question

Q132 Thank you for showing your interest in participating in this survey. Before we begin, could you please indicate what applies to you?

- ☐ I am a piano teacher (1)
 - ☐ I am a parent/carer with a child(ren) taking piano lessons (2)
 - ☐ I am both (3)
 - ☐ None of the above (4)
-

Q133 Please see the Participant Information Sheet on the next page.

End of Block: Screening question

Start of Block: Information sheet for teachers

Q88 Online piano lessons with young beginner students: a mixed-methods study

Invitation

You are being invited to take part in my research project. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and please feel free to raise any questions or concerns. Thank you for your time.

Project

The purpose of this survey is to understand what influences the experiences of young students who are 5-9 years old in an online lesson setting. We want to find out how much their ability to be independent and self-motivated affects their experience. We'll also look at other factors such as how their teacher teaches, what kind of technology they use, and how much help they receive from their parents.

Why have you been chosen?

To participate in this research study, you must be a piano teacher with experience delivering online lessons to 5-9-year-old students. You must be at least 18 years old to take part.

Voluntary participation

Your participation in this survey is voluntary and you may withdraw from the study at any time if you wish by exiting the survey. By submitting responses to the survey you are giving your informed consent to participate in this study.

Nature of participation

It should take approximately 10-15 minutes to complete the survey. Some of the questions are compulsory as they will ensure that you receive questions relevant to your experiences with online music lessons.

Potential risks to participants

There should not be any risks and discomfort associated with participation in this study. If any arise, they are no greater than those ordinarily encountered in daily life. There is a small risk when discussing your professional practice and experience – and especially some of the challenges involved – that you may experience some personal psychological discomfort. If you do, support is available from a number of sources, many of which are summarized on this NHS Direct website: <https://www.nhs.uk/conditions/stress-anxiety-depression/low-mood-and-depression/>

Potential benefits to participants

You are unlikely to experience any personal benefits as a result of taking part in this project, although I hope the research will give you the opportunity to reflect on your experiences of online music lessons. It will help us to improve an understanding of and develop new tools and techniques for online music lessons in the future which you might benefit from as well.

Q135 Confidentiality and anonymity

After completion of the study, all data will be made anonymous (i.e., any personal information, like your contact details provided to be invited in the second part of this research – interviews, will be removed), and your participation in the survey will not be identifiable in any way. Information that is collected about you, for the purposes of the research, will be kept strictly confidential. I would request that you protect the anonymity of your pupils when answering open-ended questions by not including their names or identifying information. Any such identifying material will be removed from your responses. The only time that confidentiality would be broken is in the event that you disclose risk of immediate harm to yourself or others, or where we have a legal obligation to do so, in which case we may need to discuss this with somebody else (only in cases where contact details are provided).

Possible termination of research

If the project has to be terminated for any reason and you and/or the contribution you have made is no longer required for the research any already-collected data would be destroyed.

Storing personal data and information

Information provided by you in this study will be handled in a confidential manner under the policies and procedures of the Royal College of Music. Your personal data and any information that you provide for the purposes of the research will be stored securely on password-protected and encrypted RCM OneDrive online for 10 years. If I wish to re-use it within this time period, I will seek your permission to do so. At the end of the period it will be destroyed.

Outputs

The data collected will contribute towards Dainora Daugvilaite's PhD research project at the Royal College of Music. The final thesis will be shared internally at the RCM and with the general public through its online research database and, results may be shared through other dissemination publications such as academic journals and conference presentations. Please let the researcher know if you have any questions.

Name of researcher: Dainora Daugvilaite
Institutional Email: dainora.daugvilaite@rcm.ac.uk
Institutional Affiliation: Royal College of Music
Name of the directing supervisor: Dr Tania Lisboa

Q89 Thank you for reading this Participant Information Sheet and for considering your participation in this research project. This project has been reviewed by the Royal College of Music London (RCM) Ethics Committee. By selecting 'Agree' you are consenting to the conditions described above.

☐ Agree (1)

End of Block: Information sheet for teachers

Start of Block: Consent questions for both teachers and parents

Q126 I confirm that I have read and understood the participant information sheet for the research project in which I have been asked to take part and have had the opportunity to ask questions.

☐ Agree (1)

Q127 I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.

☐ Agree (1)

Q128 I give the researcher(s) permission to collect information about me and from me for the purposes of the research project provided all information about me will be kept confidential, stored securely and destroyed after 10 years.

☐ Agree (1)

Q129 I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.

☐ Agree (1)

Q130 I confirm that I am 18 years of age or over.

☐ Agree (1)

End of Block: Consent questions for both teachers and parents

Start of Block: Teaching Studio

Q111 Which of these describes your professional situation? Select all that apply.

- ☐ Private piano teacher (1)
- ☐ Primary school piano teacher (2)
- ☐ Secondary school piano teacher (3)
- ☐ College/university piano teacher (4)
- ☐ Retired piano teacher (5)
- ☐ None of these apply (6)



Q9 How many years have you been teaching piano?



Q15 In a typical year, how many piano students do you teach per week on average?



Q11 In a typical year, how many **young students** (5 - 9 years old) do you teach piano every week on average?

End of Block: Teaching Studio

Start of Block: When did you teach online?

Q12 Have you taught online prior to the Covid-19 lockdowns?

- ☐ Yes, I taught exclusively online (1)
 - ☐ Yes, I mainly taught online (2)
 - ☐ Yes, I occasionally offered online lessons (3)
 - ☐ No, I never taught online before 2020 (4)
-

Q13 Did you teach online during the Covid-19 pandemic lockdowns in 2020 and 2021?

- ☐ Yes, I taught exclusively online (1)
 - ☐ Yes, I occasionally offered online lessons (7)
 - ☐ No, I did not teach online / discontinued teaching (5)
-

Q14 Since the Covid-19 lockdowns restrictions have been lifted, have you...

- ☐ Continued teaching online exclusively (1)
- ☐ Offered hybrid lessons to the same students (a few lessons online and a few lessons face-to-face) (2)
- ☐ Offered both: face-to-face and online lessons (3)
- ☐ Moved to face-to-face teaching exclusively (4)
- ☐ Discontinued teaching (5)

End of Block: When did you teach online?

Start of Block: Covid-19 comparison question for teachers

Q150 As someone who has experienced teaching online during the Covid-19 pandemic, can you identify any notable differences in terms of your teaching or students' learning in any way? Please reflect on any changes or similarities you have observed.

End of Block: Covid-19 comparison question for teachers

Start of Block: Experience teaching young students online



Q96 During the time you have been teaching **online**, how many of the students you have taught have been between the **ages of 5 and 9**?

Q120 Which levels or grades were the most common among the young students (5 - 9 years old) you have taught online? Select all that apply.

- ☐ Introductory - Preparatory level (1)
- ☐ Beginner level (e.g., ABRSM Grades 1-3 - RCM Level 1-4) (2)
- ☐ Intermediate level (e.g., ABRSM Grades 4-5 - RCM Level 5-6) (3)
- ☐ Advanced level (e.g., ABRSM Grades 6-8 - RCM Level 7-10) (4)
- ☐ Diploma (e.g., ABRSM - ARSM or RCM - ARCT) (5)

Q153 What is the approximate number of students (ages 5-9) you have met or taught face-to-face before transitioning to the online lesson format?

End of Block: Experience teaching young students online


Start of Block: Teacher's evaluation questions

Q44 Thinking of typical 5-9 year old piano students who you have taught online, please indicate on a scale ranging from 1 (strongly agree) to 5 (strongly disagree) the extent to which each of the statements below is true to you.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I enjoy teaching young students online. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with their progress. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to teach young students online long-term. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel burnout from teaching young students online. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that online lessons are not as valuable as face-to-face lessons for young students. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q162 On a scale from 0 (not at all) and 10 (very much), how satisfied are you with teaching young students (5-9-years-old) piano online?

	0	1	2	3	4	5	6	7	8	9	10
Not at all ()											

Q157 In your own words, could you please explain your answer.

End of Block: Teacher's evaluation questions

Start of Block: Student's skills, those who struggle

Q143 Thinking of your most recent online lesson experience, how much support did a typical 5-9 year old beginner student require when you...

	A great deal (1)	Considerably (2)	A moderate amount (3)	A little (4)	None at all (5)	Not applicable (6)
... taught notation or rhythm (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... taught how to maintain a steady pulse/beat (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... taught the articulation and/or dynamics (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... taught pedalling (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... corrected hand or sitting posture (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... taught and/or corrected fingering (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q29 Have you ever taught a 5-9-year-old student who particularly struggled during online piano lessons?

☐ Yes (1)

☐ No (2)

End of Block: Student's skills, those who struggle

Start of Block: Why do they struggle?

Q121 What could be the reasons why they might struggle more than other students while having online lessons? What do you think helped to overcome their struggles?

End of Block: Why do they struggle?

Start of Block: Student's initiative and parental support

Q72 Thinking of your most recent online lesson experience, how often would a typical 5-9 year old beginner student...

	Always (1)	Often (2)	About half the time (3)	Sometimes (4)	Never (5)
... pay attention during the lesson (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... practise/prepare for each lesson (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... annotate scores by themselves (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... identify their mistakes (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... ask questions (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... respond to your feedback (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... make suggestions about repertoire or interpretation (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q35 Thinking of your most recent online lesson experiences with young students (5-9 years old), how often have parent/s...

	Always (1)	Often (2)	About half the time (3)	Sometimes (4)	Never (5)
... sat in during online lessons (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... assisted their child (turning pages, making notes) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... played accompaniment with their child (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... communicated with you during the lesson (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... communicated with you via email or text after each lesson (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Student's initiative and parental support

Start of Block: Teaching style for teachers

Q170 How well do you feel that online learning suits your teaching approach? Please elaborate on how online learning complements and/or challenges your approach to teaching piano.

End of Block: Teaching style for teachers

Start of Block: Technology for teachers

Q171 Thank you for your input. There are just a few questions remaining.

Q37 What technological set-up do you use for your online lessons? Select all that apply.

- ☐ Mobile phone/ iPhone (1)
 - ☐ Tablet/ iPad (2)
 - ☐ Laptop (3)
 - ☐ Computer (4)
 - ☐ USB Camera (5)
 - ☐ USB microphone (6)
 - ☐ MIDI connection (7)
 - ☐ 2 cameras or more (8)
 - ☐ Other, please specify (9)
-

Q159 What technological set-up used **by your students** is most effective for online lessons? Select all that apply.

- ☐ Mobile phone/ iPhone (1)
 - ☐ Tablet/ iPad (2)
 - ☐ Laptop (3)
 - ☐ Computer (4)
 - ☐ USB Camera (5)
 - ☐ USB microphone (6)
 - ☐ MIDI connection (7)
 - ☐ 2 cameras or more (8)
 - ☐ Other, please specify (9)
-

Q106 How often (if ever) have you experienced any issues with broadband connectivity, such as calls being dropped, not being able to hear/see the other person on the screen, blurred video, etc.?

- ☐ Always (1)
 - ☐ Often (2)
 - ☐ About half the time (3)
 - ☐ Sometimes (4)
 - ☐ Never (5)
-

Q142 Which videoconferencing platforms have you enjoyed using for online lessons? Select all that apply.

- ☐ Zoom (1)
 - ☐ Skype (2)
 - ☐ FaceTime (3)
 - ☐ Microsoft Teams (4)
 - ☐ Adobe Connect (5)
 - ☐ Facebook Messenger (6)
 - ☐ LoLa (7)
 - ☐ Forte (8)
 - ☐ Other, please specify (9)
-

Q40 How often do you record the lessons or make videos for learning purposes and share them with your 5-9 year-old students' parents?

- ☐ Always (1)
 - ☐ Often (2)
 - ☐ About half the time (3)
 - ☐ Sometimes (4)
 - ☐ Never (5)
-

Q41 How confident do you feel teaching using digital technology?

- ☐ Very confident (1)
- ☐ Fairly confident (2)
- ☐ Somewhat confident (3)
- ☐ Slightly confident (4)
- ☐ Not confident at all (5)

End of Block: Technology for teachers

Start of Block: Demographics

Q98 Your insights are important to us. For a clearer understanding of our data, we'd like to gather some demographic details. Your responses will be kept strictly confidential and will be used solely for research purposes. Providing this information is optional, but we appreciate your participation.

What is your age?

- ☐ Please write below (1) _____
 - ☐ Prefer not to say (2)
-

Q5 How do you describe yourself?

- ☐ Male (1)
 - ☐ Female (2)
 - ☐ Non-binary / third gender (3)
 - ☐ Prefer to self-describe (4) _____
 - ☐ Prefer not to say (5)
-



Q1 In which country do you currently reside?

▼ Afghanistan (1) ... Zimbabwe (1357)

Q100 What is the highest level of education you have completed?

- ☐ Completed Primary School (1)
- ☐ Completed Secondary School (2)
- ☐ Vocational or Similar (3)
- ☐ Some University but no degree (4)
- ☐ University Bachelors Degree (5)
- ☐ Graduate of professional degree (MA, MS, MBA, PhD, MD, DDS) (6)
- ☐ Other (7)
- ☐ Prefer not to say (8)

Q6 What best describes your employment status over the last three months?

- ☐ Working full-time (1)
- ☐ Working part-time (2)
- ☐ Unemployed and looking for work (3)
- ☐ A homemaker or stay-at-home parent (4)
- ☐ Student (5)
- ☐ Retired (6)
- ☐ Other (7)

End of Block: Demographics

Start of Block: Follow-up interview - teachers

Q154 We'd be grateful if you'd be willing to speak with us in a recorded interview to talk further about your teaching experiences in online setting. If so, please indicate below and provide your email address. This email will be stored separately from your responses above and will only be used to contact you to arrange an interview.

- ☐ Yes, I would like to participate in an interview (1)
- ☐ No, I do not wish to participate in an interview (2)



Q155 Please write your email address below

Q156 If you know a parent whose child has been taking piano lessons or a piano teacher who has experienced online teaching setting, please share this survey with them by sharing this link:
https://imperial.eu.qualtrics.com/jfe/form/SV_bk0rA5YpusWC4tM

Please get in touch if you have any questions about the survey.

If you have experienced any personal psychological discomfort during the survey, please be aware that support is available from various sources. You can find a summary of many of these sources on the NHS Direct website: <https://www.nhs.uk/conditions/stress-anxiety-depression/low-mood-and-depression/>

Name of researcher: Dainora Daugvilaite
Institutional Affiliation: Royal College of Music
Email address: dainora.daugvilaite@rcm.ac.uk
Name of the directing supervisor: Dr Tania Lisboa

Thank you for your time and cooperation!

End of Block: Follow-up interview - teachers

Appendix 2.2

Parents' survey questions

Start of Block: Information sheet for parents

Q136 Online piano lessons with young beginner students: a mixed-methods research

Invitation

You are being invited to take part in my research project. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and please feel free to raise any questions or concerns. Thank you for your time.

Project

The purpose of this survey is to understand what influences the experiences of young students who are 5-9 years old in an online lesson setting. We want to find out how much their ability to be independent and self-motivated affects their experience. We'll also look at other factors such as how their teacher teaches, what kind of technology they use, and how much help they receive from their parents.

Why have you been chosen?

To participate in this research study, you must be a parent or carer of at least one child who has been or is between the ages of 5 and 9 while taking piano lessons online. You must be at least 18 years old to take part.

Voluntary participation

Your participation in this survey is voluntary and you may withdraw from the study at any time if you wish by exiting the survey. By submitting responses to the survey you are giving your informed consent to participate in this study.

Nature of participation

It should take approximately 10-15 minutes to complete the survey. Some of the questions are compulsory as they will ensure that you receive questions relevant to your experiences with online music lessons.

Potential risks to participants

There should not be any risks and discomfort associated with participation in this study. If any arise,

they are no greater than those ordinarily encountered in daily life. There is a small risk when discussing your and your child's experience – and especially some of the challenges involved – that you may experience some personal psychological discomfort. If you do, support is available from a number of sources, many of which are summarized on this NHS Direct website:
<https://www.nhs.uk/conditions/stress-anxiety-depression/low-mood-and-depression/>

Potential benefits to participants

You are unlikely to experience any personal benefits as a result of taking part in this project, although I hope the research will give you the opportunity to reflect on your and your child's experiences of online music lessons. It will help us to improve an understanding of and develop new tools and techniques for online music lessons in the future which you and your child might benefit from as well.

Q137 Confidentiality and anonymity

After completion of the study, all data will be made anonymous (i.e., any personal information, like your contact details provided to be invited in the second part of this research – interviews, will be removed), and your participation in the survey will not be identifiable in any way. Information that is collected about you, for the purposes of the research, will be kept strictly confidential. I would request that you protect the anonymity of your child/children when answering open-ended questions by not including their names or identifying information. Any such identifying material will be removed from your responses. The only time that confidentiality would be broken is in the event that you disclose risk of immediate harm to yourself or others, or where we have a legal obligation to do so, in which case we may need to discuss this with somebody else (only in cases where contact details are provided).

Possible termination of research

If the project has to be terminated for any reason and you and/or the contribution you have made is no longer required for the research any already-collected data would be destroyed.

Storing personal data and information

Information provided by you in this study will be handled in a confidential manner under the policies and procedures of the Royal College of Music. Your personal data and any information that you provide for the purposes of the research will be stored securely on password-protected and encrypted RCM OneDrive online for 10 years. If I wish to re-use it within this time period, I will seek your permission to do so. At the end of the period it will be destroyed.

Outputs

The data collected will contribute towards Dainora Daugvilaite's PhD research project at the Royal College of Music. The final thesis will be shared internally at the RCM and with the general public through its online research database and, results may be shared through other dissemination publications such as academic journals and conference presentations. Please let the researcher know if you have any questions.

Name of researcher: Dainora Daugvilaite

Institutional email: dainora.daugvilaite@rcm.ac.uk
Institutional Affiliation: Royal College of Music
Name of the directing supervisor: Dr Tania Lisboa

Q138 Thank you for reading this Participant Information Sheet and for considering your participation in this research project. This project has been reviewed by the Royal College of Music London (RCM) Ethics Committee. By selecting 'Agree' you are consenting to the conditions described above.

☐ Agree (1)

End of Block: Information sheet for parents

Start of Block: Information about a child



Q113 How many children do you have who have taken or are taking piano lessons?

Q114 For all questions thereafter, if you have more than one child who is taking piano lessons online, base your responses on the experiences of the youngest child.



Q47 How old is your child?

Q49 How long has your child been learning piano?

- ☐ 0 - 5 months (1)
 - ☐ 6 months - 11 months (2)
 - ☐ 1 - 1 year 11 months (3)
 - ☐ 2 years - 3 years and 11 months (4)
 - ☐ 4 - 5 years (5)
 - ☐ More than 5 years (6)
-

Q104 What grade/level is your child currently at? If your child does not prepare for exams, please indicate an approximate level.

- ☐ Introductory - Preparatory level (1)
 - ☐ Beginner level (e.g., ABRSM Grades 1-3 - RCM Level 1-4) (2)
 - ☐ Intermediate level (e.g., ABRSM Grades 4-5 - RCM Level 5-6) (3)
 - ☐ Advanced level (e.g., ABRSM Grades 6-8 - RCM Level 7-10) (4)
 - ☐ Diploma (e.g., ABRSM - ARSM or RCM - ARCT) (5)
 - ☐ I am not sure (6)
-

Q167 Do you consider your child to have any physical or mental impairment which has a substantial and long-term adverse effect on his or her ability to carry out normal day-to-day activities?

- ☐ Yes (1)
- ☐ No (2)
- ☐ Prefer not to say (3)

End of Block: Information about a child

Start of Block: Parents - online before/during Covid?

Q52 Did your child receive piano lessons online before the Covid-19 pandemic lockdowns?

- ☐ Yes, all lessons were online (1)
 - ☐ Yes, we had a few lessons online (2)
 - ☐ No, we had never had online lessons before (3)
 - ☐ My child started learning piano during or after the Covid-19 pandemic (4)
-

Q53 Did your child have piano lessons online during the Covid-19 pandemic lockdowns?

- ☐ Yes (1)
 - ☐ No (2)
 - ☐ My child started learning piano after the Covid-19 pandemic (3)
-

Q50 Where does your child currently have piano lessons? Select all that apply.

- ☐ Primary/secondary school (1)
- ☐ Music school (2)
- ☐ Home - private tuition (teacher visits us) (3)
- ☐ Teacher's home (4)
- ☐ Online (5)
- ☐ Hybrid - online and in-person (face-to-face) (6)
- ☐ My child is not learning piano anymore (7)

End of Block: Parents - online before/during Covid?

Start of Block: Covid-19 comparison question for parents

Q173 As someone whose child has experienced online piano lessons during the Covid-19 pandemic, can you identify any notable differences in your child's behaviour and/or learning in any way? Please reflect on any changes or similarities you have observed.

End of Block: Covid-19 comparison question for parents

Start of Block: Childs level during online lessons



Q166 How old was your child while taking online piano lessons?

Q60 What was the average level/grade of your child while they were taking online piano lessons? If your child does not prepare for exams, please indicate an approximate level.

- ☐ Introductory - Preparatory level (1)
 - ☐ Beginner level (e.g., ABRSM Grades 1-3 - RCM Level 1-4) (2)
 - ☐ Intermediate level (e.g., ABRSM Grades 4-5 - RCM Level 5-6) (3)
 - ☐ Advanced level (e.g., ABRSM Grades 6-8 - RCM Level 7-10) (4)
 - ☐ Diploma (e.g., ABRSM - ARSM or RCM - ARCT) (5)
 - ☐ I am not sure (6)
-

Q154 Did your child receive face-to-face instruction from the same teacher before starting online lessons?

- ☐ Yes, my child received face-to-face instruction for more than 2 months prior commencing to online lessons (1)
- ☐ Yes, my child received only a few face-to-face lessons before starting online lessons (2)
- ☐ No, my child had never met the teacher face-to-face before starting online lessons (3)

End of Block: Childs level during online lessons

Start of Block: Parent's evaluation questions

Q146 Thinking of the online piano lessons your child has experienced, please indicate on a scale from 1 (strongly agree) to 5 (strongly disagree) the extent to which you agree with each of the statements below.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
My child enjoys having piano lessons online. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my child's progress. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like my child to have online piano lessons long-term. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My child feels burnout from having online piano lessons. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that online lessons are not as valuable as face-to-face lessons for young children. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q163 On a scale from 0 (not at all) and 10 (very much), how satisfied are you with online piano lessons?

	0	1	2	3	4	5	6	7	8	9	10
--	---	---	---	---	---	---	---	---	---	---	----

Not at all ()

Q164 In your own words, could you please explain your answer.

End of Block: Parent's evaluation questions

Start of Block: Child's independence, initiative, and parental support

Q59 Thinking of the most recent online piano lessons your child had, how often did your child...

	Always (1)	Often (2)	About half the time (3)	Sometimes (4)	Never (5)
... engage during the lesson (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... pay attention during the lesson (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... look forward to the next online lesson (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... complain about online lesson (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... prepare/practise for the lesson (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q145 Thinking of the most recent online piano lesson experience your child had, how often would they...

	Always (1)	Often (2)	About half the time (3)	Sometimes (4)	Never (5)	I am not sure (6)
... mark up the scores by themselves (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... identify their mistakes (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... ask questions (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... respond to teacher's feedback (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... make suggestions about repertoire or interpretation (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q65 Thinking of the most recent online piano lesson experience your child had, how often have you...

	Always (1)	Often (2)	About half the time (3)	Sometimes (4)	Never (5)
... sat in during online lessons (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... assisted your child (turning pages, making notes) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... played accompaniment with your child (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... communicated with the teacher during the lesson (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... communicated with the teacher via email or text after each lesson (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Child's independence, initiative, and parental support

Start of Block: Student's motivation according to parents

Q151 While having online piano lessons, how much has your child been motivated because...

	A great deal (1)	Considerably (2)	A moderate amount (3)	A little (4)	Not at all (5)
... they love music (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... they enjoy piano lessons (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I reward them for having a good lesson or for practice (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... they are afraid of not being prepared for the lessons (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... they know friends who also play the piano (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... they have piano exams (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Student's motivation according to parents

Start of Block: Teaching style for parents

Q171 How effective do you find your child's piano teacher's approach to online lessons? Please share any specific experiences or examples that have informed your opinion.

End of Block: Teaching style for parents

Start of Block: Technology for Parents

Q170 Thank you for your input. There are just a few questions remaining.

Q78 What technological set-up do you use for online lessons? Select all that apply.

- ☐ Mobile phone/ iPhone (1)
 - ☐ Tablet/ iPad (2)
 - ☐ Laptop (3)
 - ☐ Computer (4)
 - ☐ USB Camera (5)
 - ☐ USB microphone (6)
 - ☐ MIDI connection (7)
 - ☐ 2 cameras or more (8)
 - ☐ Other, please specify (9)
-

Q161 What technological set-up does **the teacher** use for online lessons? Select all that apply.

- ☐ Mobile phone/ iPhone (1)
 - ☐ Tablet/ iPad (2)
 - ☐ Laptop (3)
 - ☐ Computer (4)
 - ☐ USB Camera (5)
 - ☐ USB microphone (6)
 - ☐ MIDI connection (7)
 - ☐ 2 cameras or more (8)
 - ☐ I am not sure (9)
 - ☐ Other, please specify (10)
-

Q79 Has your child experienced any issues with broadband connectivity, such as calls being dropped, not being able to hear/see the other person on the screen, blurred video, etc.?

- ☐ Always (1)
 - ☐ Often (2)
 - ☐ About half the time (3)
 - ☐ Sometimes (4)
 - ☐ Never (5)
-

Q80 Which videoconferencing platforms have been used for online lessons? Select all that apply.

- ☐ Zoom (1)
 - ☐ Skype (2)
 - ☐ FaceTime (3)
 - ☐ Microsoft Teams (4)
 - ☐ Adobe Connect (5)
 - ☐ Facebook Messenger (6)
 - ☐ LoLa (7)
 - ☐ Forte (8)
 - ☐ Other, please specify (9)
-

Q81 How often does the teacher record the lessons or make videos for learning purposes and share them with you/your child?

- ☐ Always (1)
- ☐ Often (2)
- ☐ About half the time (3)
- ☐ Sometimes (4)
- ☐ Never (5)

End of Block: Technology for Parents

Start of Block: Demographics

Q98 Your insights are important to us. For a clearer understanding of our data, we'd like to gather some demographic details. Your responses will be kept strictly confidential and will be used solely for research purposes. Providing this information is optional, but we appreciate your participation.

What is your age?

☐ Please write below (1) _____

☐ Prefer not to say (2)

Q5 How do you describe yourself?

☐ Male (1)

☐ Female (2)

☐ Non-binary / third gender (3)

☐ Prefer to self-describe (4) _____

☐ Prefer not to say (5)



Q1 In which country do you currently reside?

▼ Afghanistan (1) ... Zimbabwe (1357)

Q100 What is the highest level of education you have completed?

- ☐ Completed Primary School (1)
 - ☐ Completed Secondary School (2)
 - ☐ Vocational or Similar (3)
 - ☐ Some University but no degree (4)
 - ☐ University Bachelors Degree (5)
 - ☐ Graduate of professional degree (MA, MS, MBA, PhD, MD, DDS) (6)
 - ☐ Other (7)
 - ☐ Prefer not to say (8)
-

Q6 What best describes your employment status over the last three months?

- ☐ Working full-time (1)
- ☐ Working part-time (2)
- ☐ Unemployed and looking for work (3)
- ☐ A homemaker or stay-at-home parent (4)
- ☐ Student (5)
- ☐ Retired (6)
- ☐ Other (7)

End of Block: Demographics

Start of Block: Follow-up interview - parents

Q38 We'd be grateful if you'd be willing to speak with us in a recorded interview to talk further about your and your child's experiences of online lessons. If so, please indicate below and provide your

email address. This email will be stored separately from your responses above and will only be used to contact you to arrange an interview.

- ☐ Yes, I would like to participate in the interview (1)
- ☐ No, I do not wish to participate in the interview (2)



Q39 Please write your email address below

Q165 Would you like **your child** to participate in the interview and share their experiences as well?

- ☐ Yes, I would like my child to participate in the interview (1)
- ☐ No, I do not want my child to participate in the interview (2)

Q90 If you know a parent whose child has been taking piano lessons or a piano teacher who has experienced online teaching setting, please share this survey with them by sharing this link: https://imperial.eu.qualtrics.com/jfe/form/SV_bk0rA5YpusWC4tM

Please get in touch if you have any questions about the survey.

If you have experienced any personal psychological discomfort during the survey, please be aware that support is available from various sources. You can find a summary of many of these sources on the NHS Direct website: <https://www.nhs.uk/conditions/stress-anxiety-depression/low-mood-and-depression/>

Name of researcher: Dainora Daugvilaite
Institutional Affiliation: Royal College of Music
Email address: dainora.daugvilaite@rcm.ac.uk
Name of the directing supervisor: Dr Tania Lisboa

Thank you for your time and cooperation!

End of Block: Follow-up interview - parents

Appendix 3 – Latent variables

Here is a table of all Likert-type questions in this survey used as latent variables in regression analysis, demonstrating whether the score values were reversed (transformed) in the analyses. It is also explained which variables are dependent and independent in regression analysis.

Appendix 3.1

Teachers' survey

Question	Is the score value transformed and explanation	The name of the latent variable in Jamovi and it's function
Q44 Thinking of typical 5-9 year old piano students who you have taught online, please indicate on a scale ranging from 1 (strongly agree) to 5 (strongly disagree) the extent to which each of the statements below is true to you.	The value of the first 3 statements transformed as explained in Table 4.2	Satisfaction Likert-type (this is not the final variable used in regression analysis) Dependent (outcome) variable
Q143 Thinking of your most recent online lesson experience, how much support did a typical 5-9 year old beginner student require when you...	None of the values transformed because 1 means low student skill acquisition and 5 means high skill acquisition . If the teacher selects 'A great deal' for the first statement (how much support did your student need when you taught notation or rhythm), that means the student's level of skill acquisition is low – 1 point.	Skill Acquisition Independent (predictor) variable
Q72 Thinking of your most recent online lesson experience, how often would a typical 5-9 year old beginner student...	All values were transformed because 5 points show high levels of independence; e.g., 'Always' paying	Student's Independence

	attention during the lesson, and 1 shows low levels of independence.	Independent (predictor) variable
Q35 Thinking of your most recent online lesson experiences with young students (5-9 years old), how often have parent/s...	All values were transformed because 5 points show high parental involvement; e.g., 'Always' sitting in during online lessons , and 1 shows low levels of parental involvement.	Parental Involvement Independent (predictor) variable

Appendix 3.2

Parents' survey

Question	Is the score value transformed and explanation	The name of the latent variable in Jamovi and it's function
Q146 Thinking of the online piano lessons your child has experienced, please indicate on a scale from 1 (strongly agree) to 5 (strongly disagree) the extent to which you agree with each of the statements below.	The value of the first 3 statements transformed as explained in Table 4.2.	Parent's Satisfaction (this is not the final variable used in regression analysis) Dependent (outcome) variable
Q59 Thinking of the most recent online piano lessons your child had, how often did your child...	All values except the 4 th one ('complain about online lesson') were transformed because this statement was negative (reversed). 5 points show high levels of independence, e.g., 'Always' paying attention during the lesson, and 1 shows low levels of independence.	(Parent's) Satisfaction and Student's Independence Independent (predictor) variable*
Q145 Thinking of the most recent online piano lesson experience	All values were transformed because 5 points show high levels of	(Parent's) Satisfaction and

your child had, how often would they...	independence; e.g., ‘Always’ asking questions during the lesson, and 1 shows low levels of independence.	Student’s Independence Independent (predictor) variable*
Q65 Thinking of the most recent online piano lesson experience your child had, how often have you...	All values were transformed because 5 points show high parental involvement; e.g., ‘Always’ sitting in during online lessons , and 1 shows low levels of parental involvement.	Parental Involvement Independent (predictor) variable
Q151 While having online piano lessons, how much has your child been motivated because...	All values were transformed because 5 points show high levels of motivation; e.g., ‘The child is motivated ‘A great deal’ because they love music, and 1 shows low levels of motivation.	Student’s Motivation Independent (predictor) variable**

* The statements for these two variables are divided between these two Likert-type questions. The parents’ survey has 3 additional items between questions 59 and 145, which the teachers’ survey does not have; those predominantly asked about student’s satisfaction with online lessons. Since student’s themselves were not included in this phase of the research, these three statements were added to Parent’s Satisfaction latent variable. Cronbach’s alpha supports the division of these statements between two variables, explained in section 4.4.4 and Appendix 4.2.

** This survey does not distinguish between intrinsic and extrinsic motivation. It only measures the levels of motivation, not what motivates the students. This is backed up by Cronbach’s alpha test, Appendix 4.2.

Appendix 3.3

Since the two Likert-type questions in the parents’ survey consisted of statements belonging to two variables, below is a table demonstrating how the statements were divided into two latent variables. The statements in the Student’s Independence variable are identical in both surveys to keep consistency.

Q59 Thinking of the most recent online piano lessons your child had, how often did your child...		
	Additional statements in Parent's Satisfaction variable	Student Independence variable
... engage during the lesson	✓	
... pay attention during the lesson		✓
... look forward to the next online lesson	✓	
... complain about online lesson	✓	
... prepare/practise for the lesson		✓
Q145 Thinking of the most recent online piano lesson experience your child had, how often would they...		
... mark up the scores by themselves		✓
... identify their mistakes		✓
... ask questions		✓
... respond to teacher's feedback		✓
... make suggestions about repertoire or interpretation		✓

Appendix 3.4

The transformation of 11-point scale

Below is an explanation how a 11-point scale was transformed to a 5-point scale to match the Likert-type scale statements.

$$NewValue = C + \frac{(V - A) \times (D - C)}{B - A}$$

Given:

- Original scale $[A, B] = [0, 10]$
- New scale $[C, D] = [1, 5]$

The formula for your case simplifies to:

$$NewValue = 1 + \frac{(SurveyScore - 0) \times (5 - 1)}{10 - 0}$$

$$NewValue = 1 + \frac{SurveyScore \times 4}{10}$$

$$NewValue = 1 + \frac{SurveyScore}{2.5}$$

The explanation of the formula:

V: The original value that you want to convert from the old scale to the new scale.

A: The minimum value of the original scale.

B: The maximum value of the original scale.

C: The minimum value of the new scale.

D: The maximum value of the new scale.

❓ Original scale $[A, B] = [0, 10]$

- Here, $A=0$ and $B = 10$

❓ New scale $[C, D] = [1, 5]$

- Here, $C=1$ and $D=5$

1. Substitute the given values into the formula:

$$NewValue = 1 + \frac{(V-0) \times (5-1)}{10-0}$$

2. Simplify the formula step-by-step:

$$NewValue = 1 + \frac{V \times 4}{10}$$

$$NewValue = 1 + \frac{V}{2.5}$$

1. Subtracted the minimum value of the original scale (A) from the original value (V): This centres the original value within the original scale.

2. Multiplied the result by the difference between the maximum and minimum values of the new scale (D–C): This adjusts the centred value to the range of the new scale.
3. Systematically, the difference between the maximum and minimum values of the original scale is divided (B–A). This systematic approach normalises the adjustment to the range of the original scale.
4. Added the minimum value of the new scale (C): This shifts the normalised value to fit within the new scale.

In the given example, the formula converts a value from a 0-10 scale to a 1-5 scale. The simplified formula shows that you can take the original value, divide it by 2.5, and then add 1 to get the new value.

Further example:

1. Original score (V): 8

2. Apply the conversion formula:

$$\text{NewValue} = 1 + \frac{8}{2.5}$$

3. Calculate:

$$\text{NewValue} = 1 + 3.2 = 4.2$$

And here is an screenshot of how the transformed values looks in relation to other variable in Jamovi software analysis:

Appendix 3.5

COMPUTED VARIABLE

Teacher's Satisfaction

Description

Formula

f_k = MEAN('Satisfaction Likert-type', 'Satisfaction 0-10 transformed')

Retain unused levels in analyses ☐

	Satisfaction Likert-type	Satisfaction2	Satisfaction 0-10 transformed	Teacher's Satisfaction
1	2.6	1	1.4	2.0
2	3.0	7	3.8	3.4
2	2.6	2	1.8	2.2
5	3.4	10	5.0	4.2
5	3.4	10	5.0	4.2
2	3.0	3	2.2	2.6
1	2.6	1	1.4	2.0
1	2.8	7	3.8	3.3
1	3.2	3	2.2	2.7
1	2.6	5	3.0	2.8
1	2.6	0	1.0	1.8
3	4.0	7	3.8	3.9
1	2.8	3	2.2	2.5
1	3.8	7	3.8	3.8
1	2.6	8	4.2	3.4
5	3.4	10	5.0	4.2
1	3.0	0	1.0	2.0
2	3.2	7	3.8	3.5
2	3.0	7	3.8	3.4
5	2.8	8	4.2	3.5
5	3.2	9	4.6	3.9
1	3.0	4	2.6	2.8
5	3.4	10	5.0	4.2
5	3.6	8	4.2	3.9
1	3.0	4	2.6	2.8

Appendix 4 - Reliability Tests

The following tables were produced using Jamovi analysis software. For the analysis, each Likert-type statement required a variable name. In the teachers' survey, Satisfaction A–E correspond to survey question 44, with the five statements labelled alphabetically in descending order. The variable Skill Acquisition corresponds to question 143, Independence to question 72, and Parental Involvement to question 35. In the parents' survey, Satisfaction corresponds to 146, Child's Satisfaction and Student Independence to statements explained in Appendix 3.3, Parental Involvement to 65, and Motivation to question 151.

Appendix 4.1

Cronbach's alpha

Teachers' Survey Analysis – Cronbach's alpha

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	2.77	1.18	0.900

Item Reliability Statistics

	If item dropped
	Cronbach's α
Satisfaction A	0.854
Satisfaction B	0.885
Satisfaction C	0.863
Satisfaction D	0.907
Satisfaction E	0.874

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	2.31	0.807	0.868

Item Reliability Statistics

	If item dropped
	Cronbach's α
Skill Acquisition A	0.839
Skill Acquisition B	0.835
Skill Acquisition C	0.832
Skill Acquisition D	0.871
Skill Acquisition E	0.856
Skill Acquisition F	0.837

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	3.14	0.777	0.832

Scale Reliability Statistics

	Mean	SD	Cronbach's α
Item Reliability Statistics			
	If item dropped		
	Cronbach's α		
Independence A		0.835	
Independence B		0.813	
Independence C		0.810	
Independence D		0.785	
Independence E		0.808	
Independence F		0.804	
Independence G		0.807	

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	2.39	0.846	0.774

Item Reliability Statistics

	If item dropped	
	Cronbach's α	
Parental Involvement A	0.666	
Parental Involvement B	0.650	
Parental Involvement C	0.800	
Parental Involvement D	0.676	
Parental Involvement E	0.809	

Appendix 4.2

Parents' Survey Analysis

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	2.78	0.914	0.805

Item Reliability Statistics

	If item dropped
--	-----------------

Scale Reliability Statistics

	Mean	SD	Cronbach's α
Cronbach's α			
Satisfaction A		0.731	
Satisfaction B		0.747	
Satisfaction C		0.743	
Satisfaction D		0.794	
Satisfaction E		0.805	

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	3.19	0.904	0.859

Item Reliability Statistics

	If item dropped
Cronbach's α	
Independence A	0.858
Independence B	0.872
Independence C	0.838
Independence D	0.822
Independence E	0.822
Independence F	0.833
Independence G	0.821

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	3.67	0.844	0.700

Item Reliability Statistics

	If item dropped
Cronbach's α	
Student's satisfaction A	0.505

Scale Reliability Statistics

	Mean	SD	Cronbach's α
Student's satisfaction B			0.342
Student's satisfaction C			0.850

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	2.44	0.976	0.777

Item Reliability Statistics

	If item dropped
	Cronbach's α
Parental Involvement A	0.684
Parental Involvement B	0.662
Parental Involvement C	0.754
Parental Involvement D	0.697
Parental Involvement E	0.829

Scale Reliability Statistics

	Mean	SD	Cronbach's α
scale	2.83	0.736	0.603

Item Reliability Statistics

	If item dropped
	Cronbach's α
Motivation A Tr.	0.505
Motivation B Tr.	0.513
Motivation C Tr.	0.587
Motivation D Tr.	0.568
Motivation E Tr.	0.564
Motivation F Tr.	0.612

Appendix 4.3

Confirmatory Factor Analysis

Teachers' Survey

The analysis of the teachers' Factor analysis:

- All indicators (A to E) for Satisfaction have significant loadings ($p < .001$). The standardised estimates for these indicators range from 0.933 to 0.642, indicating vital to moderate associations with the Satisfaction factor, further demonstrating the importance of these indicators concerning the construction of the variable. All indicators (A to F) for Skill Acquisition also show significant loadings ($p < .001$). The standardised estimates range from 0.807 to 0.576, demonstrating vital to moderate associations with the Skill Acquisition factor.
- For the Independence factor, all indicators (A to G) have significant loadings ($p < .001$). The standardised estimates range from 0.830 to 0.446, indicating varying strengths of association, with Initiative A having the weakest loading.
- All indicators (A to E) related to Parental Involvement have significant loadings ($p < .001$). The standardised estimates range from 0.880 to 0.335, with indicators C and E having relatively weak loadings.

The covariances between factors indicate how the factors are related to each other. Satisfaction has significant positive covariances with Skill Acquisition, Independence, and Parental Involvement ($p < .001$ for all). The standardised estimates for these covariances range from 0.5977 to 0.2906. Skill Acquisition shows a significant positive covariance with Initiative ($p < .001$) but a non-significant covariance with Parental Involvement ($p = 0.483$). The Independence has a non-significant covariance with Parental Involvement ($p = 0.252$). The non-significant covariances are correct because if the child is independent and self-sufficient, parental help might not be needed. However, the regression analysis needs these variables.

The chi-square test (which examines "the relationship between two categorical variables," Williamon et al., 2021, 425) for exact fit yielded a χ^2 value of 298 with 224 degrees of freedom and a p-value of less than .001. This result indicates that the model does not fit the data exactly. However, because the chi-square test is sensitive to sample size, other fit indices should be considered to evaluate model fit.

One such measure is the ratio of the chi-square statistic to the degrees of freedom (χ^2/df), which is preferred in cases with large samples (Wheaton, Muthén, Alwin, & Summers, 1977). A ratio ≤ 2 is considered a superior fit between the hypothesized model and the sample data (Cole, 1987). In this case, $\chi^2/\text{df} = 298/224 \approx 1.33$, which falls well below this threshold, suggesting a good model fit.

The Comparative Fit Index (CFI) ('the goodness of fit test', Cohen et al. 2017, 835) is 0.935, more significant than 0.90, and indicates a good fit. The Tucker-Lewis Index (TLI) is 0.926, more significant than 0.90, suggesting a good fit. The Root Mean Square Error of Approximation (RMSEA) is 0.0563, with a 90% confidence interval ranging from 0.0376 to 0.0726. Values less than 0.06 indicate a good fit, and the RMSEA value falls within this threshold.

Confirmatory Factor Analysis

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p	Stand. Estimate
Satisfaction	Satisfaction A	1.308	0.1063	12.30	< .001	0.933
	Satisfaction B	1.006	0.1028	9.78	< .001	0.807
	Satisfaction C	1.239	0.1201	10.32	< .001	0.839
	Satisfaction D	0.858	0.1202	7.14	< .001	0.642
	Satisfaction E	1.149	0.1233	9.31	< .001	0.787
Playing Independence	Skill Acquisition A	0.767	0.0843	9.10	< .001	0.781
	Skill Acquisition B	0.744	0.0787	9.46	< .001	0.803
	Skill Acquisition C	0.861	0.0900	9.56	< .001	0.807
	Skill Acquisition D	0.630	0.1035	6.09	< .001	0.576
	Skill Acquisition E	0.671	0.0959	7.00	< .001	0.644
	Skill Acquisition F	0.831	0.0950	8.75	< .001	0.762
Initiative	Independence A	0.419	0.0939	4.46	< .001	0.446
	Independence B	0.610	0.0958	6.36	< .001	0.604
	Independence C	0.836	0.1218	6.86	< .001	0.639
	Independence D	0.839	0.0862	9.74	< .001	0.830
	Independence E	0.772	0.1076	7.17	< .001	0.664
	Independence F	0.683	0.0924	7.39	< .001	0.683
	Independence G	0.799	0.1100	7.26	< .001	0.672

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p	Stand. Estimate
Parental Involvement	Parental Involvement A	1.105	0.1052	10.51	< .001	0.867
	Parental Involvement B	1.127	0.1049	10.75	< .001	0.880
	Parental Involvement C	0.255	0.0759	3.35	< .001	0.340
	Parental Involvement D	0.938	0.1068	8.78	< .001	0.766
	Parental Involvement E	0.401	0.1216	3.30	< .001	0.335

Factor Estimates

Factor Covariances

		Estimate	SE	Z	p	Stand. Estimate
Satisfaction	Satisfaction	1.0000 ^a				
	Skill Acquisition	0.4703	0.0869	5.414	< .001	0.4703
	Independence	0.5977	0.0762	7.845	< .001	0.5977
	Parental Involvement	0.2906	0.1003	2.898	0.004	0.2906
Skill Acquisition	Playing Independence	1.0000 ^a				
	Initiative	0.4114	0.0965	4.264	< .001	0.4114
	Parental Involvement	-0.0773	0.1102	0.702	0.483	-0.0773
Independence	Independence	1.0000 ^a				
	Parental Involvement	0.1284	0.1121	1.146	0.252	0.1284
Parental Involvement	Parental Involvement	1.0000 ^a				

Model Fit

Test for Exact Fit

χ^2	df	p
298	224	< .001

Test for Exact Fit

χ^2	df	p
----------	----	---

Fit Measures

CFI	TLI	RMSEA	RMSEA 90% CI	
			Lower	Upper
0.935	0.926	0.0563	0.0376	0.0726

Appendix 4.4

Parents' survey

- All indicators (A to E) for Satisfaction have significant loadings ($p < .001$, except for Satisfaction E with $p = 0.004$). The loadings range from 1.0994 to 0.4294, indicating varying strengths of association with the Satisfaction factor.
- All indicators (A to G) for Independence have significant loadings ($p < .001$, except for Independence B with $p = 0.006$). The loadings range from 1.0955 to 0.4989, indicating a strong relationship between these indicators and the Initiative factor.
- All indicators (A to C) for Student's Satisfaction have significant loadings ($p < .001$, except for Student's Satisfaction C with $p = 0.013$). The loadings range from 1.1158 to 0.3896, indicating varying strengths of association with the Student's Satisfaction factor.
- Most indicators (A to D) for Parental Involvement have significant loadings ($p < .001$, except for Parental Involvement C with $p = 0.002$ and Parental Involvement E with $p = 0.353$). The loadings range from 1.4809 to 0.1702, with Parental Involvement E not showing a significant loading ($p = 0.353$), indicating it may not be a good measure of this factor. This might be for the same reasons as in the teachers' survey.
- For Motivation, only indicators A and B have significant positive loadings ($p < .001$). Other indicators (C to F) have non-significant or negative loadings, suggesting these items may not be appropriate measures for the Motivation factor.

The covariances between factors indicate how the factors are related to each other. Satisfaction has significant positive covariances with Initiative, Student Satisfaction, and Motivation ($p < .001$) but a non-significant covariance with Parental Involvement ($p = 0.732$). The Independence has significant positive covariances with Student Satisfaction and Motivation ($p < .001$) but a non-significant covariance with Parental Involvement ($p = 0.705$). Student Satisfaction has a significant positive covariance with Motivation ($p < .001$) but a non-significant covariance with Parental Involvement ($p = 0.651$). Parental Involvement has a non-significant covariance with all other factors, including Motivation ($p = 0.521$).

The chi-square test for exact fit yielded a χ^2 value of 544 with 289 degrees of freedom and a p-value of less than .001. This suggests that the model does not fit the data exactly. However, because the chi-square test is sensitive to sample size, other fit indices should be considered to evaluate the model fit. According to degrees of freedom, $\chi^2/df = 544/289 = 1.88$, which falls well below this threshold, suggesting a good model fit.

The Comparative Fit Index (CFI) is 0.639, below the threshold of 0.90, which does not indicate a good fit. The Tucker-Lewis Index (TLI) is 0.594, also below the threshold. The Root Mean Square Error of Approximation (RMSEA) is 0.140; the RMSEA value is well above this threshold.

The CFA model shows varying degrees of association between observed variables and their respective factors. Some indicators, especially within the Motivation and Parental Involvement factors, show weak or non-significant loadings, indicating potential issues with these measures. The significant covariances suggest relationships between some aspects (e.g., Satisfaction and Independence) but not all (e.g., Parental Involvement has weak associations with other factors). The overall model fit indices (CFI, TLI, and RMSEA) suggest that the model does not fit the data well, with values below acceptable thresholds.

Some factors (e.g., Satisfaction and Independence) showed consistent and strong loadings across both tests; factors such as Motivation and Parental Involvement had varying results, indicating that these constructs might be more sensitive to the specific population being studied. The parents' Factor Analysis test results suggested that a lower sample size contributed to the reduced stability in parameter estimates, which caused higher standard errors. However, the sample size was limited by the number of responses received within the time constraints.

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p
Satisfaction	Satisfaction A	1.0994	0.166	6.617	< .001
	Satisfaction B	1.0771	0.155	6.939	< .001
	Satisfaction C	0.8415	0.186	4.521	< .001
	Satisfaction D	0.5676	0.163	3.492	< .001

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p
Initiative	Satisfaction E	0.4294	0.148	2.901	0.004
	Independence A	0.5167	0.132	3.916	< .001
	Independence B	0.4989	0.180	2.770	0.006
	Independence C	1.0188	0.191	5.328	< .001
	Independence D	0.9209	0.152	6.058	< .001
	Independence E	1.0558	0.167	6.319	< .001
	Independence F	0.7668	0.149	5.158	< .001
	Independence G	1.0955	0.167	6.560	< .001
Student's satisfaction	Student's satisfaction A	0.7396	0.107	6.942	< .001
	Student's satisfaction B	1.1158	0.146	7.660	< .001
	Student's satisfaction C	0.3896	0.157	2.478	0.013
Parental Involvement	Parental Involvement A	1.4809	0.198	7.479	< .001
	Parental Involvement B	1.4318	0.187	7.641	< .001
	Parental Involvement C	0.3939	0.127	3.106	0.002
	Parental Involvement D	0.8237	0.174	4.732	< .001
	Parental Involvement E	0.1702	0.183	0.928	0.353
Motivation	Motivation A Tr.	0.8092	0.155	5.236	< .001
	Motivation B Tr.	1.0152	0.139	7.302	< .001
	Motivation C Tr.	-0.2919	0.221	-1.324	0.186
	Motivation D Tr.	-0.0988	0.184	-0.537	0.591
	Motivation E Tr.	-0.3652	0.237	-1.539	0.124
	Motivation F Tr.	-0.4622	0.210	-2.199	0.028

Factor Estimates

Factor Covariances

		Estimate	SE	Z	p
Satisfaction	Satisfaction	1.0000 ^a			
	Independence	0.6541	0.1128	5.797	< .001
	Student's satisfaction	0.9450	0.0497	18.999	< .001
	Parental Involvement	0.0583	0.1700	0.343	0.732
	Motivation	0.8174	0.0886	9.225	< .001
Independence	Independence	1.0000 ^a			
	Student's satisfaction	0.7209	0.0986	7.310	< .001
	Parental Involvement	0.0646	0.1704	0.379	0.705

Factor Covariances

		Estimate	SE	Z	p
Student's satisfaction	Motivation	0.6325	0.1250	5.058	< .001
	Student's satisfaction	1.0000 ^a			
	Parental Involvement	0.0763	0.1684	0.453	0.651
Parental Involvement	Motivation	0.8289	0.0787	10.534	< .001
	Parental Involvement	1.0000 ^a			
Motivation	Motivation	-0.1075	0.1673	-0.643	0.521
	Motivation	1.0000 ^a			

^a fixed parameter

Model Fit

Test for Exact Fit

χ^2	df	p
544	289	< .001

Fit Measures

CFI	TLI	RMSEA	RMSEA 90% CI	
			Lower	Upper
0.639	0.594	0.140	0.122	0.158

Appendix 4.5

Correlation Matrix

Parents' Survey

Correlation Matrix

Correlation Matrix

		Independence A	Independence B	Independence C	Independence D	Independence E	Independence F	Independence G
Independence A	Pearson's r	—						
	p-value	—						
Independence B	Pearson's r	0.293	—					
	p-value	0.051	—					
Independence C	Pearson's r	0.325	0.165	—				
	p-value	0.029	0.279	—				
Independence D	Pearson's r	0.388	0.353	0.630	—			
	p-value	0.008	0.017	< .001	—			
Independence E	Pearson's r	0.321	0.330	0.639	0.669	—		
	p-value	0.032	0.027	< .001	< .001	—		
Independence F	Pearson's r	0.404	0.430	0.514	0.496	0.548	—	
	p-value	0.006	0.003	< .001	< .001	< .001	—	
Independence G	Pearson's r	0.474	0.264	0.561	0.682	0.672	0.596	—
	p-value	< .001	0.079	< .001	< .001	< .001	< .001	—

Correlation Matrix

Correlation Matrix

		Satisfaction A	Satisfaction B	Satisfaction C	Satisfaction D	Satisfaction E	Student's satisfaction A	Student's satisfaction B	Student's satisfaction C
Satisfaction A	Pearson's r	—							
	p-value	—							
Satisfaction B	Pearson's r	0.713	—						
	p-value	< .001	—						
Satisfaction C	Pearson's r	0.678	0.482	—					
	p-value	< .001	< .001	—					
Satisfaction D	Pearson's r	0.327	0.465	0.349	—				
	p-value	0.028	0.001	0.019	—				
Satisfaction E	Pearson's r	0.284	0.255	0.461	0.438	—			
	p-value	0.059	0.091	0.001	0.003	—			
Student's satisfaction A	Pearson's r	0.635	0.727	0.369	0.395	0.431	—		
	p-value	< .001	< .001	0.013	0.007	0.003	—		
Student's satisfaction B	Pearson's r	0.708	0.719	0.564	0.503	0.391	0.783	—	
	p-value	< .001	< .001	< .001	< .001	0.008	< .001	—	
Student's satisfaction C	Pearson's r	0.352	0.458	0.081	0.517	0.065	0.210	0.342	—
	p-value	0.018	0.002	0.597	< .001	0.673	0.167	0.021	—

Appendix 5 - Interview questions

Interview Questions for Teachers

Experiences

1) Tell me about your overall experience of teaching piano online.

a) And how about your experience of teaching young students online?

2) (From your experience of teaching online,) What are the positives and the negatives of online piano lessons? Sub questions:

- student's behaviour
- teacher-student relationship
- playing technique/playing independence
- progress
- Technological issues

About students

3) What qualities or characteristics do students need in order to have a successful experience of online piano lessons?

- Engagement
- Motivation
- Initiative
- Behaviour
- Independence (playing and developmental)

4) Are online piano lessons suitable for all ages and levels?

- In your experience, what student age ranges or developmental levels have a better (or worse) experience of online music lessons?

Teaching strategies

5) Do you use the same or different teaching strategies with different age groups in online settings? If so, how do those strategies differ?

Parental involvement

6) Have you experienced any parental involvement in online lessons?

a) If so, what impact does parental involvement have on the online lesson?

b) Do you require the parents to be present, or do you prefer to work with students independently?

Resources/technology

7) What resources have helped you to deliver online music tuition?

a) What kind of hardware and software technologies do you use/have you used? Which have you found most / least effective?

b) Have you experienced any difficulties or made any discoveries as a result of the use of such tools?

Covid-19 experiences

8) If applicable: Can you share a story that illustrates the differences between online and face-to-face teaching, especially pre-, during, and post- pandemic?

- In terms of engagement? Or progress? Or motivation?

Closing statements

9) What have been the most significant insights you've developed from teaching piano online?

10) Are there any other points or experiences you would like to share that you have not covered that may be important when teaching online?

Interview Questions for Parents

Experiences

- 1) Tell me about your and your child's experience of having piano lessons online.
- 2) What are the positives and the negatives of online piano lessons?

About a child

- 3) In your experience, has your child's engagement, progress, motivation to practise, and/or independence been different when taking online piano lessons compared to face-to-face lessons?

Teaching strategies

- 4) How would you describe your child's teacher's teaching approach in an online setting?

Parental involvement

- 5) Have you supported your child in any way during online lessons?

Resources/technology

- 6) What kind of hardware and software technologies have you used?
- 7) Have you experienced any difficulties? Have technological issues impacted the lessons in any way?
- 8) Have you received any help or support from parents' communities in regards to online learning?

Covid-19

Optional Questions for those who previously had face-to-face lessons

9) (if applicable) Can you share a story which illustrates the differences between online and face-to-face lessons, especially pre-, during and post- pandemic?

Closing statements

10) Are there any other points or experiences you would like to share that you have not covered that may be important when discussing online piano lessons?

Indicative interview questions for children

(Initially, a picture will be presented, followed by 1-2 related questions):

If a child brings personal items such as photographs, musical scores, artefacts, toys, or drawings related to their online music experiences (depending on their age), they will be prompted with questions like:

- What have you brought with you?
- Why did you choose to bring this item?

If a piece of music or an extract is being played either on piano or Youtube as a reminder of what the child has been learning while having online piano lessons:

- How does this piece make you feel?
- Do you remember learning this piece while having the lessons online?

Some publicly available photos of children playing the piano, either with or without a laptop present and with or without a teacher or guardian, were shown to the interviewed children to prompt the following questions:

1. What do you see in this picture?
2. How do you feel about learning piano online?
3. What do you find exciting about online piano lessons?
4. What do you find challenging about online piano lessons?
5. How do you feel about your piano teacher when you see them on the screen?
6. Is there anything your teacher does during your online lessons that makes learning fun?
7. Do you like learning piano on the computer or with your teacher sitting next to you more? Why?
8. What do you see in these pictures?
9. How do these pictures make you feel?

10. When you're learning piano online, are there times you wish to ask for more help? Who do you ask for help?
11. Do you like it when your parents help you with your piano lessons? Why or why not?"

Appendix 6 – Demographics

Appendix 6.1

Teacher Demographics

Descriptives

	Gender	Education	Employment
N	100	100	100
Missing	4	4	4
Mean	1.98	5.61	1.68
Median	2.00	6.00	1.00
Standard deviation	0.635	0.790	1.13
Minimum	1	3	1
Maximum	5	7	7

Frequencies of Gender

Gender	Counts	% of Total
Male	12	12.0 %
Female	84	84.0 %
Non-binary / third gender	1	1.0 %
Prefer not to say	3	3.0 %

Frequencies of Education

Education	Counts	% of Total
Vocational or Similar	4	4.0 %
Some University but no degree	1	1.0 %
University Bachelors Degree	31	31.0 %
Graduate of professional degree (MA, MS, MBA, PhD, MD, DDS)	58	58.0 %

Frequencies of Education

Education	Counts	% of Total
Other	6	6.0 %

Frequencies of Employment

Employment	Counts	% of Total
Working full-time	55	55.0 %
Working part-time	38	38.0 %
A homemaker or stay-at-home parent	1	1.0 %
Student	4	4.0 %
Retired	1	1.0 %
Other	1	1.0 %

Country	Counts	% of Total
Afghanistan	1	1.0 %
Albania	1	1.0 %
Australia	1	1.0 %
Bahrain	1	1.0 %
Bulgaria	1	1.0 %
Canada	6	6.1 %
Croatia	1	1.0 %
Germany	2	2.0 %
India	2	2.0 %
Indonesia	1	1.0 %
Ireland	3	3.1 %
Lithuania	6	6.1 %
Malaysia	1	1.0 %
Mexico	1	1.0 %
Singapore	1	1.0 %
Switzerland	2	2.0 %
United Kingdom	52	53.1 %
United States of America	15	15.3 %

Descriptives

	Age
N	92
Missing	12
Mean	46.4
Median	44.0
Standard deviation	14.2
Minimum	22
Maximum	80

Appendix 6.2

Parent Demographics

Descriptives

	Gender	Education	Employment status
N	40	41	41
Mean	1.95	5.51	2.15
Median	2.00	6	1
Standard deviation	0.597	0.952	1.97
Minimum	1	2	1
Maximum	5	8	7

Frequencies of Gender

Gender	Counts	% of Total
Male	5	12.5 %
Female	34	85.0 %
Prefer not to say	1	2.5 %

Frequencies of Education

Education	Counts	% of Total
Completed Secondary School	1	2.4 %
Vocational or Similar	1	2.4 %
Some University but no degree	1	2.4 %
University Bachelors Degree	13	31.7 %
Graduate of professional degree (MA, MS, MBA, PhD, MD, DDS)	24	58.5 %
Prefer not to say	1	2.4 %

Frequencies of Employment status

Employment status	Counts	% of Total
Working full-time	23	56.1 %
Working part-time	11	26.8 %
A homemaker or stay-at-home parents	2	4.9 %
Other	5	12.2 %

Descriptives

Number of children	
N	40
Missing	5
Standard deviation	0.594
Minimum	1
Maximum	3

Frequencies of Number of children

Number of children	Counts	% of Total	Cumulative %
1	19	47.5 %	47.5 %
2	19	47.5 %	95.0 %
3	2	5.0 %	100.0 %

Frequencies of Country

Country	Counts	% of Total	Cumulative %
Australia	3	7.3 %	7.3 %
Lithuania	9	22.0 %	29.3 %
Pakistan	1	2.4 %	31.7 %
United Kingdom	28	68.3 %	100.0 %

Appendix 7 - Additional multiple-regression analyses

Appendix 7.1

Teachers' survey

Model Fit Measures

Model	R	R ²	Overall Model Test			
			F	df1	df2	p
1	0.748	0.559	7.61	14	84	< .001

Model Coefficients - Teacher's Satisfaction

Predictor	Estimate	SE	t	p
Intercept ^a	-0.8640	0.846	-1.0212	0.310
Skill Acquisition	0.2772	0.122	2.2762	0.025
Student's Independence	0.5409	0.128	4.2189	< .001
Parental Involvement	0.3852	0.113	3.4049	0.001
Connectivity issues:				
Often – Always	0.3366	0.534	0.6299	0.530
About half the time – Always	0.8000	0.559	1.4301	0.156
Sometimes – Always	0.7792	0.523	1.4902	0.140
Never – Always	0.9457	0.767	1.2334	0.221
Confidence using technology:				
Fairly confident – Very confident	-0.1338	0.208	-0.6424	0.522
Somewhat confident – Very confident	-0.5778	0.278	-2.0784	0.041
Slightly confident – Very confident	-0.3572	0.409	-0.8731	0.385
Not confident at all – Very confident	-0.8087	0.520	-1.5549	0.124
Online before Covid-19:				
Yes, I mainly taught online – Yes, I taught exclusively online	0.8571	0.959	0.8938	0.374
Yes, I occasionally offered online lessons – Yes, I taught exclusively online	0.3436	0.503	0.6832	0.496
No, I never taught online before 2020 – Yes, I taught exclusively online	-0.0279	0.473	-0.0590	0.953

^a Represents reference level

Appendix 7.2

Parents' Survey

Model Fit Measures

Model	R	R ²	Overall Model Test			
			F	df1	df2	p
1	0.804	0.646	4.21	13	30	< .001

Model Coefficients - Parent's satisfaction

Predictor	Estimate	SE	t	p
Intercept *	0.3132	0.823	0.381	0.706
Student's Independence	0.3835	0.154	2.498	0.018
Parental Involvement	-0.0171	0.134	-0.128	0.899
Connectivity Issues:				
About half the time – Often	0.1003	0.510	0.197	0.845
Sometimes – Often	0.4018	0.285	1.410	0.169
Never – Often	0.8596	0.364	2.359	0.025
Before Covid-19:				
Yes, we had a few lessons online – Yes, all lessons were online	0.2220	0.592	0.375	0.710
No, we have never had online lessons before – Yes, all lessons were online	0.2933	0.504	0.582	0.565
My child started learning piano during or after the Covid-19 pandemic – Yes, all lessons were online	1.0313	0.620	1.665	0.106
Video recordings:				
Often – Always	1.1275	0.783	1.439	0.160
About half the time – Always	0.2343	0.634	0.369	0.714
Sometimes – Always	0.1649	0.508	0.325	0.748
Never – Always	0.1347	0.470	0.287	0.776
Student's Motivation	0.3416	0.208	1.645	0.111

* Represents reference level

Appendix 8 – Teachers' survey – the use of devices

BM (2)	Coun ts	% of Total
Mobile phone/iPhone, Tablet/iPad, Large screen to blow up the picture.	1	1.0 %
Laptop, Computer	1	1.0 %
Laptop, USB Camera, USB microphone2 cameras or Ring light	1	1.0 %
Tablet/iPad, Computer	1	1.0 %

BM (2)	Coun ts	% of Total
Mobile phone/iPhone, Tablet/iPad, Laptop, Computer, USB Camera, USB microphone2 cameras or more	1	1.0 %
Tablet/ iPad, Laptop, USB microphone	3	3.0 %
Tablet/ iPad, Laptop, USB Camera	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop	13	13.0 %
Tablet/ iPad	7	7.0 %
Computer, USB Camera, USB microphone, MIDI connection2 cameras or more	2	2.0 %
Mobile phone/iPhoneLaptop2 cameras or more	2	2.0 %
Tablet/iPad, Laptop	5	5.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, Computer, USB Camera, USB microphone	2	2.0 %
Laptop, USB Camera, USB microphone, 2 cameras, Ethernet cable and stereo speakers	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, Computer. 2 cameras or more	1	1.0 %
Laptop, USB Camera, 2 cameras Headset and microphone	1	1.0 %
Mobile phone/iPhone, Laptop, Computer, USB microphone, MIDI connection, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Tablet/iPad	7	7.0 %
Tablet/iPad, Computer, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Computer, USB microphone	1	1.0 %
Laptop	11	11.0 %
Mobile phone/iPhone, Tablet iPad, Laptop, USB Camera, USB microphone, 2 cameras or more	1	1.0 %
Computer, USB Camera, USB microphone, iPad also to record piano notes and email to parents.	1	1.0 %
Tablet/iPad, Computer, Zoom for lessons and a CRM called My Music Staff for scheduling, database, and billing.	1	1.0 %
Laptop, USB Camera, USB microphone,2 cameras or more	5	5.0 %
Laptop, USB Camera	1	1.0 %
Computer	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, Computer	1	1.0 %
Tablet/iPad, iPad stand, support	1	1.0 %
Mobile phone/iPhone, Laptop, USB Camera	1	1.0 %
Mobile phone/iPhone	5	5.0 %
Laptop, USB Camera, USB microphone	2	2.0 %
Laptop, USB microphone	2	2.0 %
Tablet/iPad, Laptop, USB Camera, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Laptop, Computer	1	1.0 %
Computer, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, Computer, MIDI connection	1	1.0 %

BM (2)	Coun ts	% of Total
Mobile phone/iPhone, Tablet/iPad, Computer, USB Camera, USB microphone, MIDI connection, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, Computer, 2 cameras or change set for different reasons.	1	1.0 %
Tablet/iPad, Computer, USB Camera, Gooseneck iPad stand	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, USB microphone, 2 cameras or more	1	1.0 %
Mobile phone/iPhone, Tablet/iPad, Laptop, USB microphone, MIDI connection	1	1.0 %
Mobile phone/iPhone, Laptop	1	1.0 %
Laptop, USB microphone, MIDI connection, Yamaha Disklavier	1	1.0 %
Computer, USB Camera, USB microphone	1	1.0 %

Appendix 9 - Code Relations Browser

Appendix 9.1

Teachers' Survey

Code System	Lack ...	Teach...	Prefer...	Negat...	Slowe...	Teach...	Frustr...	Lack ...	Teach...	Spont...	Negat...	Stude...	Lack ...	Stude...	Atten...	Lack ...
Lack of resources at home/home set-up		5	9		5	6	7	2	2	4	4		6	20	2	
Teacher's workload	5		7		3	4		6	2		5		16	9	11	
Prefer face-to-face lessons	9	7			21	23	20	10	14	9	5		29	16	12	3
▼ Negative experiences																
Slower pace/progress	5	3	21			15	12	7	4				12	10	6	
Teaching approach does not work o	6	4	23		15		15	6	6		2		11	16	4	
Frustration and dissatisfaction	7		20		12	15			5	4	2		17	7	4	
Lack of parental support	2	6	10		7	6					2		6	10	3	
Teacher's physical absence	2	2	14		4	6	5			2			8	4	2	
Spontaneity	4		9				4		2				4			
Negative parental impact	4	5	5			2	2	2						4	2	
▼ Student's behaviour during the lessc																
Lack of focus	6	16	29		12	11	17	6	8	4				15	12	3
Students' being distracted	20	9	16		10	16	7	10	4		4		15		6	
Attention and engagement	2	11	12		6	4	4	3	2		2		12	6		5
Lack of motivation			3										3		5	

The full Code Relations Browser output is provided in the accompanying Excel and PNG files (see supplementary materials).














































Appendix 9.2

Parents' Survey

Code System	Prefer...	Paren...	The te...	Teach...	Teach...	Asses...	Better...	No ch...	Positi...	Progr...	Indep...	Enga...	Conv...	Positi...	Gaine...	Negat...	Negat...	Teach...	Diffic...	Teach...	Impor...	Inabili...	Negat...	Lower...	Less p...	Less ...	Stude...	Onlin...	Stude...	Techn...	Frustr...
• Prefers face-to-face				4	2	3	4	2		2	2	2						3	8								2	2	4		
• Parental Involvement				4						2									2	2											
▼ • The teaching																															
• Teaching - the positives	4	4			8	5	8	8		6	9	7	8	2				2	4	6		2			8		2	3	7	9	
• Teaching adjustments	2			8		5	2	5			3	2						2	2	2	2	2		4	6	5	4	4	5	3	
• Assessment methods / feedback	3			5	5						3		2						2						2	2	3			2	
• Better than nothing	4			8	2			3		2	2	2						5	6	5				7	2	4	8	14	7	6	
• No change	2			8	5		3				2		2	2				2					3	2		2	2	7	2	2	
▼ • Positive adaptation																															
• Progress	2	2		6			2				2	2	3					3	2									3	2		
• Independence	2			9	3	3	2	2		2		4	2						2										2		
• Engagement / focus	2			7	2		2			2	4							2	2										2		
• Convenience				8		2		2		3	2																	4			
• Positive experience				2				2																							
• Gained confidence																	2			2											
▼ • Negatives																															
▼ • Negatives related to teaching																															
• Teacher's physical absence	3			2	2		5	2		3		2			2				2	2	2	4		5	2		2	4		4	2
• Difficult for teacher to notice m	8	2		4	2	2	6			2	2	2						2			2			2	3	3	3	5	3	4	
• Teacher-student communication		2		6	2		5											2				4		4					2		
• Importance of non-verbal cues i					2										2			4	2						3		2		3	2	
• Inability to play together				2	2															4				4							
▼ • Negatives related to students																															
• Lower engagement / focus				8	4		7	3										5	2	4		4			11	6	3	11	5	4	3
• Less progress					6	2	2	2										2	3		3			11		8	3	6	4	4	4
• Less motivation				2	5	2	4												3					6	8		3	4		5	
• Students not understanding inst	2			3	4	3	8	2										2	3		2			3	3	3		7	4	5	
• Online lessons are less effective / low	2			7	4		14	7		3			4					4	5				11	6	4	7		3	7	2	
• Student's age / level	4			9	5		7	2		2	2	2							3		3		5	4			4	3			
• Technical challenges					3	2	6											4	4	2	2			4	4	5	5	7			
• Frustration / anxiety								2										2						3	4			2			

Appendix 9.3













Code Relations Browser (according to open-ended questions) – Teachers' Survey

Code System	Q150	Q157	Q121	Q170
 Lack of resources at home/home set-up	6	6	6	3
 Teacher's workload	9	5		2
 Prefer face-to-face lessons	8	15	3	18
 Negative experiences				
 Slower pace/progress	18	7	2	1
 Teaching approach does not work o	4	4		13
 Frustration and dissatisfaction	7	7	4	4
 Lack of parental support		6	12	2
 Teacher's physical absence		4	2	1
 Spontaneity	3	2		1
 Negative parental impact		2	1	
 Student's behaviour during the less				
 Lack of focus	4	18	20	1
 Students' being distracted	4	2	15	1
 Attention and engagement	6	6	3	2
 Lack of motivation	1	1	1	1
 Teaching approach				
 Inability to play together	10	8	2	5
 Difficult to demonstrate	10	6	3	2
 Tactile approach/physical demo	2	4		4
 Inability to point to the score	5			1
 Lack of movement activities		3	1	1
 Student-teacher relationship				
 Lack of personal connection	4	7	3	2
 Having less authority	1		2	
 Difficulty to communicate		1	1	
 Difficult to build rapport	3			
 Piano teaching technical aspects				
 Hand position/posture	4	7	2	3
 Difficulty in teaching technique	7	4	1	2
 Teaching notation	5	2	3	
 Rhythm/pulse	5	2	1	1
 Fingering	3	3	1	1
 Difficult to annotate	4	1	1	2
 Pedalling	3	1	2	1
 Dynamics/phrasing	4	3		
 Corrections/feedback		3		
 Tracking the music while playing		1	1	
 Technological issues				
 Connectivity / broadband	13	7	4	2
 Issues with video and audio	14	5	5	1
 Students - lack of equipment	5	2	4	1
 Technological limitations	3	3	3	2
 Latency	6	3	2	
 Teacher's lack of equipment	1	1		

Code System	Q150	Q157	Q121	Q170
▼ Students' behaviour, age, capabilities				
Age as a factor	11	24	12	13
Development/capabilities	1	3	4	4
Disabilities	2		8	
Issues with behaviour	1	1	6	
Beginner students	2	3	1	2
Student dropout	3	1	2	
Positive about young students	1	1		
▼ Neutral experiences				
No difference in teaching	5	2		2
I had no other choice	1	2		3
Better than nothing		4		
It was ok / satisfactory		2		2
▼ Positive experiences				
Parental support	9	11	17	5
Positive experience/suits teaching approach	6	6		18
Increased independence	14	1		3
Better progress	4	2		
Paying attention - improved	5			1
Convenience	3	2		1
Accessing online resources	1			4
Students' practice	4			
▼ Teaching adaptability		1		2
I adapted my teaching	12	3		7
I came up with something new	6	2	3	8
I adapted and used it in f2f lessons	4			
▼ New opportunities				
Teaching online when students fall ill / or bad weather	3	6		7
Remote areas / other countries	1	6		6
Group lessons / other than piano lessons / new opportunities	3	1	1	3
Hybrid lessons	1	3		2
I am only teaching online now	1	1	1	2
Students with disabilities		1		
I would like to learn more				1
Technological setup	12	5		7

Appendix 9.4

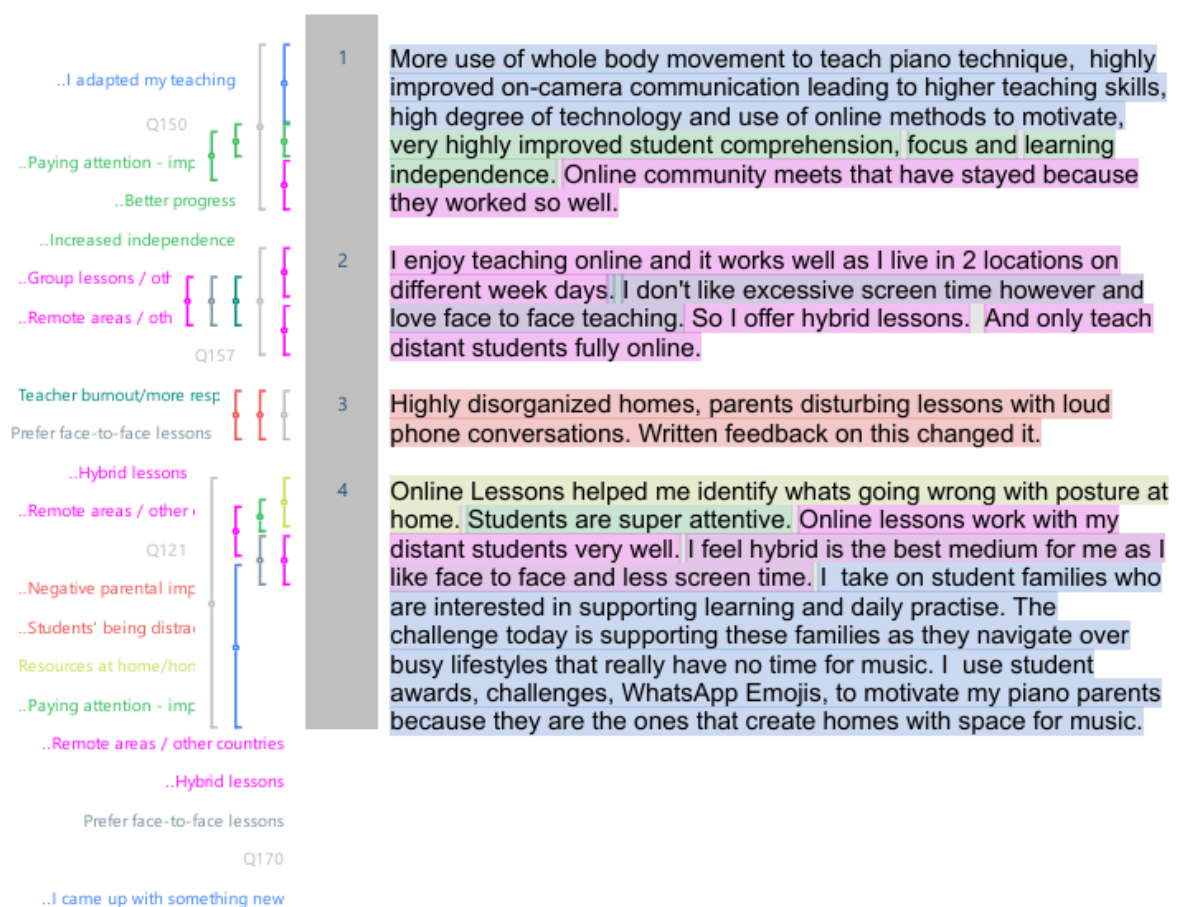
Code Relations Browser (according to open-ended questions) – Parent's Survey

Code System	Q173	Q164	Q171
 Prefers face-to-face	11	13	13
 Parental Involvement	4	4	4
▼  The teaching			
 Teaching - the positives	29	36	34
 Teaching adjustments	17	17	17
 Assessment methods / feedback	8	8	8
 Better than nothing	19	23	20
 No change	15	15	13
▼  Positive adaptation			
 Progress	6	10	8
 Independence	9	9	9
 Engagement / focus	6	8	8
 Convenience	4	7	7
 Positive experience	2	4	2
 Gained confidence	2	2	2
▼  Negatives			
▼  Negatives related to teaching			
 Teacher's physical absence	15	15	15
 Difficult for teacher to notice mistakes/to correct	15	15	13
 Teacher-student communication	10	14	6
 Importance of non-verbal cues in teaching	6	6	6
 Inability to play together	4	4	2
▼  Negatives related to students			
 Lower engagement / focus	21	21	17
 Less progress	17	19	13
 Less motivation	11	11	6
 Students not understanding instructions/feedback when online	12	12	12
 Online lessons are less effective / lower quality	18	23	23
 Student's age / level	10	14	14
 Technical challenges	15	15	11
 Frustration / anxiety	7	7	5

Appendix 9.5

Sample of Coding

<p>..Lack of personal connection</p>		1	I find it more difficult to connect emotionally with the student when teaching virtually - by which I mean that there is less of the emotional reward of sharing the joy of music.
<p>Q150</p> <p>..Rhythm/pulse</p> <p>..Positive experience/su</p> <p>..Increased independen</p>		2	Most teaching works well online. Teaching rhythm is more work because of the lack of any synchronous teaching (counting along, playing together, etc). The frequent need to refer to systems and measures actually helps give students confidence in their orientation within the piece.
<p>Q157</p> <p>..It was ok / satisfactory</p>		3	It works. It's a little bit harder for the teacher and the student, and it's definitely less 'fun'.
<p>Q121</p> <p>..Issues with behaviour</p>		4	This student was hyperactive, and the size and volume of the laptop they were using was not enough to draw their attention when their mind (or body) wandered from the piano.
<p>Q170</p> <p>..Accessing online resources</p>		5	I like to follow students' curiosity (questions), whether or not they are directly related to our current study. Online lessons usually make that more complicated, although having the ability to instantly share online resources (like a video of an orchestral performance of a piece) can be useful.

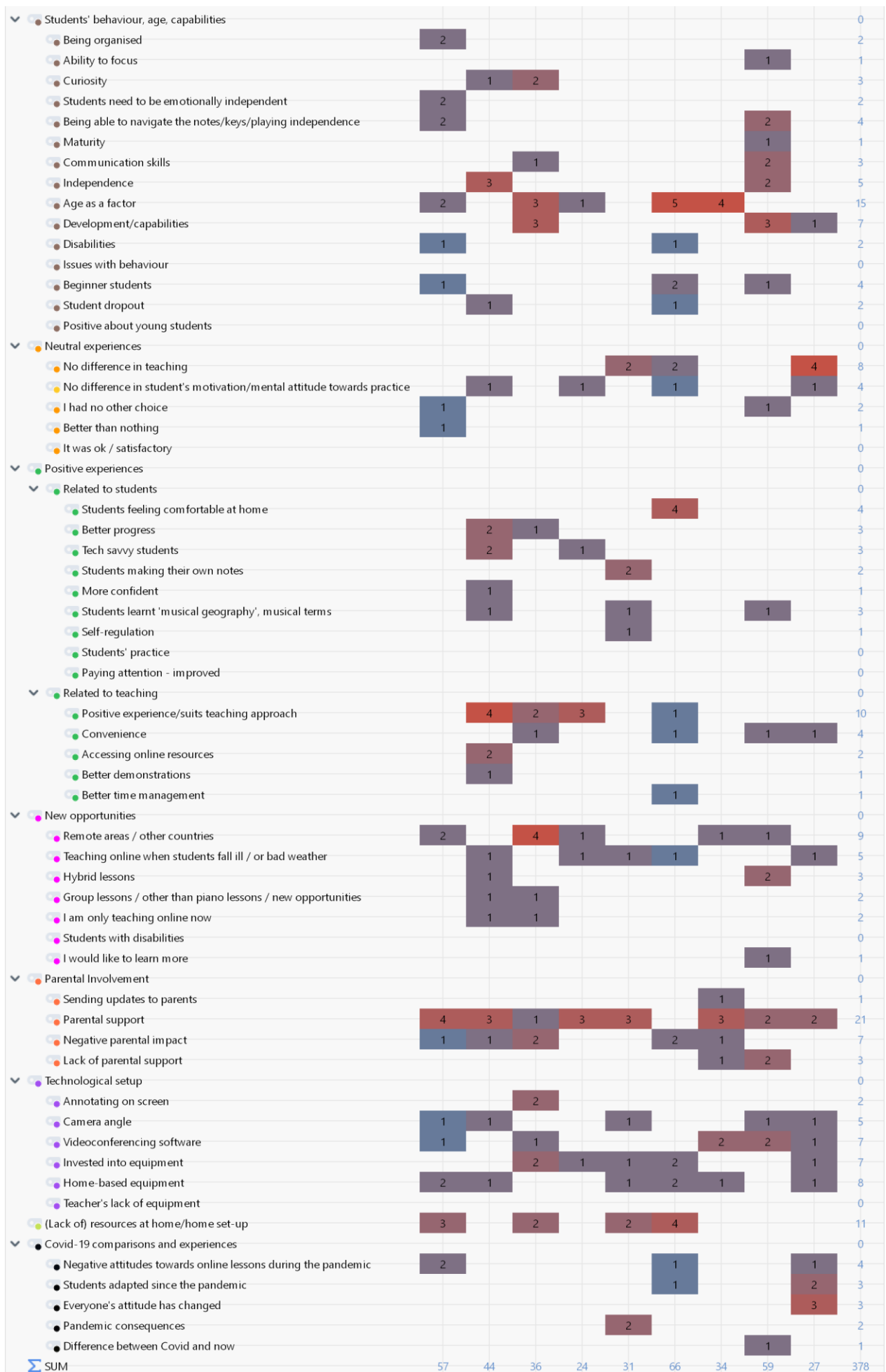


Appendix 10 – Code Matrix Browser

Appendix 10.1

Teachers

Code System	T1	T2	T3	T4	T5	T6	T7	T8	T9	SUM
Teaching approaches and suggestions										0
Improvisation		3				1		1		5
Teaching limitations								2		2
Difficult for novice teachers							1			1
Teacher's ability to explain and demonstrate			1	1		3		4		9
Funny stories		2							2	4
Knowing the student before moving online					1		3			4
Depends on student's and parents' ambition								3		3
Not to speak over each other				1	1					2
Teaching philosophy					1			1		2
Informal learning								2		2
Lack of teacher's motivation	1									1
Teacher can't control the environment	1									1
Teacher not trying to control the environment		1							1	2
Meeting parents and students f2f while having online lessons exclusively		1								1
Teachers are not trained to work with parents				1						1
Teacher's relative pitch/knowning the material					1			2		3
Teaching adaptability										0
I adapted my teaching		1			3	3	3	2	2	14
I came up with something new	1	2	1	2		1	1			8
I adapted and used it in f2f lessons				1				1		2
Teacher's workload						3	2			5
Prefer face-to-face lessons			1			4	1			6
Negative experiences										0
Not satisfied with results							1			1
Teaching approach does not work online	6									6
Slower pace/progress						5			1	6
Teacher's physical absence	2		1							3
Frustration and dissatisfaction	2									2
Spontaneity	2									2
Student's behaviour during the lesson										0
Students' being distracted	2	1			2	3				8
Lack of focus						3	2	3		8
Attention and engagement				1				1		2
Less practice						1				1
Students moving/fidgeting	1						2			3
Lack of motivation										0
Technological issues										0
Connectivity / broadband	2	1	1	1	1	2	2	1	1	12
Issues with video and audio	1	2	1	1	1			2		8
Latency	1				1	2		2		6
Technological limitations								1		1
Piano teaching technical aspects										0
Hand position/posture	1				1					2
Pedalling				2						2
Rhythm/pulse						1				1
Difficult to annotate	1									1
Difficulty in teaching technique							1			1
Teaching notation										0
Fingering										0
Dynamics/phrasing										0
Corrections/feedback										0
Tracking the music while playing										0
Teaching approach										0
Inability to play together		1		1	1	2		2		7
Multisensory			1							1
Difficult to demonstrate								1		1
Tactile approach/physical demonstration	1						1	1		3
Lack of movement activities	1									1
Inability to point to the score										0
Student-teacher relationship										0
Difficult to build rapport	2									2
Difficulty to communicate	1									1
Lack of personal connection										0
Having less authority										0
Students' behaviour, age, capabilities										0
Being organised	2									2
Ability to focus								1		1



Appendix 10.2

Parents

Code System	P1 an...	P2	P3	C7, P4	P5	SUM
▼ Negatives						0
Technical challenges	2			1		3
Slower pace				1	1	2
▼ Negatives related to teaching						0
Difficult for teacher to notice mistakes/to correct	2		2			4
Difficulty teaching technique	3			1		4
Point out to the score / mistakes	1	1			1	3
Teacher's physical absence	1		1		1	3
Difficult to demonstrate	1	2	1			4
Teacher-student communication	1			1		2
Importance of non-verbal cues in teaching	1					1
Inability to play together				1		1
▼ Negatives related to students						0
Students not understanding instructions/feedback when online			3		1	4
Less progress			1			1
Lower engagement / focus			1			1
Less motivation						0
Online lessons are less effective / lower quality			1			1
Frustration / anxiety						0
▼ Positive adaptation						0
Independence		1		1	2	4
Positive experience		1		2	1	4
Students became more accustomed to technology/online learning					3	3
Convenience	1	1		1		3
Responsibility		1				1
Engagement / focus		1				1
Progress		1				1
Gained confidence						0
Prefers face-to-face	4	3			4	11
▼ Technological setup						0
Student's setup	1	3		1	1	6
Teacher's lack of equipment	1	1				2
Teacher's setup			1	1		2
Parental Involvement	1	2	2	2	2	9
▼ Online - an alternative (new opportunities)						0
Hybrid lessons for older, more established students	3	2			2	7
Hybrid lessons	2			1	1	2
▼ The teaching						0
Teaching tips - video performance	1			2		3
Having f2f lessons before moving online					1	1
Depends on the teacher			1			1
Teaching - the positives				1	1	2
Teaching adjustments		1			1	2
Assessment methods / feedback						0
It depends on the aims	2	2				4
Student's age / level	3	1	3			7
▼ No change						0
No difference in terms of practice			1	1		2
No difference in teaching	1	1			1	3
Better than nothing	1				2	3
▼ Piano lessons is about the whole experience						0
Missing the social aspect	1	1				2
Discipline at school		1		1		1
Σ SUM	34	27	18	19	26	124

Appendix 10.3

Students

Code System	C1	C2	P1 an...	C3	C4	C5	C6	C7, P4	SUM
▼ Negatives									0
Difficult to see/understand the demonstrations and explanations	2	3	1		2				8
▼ Bad connectivity	2					2	2		6
Time wasted because of connectivity	2			1					3
Harder online	2	1			2				5
Teacher not seeing what student is playing				3					3
Hard to sight-read without teacher pointing					1		1		2
It takes longer to learn				2					2
Can't hear (dynamics)				2					2
Not as effective		1							1
▼ Lesson is the same		5		1		7	4	1	18
Practice was the same						1			1
▼ Prefers face-to-face	2	1		2	1	1			7
Easier to learn f2f	2				1	1	1		5
Teacher can correct easier				1					1
Easier to focus f2f	1								1
Having someone in the room increases the pressure		1							1
▼ Benefits of online lessons									0
Knowing 'musical geography'	2	1		2		1	2		8
Playing duets								1	1
Progress						1			1
More relaxed		1							1
Better for introverted people	1								1
Parental involvement	1	1	1	1	1	2	1	1	9
▼ Compassionate about the teacher									0
It's harder for teachers to teach	2								2
Teacher does not need to travel		1				1			2
Σ SUM	19	16	2	15	8	17	11	3	91

Appendix 11 - Code Relations Browser

Appendix 11.1

Teachers

	Age a...
<div> <div></div> <div>Teaching approaches and suggestions</div> </div>	
<div> <div></div> <div>Teacher's ability to explain and dem</div> </div>	
<div> <div></div> <div>Improvisation</div> </div>	
<div> <div></div> <div>Funny stories</div> </div>	
<div> <div></div> <div>Knowing the student before moving</div> </div>	2
<div> <div></div> <div>Depends on student's and parents' e</div> </div>	
<div> <div></div> <div>Teacher's relative pitch/knowning the</div> </div>	
<div> <div></div> <div>Teaching limitations</div> </div>	
<div> <div></div> <div>Not to speak over each other</div> </div>	
<div> <div></div> <div>Teaching philosophy</div> </div>	
<div> <div></div> <div>Informal learning</div> </div>	
<div> <div></div> <div>Teacher not trying to control the en</div> </div>	
<div> <div></div> <div>Difficult for novice teachers</div> </div>	2
<div> <div></div> <div>Lack of teacher's motivation</div> </div>	
<div> <div></div> <div>Teacher can't control the environme</div> </div>	2
<div> <div></div> <div>Meeting parents and students f2f wl</div> </div>	
<div> <div></div> <div>Teachers are not trained to work wit</div> </div>	
<div> <div></div> <div>Teaching adaptability</div> </div>	
<div> <div></div> <div>I adapted my teaching</div> </div>	5
<div> <div></div> <div>I came up with something new</div> </div>	4
<div> <div></div> <div>I adapted and used it in f2f lessons</div> </div>	
<div> <div></div> <div>Teacher's workload</div> </div>	6
<div> <div></div> <div>Prefer face-to-face lessons</div> </div>	7
<div> <div></div> <div>Negative experiences</div> </div>	
<div> <div></div> <div>Not satisfied with results</div> </div>	
<div> <div></div> <div>Teaching approach does not work o</div> </div>	6
<div> <div></div> <div>Slower pace/progress</div> </div>	4
<div> <div></div> <div>Teacher's physical absence</div> </div>	2
<div> <div></div> <div>Frustration and dissatisfaction</div> </div>	
<div> <div></div> <div>Spontaneity</div> </div>	
<div> <div></div> <div>Student's behaviour during the lesse</div> </div>	
<div> <div></div> <div>Students' being distracted</div> </div>	3
<div> <div></div> <div>Lack of focus</div> </div>	5
<div> <div></div> <div>Attention and engagement</div> </div>	
<div> <div></div> <div>Less practice</div> </div>	
<div> <div></div> <div>Students moving/fidgeting</div> </div>	4
<div> <div></div> <div>Lack of motivation</div> </div>	
<div> <div></div> <div>Technological issues</div> </div>	
<div> <div></div> <div>Connectivity / broadband</div> </div>	2
<div> <div></div> <div>Issues with video and audio</div> </div>	
<div> <div></div> <div>Latency</div> </div>	
<div> <div></div> <div>Technological limitations</div> </div>	
<div> <div></div> <div>Piano teaching technical aspects</div> </div>	
<div> <div></div> <div>Hand position/posture</div> </div>	
<div> <div></div> <div>Pedalling</div> </div>	
<div> <div></div> <div>Rhythm/pulse</div> </div>	
<div> <div></div> <div>Difficult to annotate</div> </div>	2
<div> <div></div> <div>Difficulty in teaching technique</div> </div>	
<div> <div></div> <div>Teaching notation</div> </div>	
<div> <div></div> <div>Fingering</div> </div>	
<div> <div></div> <div>Dynamics/phrasing</div> </div>	
<div> <div></div> <div>Corrections/feedback</div> </div>	
<div> <div></div> <div>Tracking the music while playing</div> </div>	
<div> <div></div> <div>Teaching approach</div> </div>	
<div> <div></div> <div>Inability to play together</div> </div>	
<div> <div></div> <div>Multisensory</div> </div>	
<div> <div></div> <div>Difficult to demonstrate</div> </div>	
<div> <div></div> <div>Tactile approach/physical demo</div> </div>	2
<div> <div></div> <div>Lack of movement activities</div> </div>	
<div> <div></div> <div>Inability to point to the score</div> </div>	
<div> <div></div> <div>Student-teacher relationship</div> </div>	
<div> <div></div> <div>Difficult to build rapport</div> </div>	
<div> <div></div> <div>Difficulty to communicate</div> </div>	
<div> <div></div> <div>Lack of personal connection</div> </div>	
<div> <div></div> <div>Having less authority</div> </div>	
<div> <div></div> <div>Students' behaviour, age, capabilities</div> </div>	
<div> <div></div> <div>Age as a factor</div> </div>	

Beginner students	6
Curiosity	
Communication skills	
Being organised	3
Students need to be emotionally inc	3
Disabilities	2
Student dropout	
Ability to focus	
Maturity	
Issues with behaviour	
Positive about young students	
Neutral experiences	
No difference in teaching	
No difference in student's motivatic	
I had no other choice	
Better than nothing	
It was ok / satisfactory	
Positive experiences	
Related to students	
Students feeling comfortable at	
Better progress	
Tech savvy students	
Students learnt 'musical geograp	
Students making their own note	
More confident	
Self-regulation	
Students' practice	
Paying attention - improved	
Related to teaching	
Positive experience/suits teachin	
Convenience	
Accessing online resources	
Better demonstrations	
Better time management	
New opportunities	
Remote areas / other countries	
Teaching online when students fall i	
Hybrid lessons	
Group lessons / other than piano les	
I am only teaching online now	2
Students with disabilities	
I would like to learn more	
Parental Involvement	
Parental support	9
Negative parental impact	
Lack of parental support	
Sending updates to parents	
Technological setup	
Home-based equipment	
Videoconferencing software	
Invested into equipment	
Camera angle	
Annotating on screen	2
Teacher's lack of equipment	
(Lack of) resources at home/home set-t	2
Covid-19 comparisons and experiences	
Negative attitudes towards online le	
Students adapted since the pandem	3
Everyone's attitude has changed	
Pandemic consequences	
Difference between Covid and now	

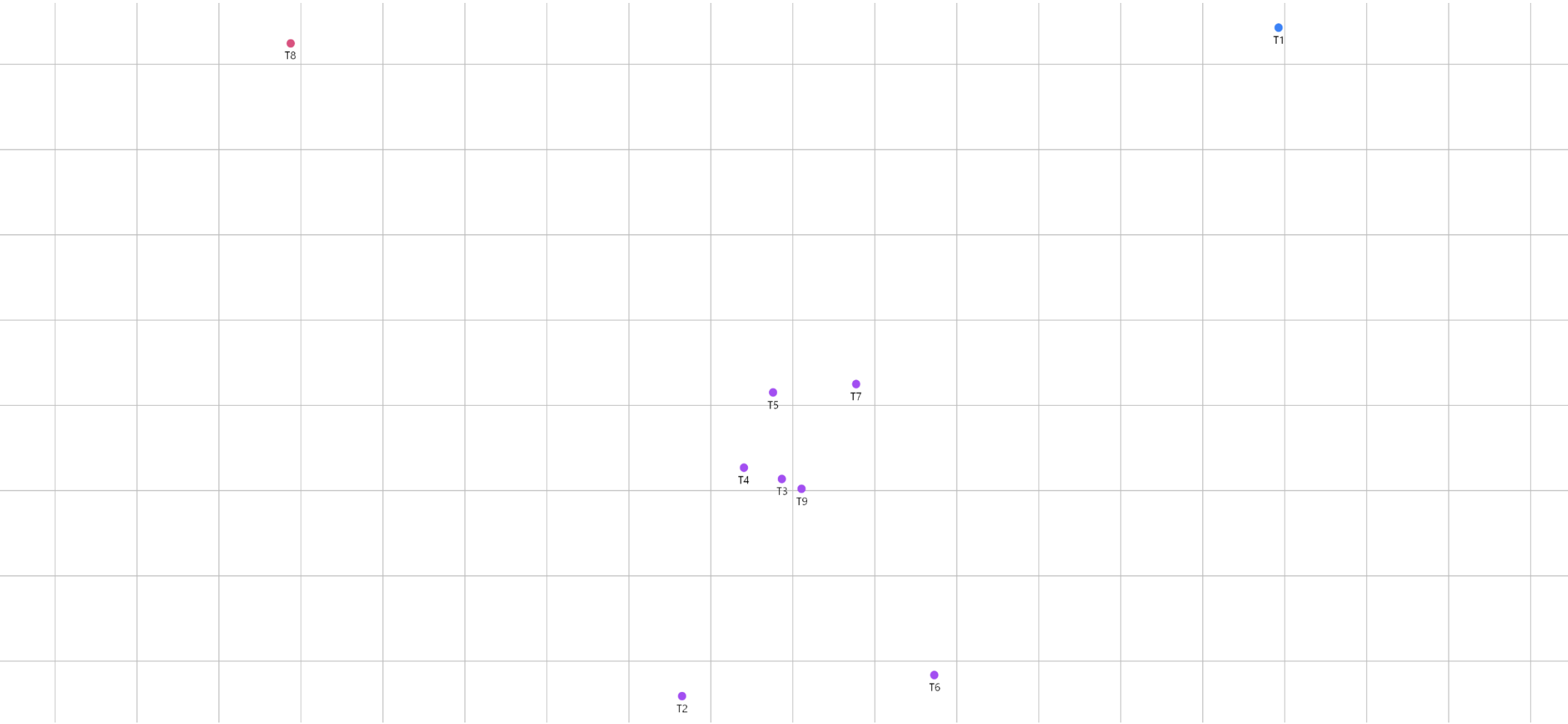
Students

[illegible]

Appendix 12 - Document Maps

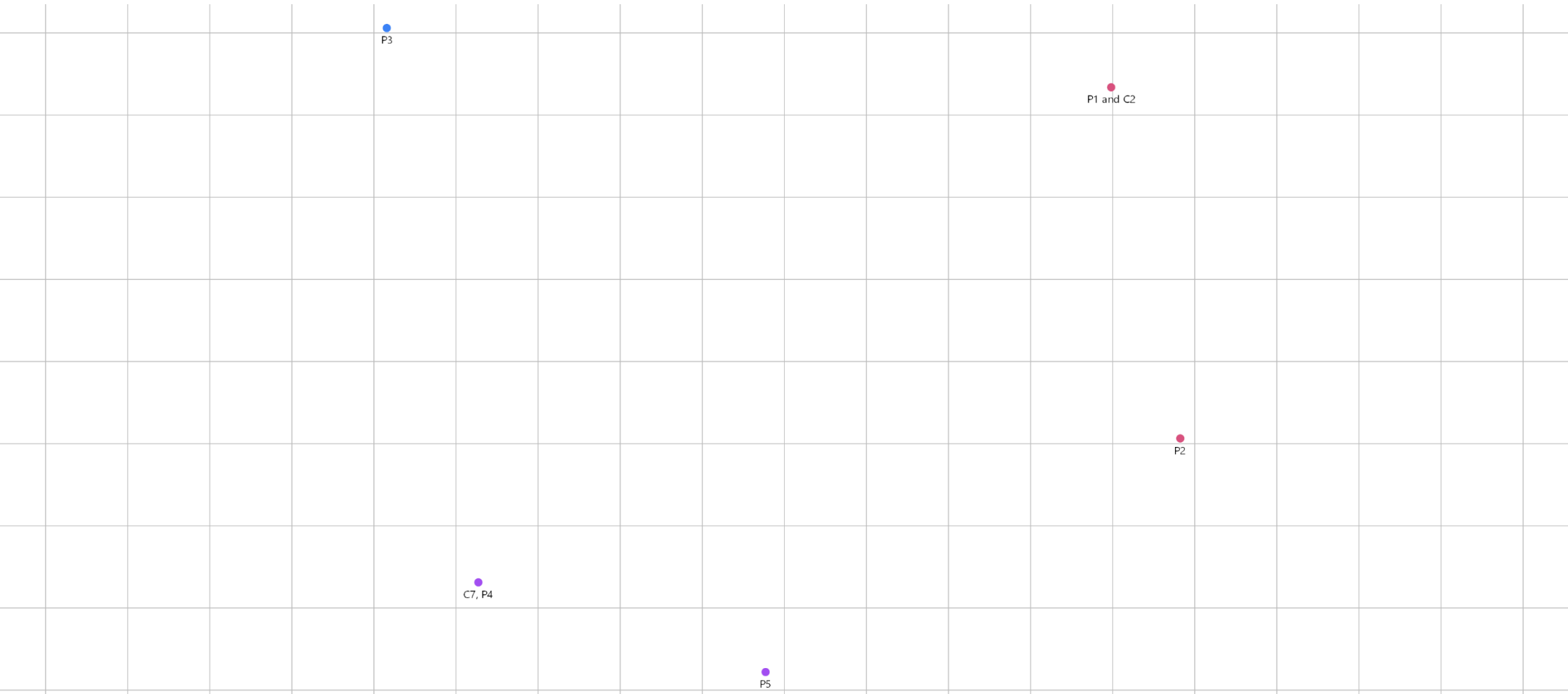
Appendix 12.1

Teachers



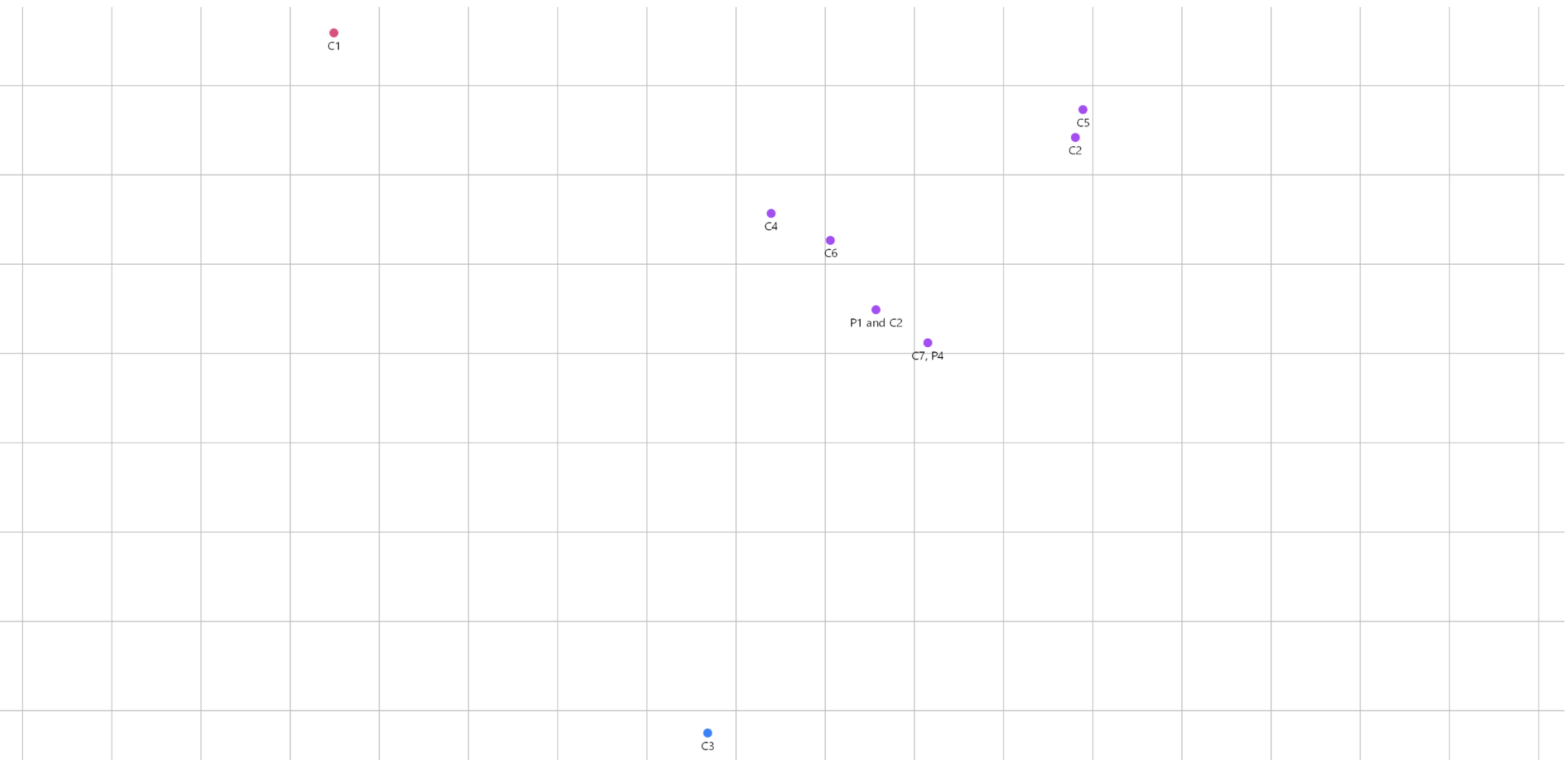
Appendix 12.2

Parents



Appendix 12.3

Students



Appendix 13 - Sample of Coding (Interviews)

Please note that the software was updated after the analysis of the open-ended questions, and it was no longer possible to export a copy of the coded document with the codes highlighted within the text as in Appendix 9.5.

<p>..Parental support</p> <p>..Students learnt 'musical geography'</p> <p>..Students making their own notes</p> <p>..Parental support</p>	<p>19 T5 01:17</p> <p>20 That's not a problem. So I work in primary schools and COVID I mostly taught that age group. You I think usually not always there was a parent in the room, which was nice. That was really good. But I'm very much an advocate for teaching, proving skills. So in other words, and it is great for two other musicianship skills in terms of now we have to count bar numbers. Now you have to and I always have the music, I have the music and they have the music. So I would say bar four Can you count 1234 Great firstly, secondly, their musical skills in that respect, allowed them to have sort of musical geography. We could repeat it was very, very good for them. I would try to encourage them to take their own notes. Parents and sometimes just like to sit and just be there with them. But I would always often not to speak they were they get back you know, but then questions are directed to the child without have parental interference. In terms of good what was the question in general about the five to nine year olds that it was just a general question of teaching young students? Well, I have I have a lot of experience because throughout COVID, yeah, that was that was my main, my main sort of body of pupils. What do you find any qualities or characteristics of students who have positive experience of learning online,</p>
<p>..Teaching online when students</p> <p>..No difference in teaching</p> <p>..Not to speak over each other</p>	<p>21 T5 02:29</p> <p>22 Yes, instead, what is it certainly to do with continuity? That I think was one of the main things that really stood out was never any inarticulate post-COVID that anyone had until now and what happens... There's no excuse we can always have a lesson online. So to keep that continuity with something like learning instrument or learning and learning a language, it's very important to not have breaks and sporadic lessons. So that's something I'm not good. And in terms of quality, my the difference in my lessons in real time and on online is very, very minimal. The only thing that I have to change is that I can't speak at the</p>
<p>..Not to speak over each other</p> <p>..I adapted my teaching</p> <p>..Inability to play together</p> <p>..No difference in teaching</p> <p>..Latency</p> <p>..I adapted my teaching</p>	<p>same time as they play. So I have to learn my conducting skills. I cannot count at the same time as they played. So that can be an issue. So the way we get around that is just by playing on breaks... Does anyone copycat, I will play and count as I play and they usually focusing on very small chunks and they get the chance to copy I will then if they still make a mistake and imitate and mimic that mistake as he did you hear what you did. This is how it should be. And it's a compare and contrast that honestly I mean, there's a there's actually a review on my website of an elderly woman who comes to me and we've had lessons online and she said to me, there's just no no difference in my teaching. If there's if there's a will there's a way so there's nothing you can. I've learnt also to overcome the delays so I know that coming together will be (demonstrating: bu-bump, bu-bump), and you have to gauge what the delay is and just trust that it's correct. And just encourage the child to mimic and copy and get that musicality of rhythm in them. But then when you step away, and they do it by themselves, then you know that they're doing it by themselves. It must be right. And some teachers and parents mention independence. So if I'm talking about students, one of the characteristics that it's kind of a bio</p>
<p>..Parental support</p> <p>..Students making their own notes</p> <p>..Self-regulation</p>	<p>23 T5 03:59</p> <p>24 Absolutely. And that's something that I really encourage my discourage any input from parents the only input never be is the camera right? Can you set it up like this? Oh, no help. Like that. It's more of a technical help with aid. That's in terms of independence. Yes. It certainly, like I mentioned before about writing on their scores, annotating scores, writing down their homework. I always encourage even when a child hasn't practised are always encouraged to keep telling me Did you practice expect the truth and I always thank them for telling me the truth that they haven't practised so it's not that they're going to be scolded that they haven't practice. So then I encourage them, okay, what ways now if you don't practice, what can we do? So, yeah, that independence of thinking for themselves in terms of okay, I'll play something to you and one last time or how do you think that went? Do you think you were alright etc. Whether it's class makes a difference? I think the only online thing is that because you're not in the room. They sort of look around at you a bit more. They kind of</p>

1/4

	1	Parent 2:
	2	Since he attends [REDACTED] where all lessons are integrated, it happened automatically. Especially during Covid, when everything shut down, and everything transitioned to remote learning automatically. We faced many different challenges.
...Student's setup	3	First of all, of course, the equipment—because no one keeps a professional microphone or professional cameras at home. And we saw that it was difficult for the teachers, especially those who were older, and so on. For example, one of our teachers—a piano teacher—ended up on sick leave because his health was poor. So we replaced him with another teacher, and this teacher said, "We'll do everything through Messenger; it'll be easier for me. But you call me because I don't know how to make calls; I only know how to answer them." So those were the kinds of experiences we had.
...Teacher's lack of equipment		
...Student's setup	4	But in general, we easily integrated everything into the lessons. We set up a stand for sheet music by the piano. Since ours is a bit flimsy and foldable, it worked very well to place the phone on it, turn it on, and point the camera at the piano. The idea was that the teacher, by communicating with and watching the child, could see if they were playing correctly. Sometimes the child would also put on headphones so the sound would come directly from the piano—not from the side—and the teacher could see how the child was playing. Essentially, the teacher needs to see not the child's face but their hands, how they are working, since that's what matters.
It depends on the aims	5	The lessons lasted sometimes 20 minutes, sometimes 30 minutes. But in essence, he played and learned new pieces. There weren't many strict requirements for him because his main instrument is the cello. These piano lessons were only once a week. However, he learned all the pieces, and when he returned to regular lessons after a couple of months, I think, he had successfully caught up, and there were no problems.
...Progress		
...Student's setup	6	But, as I said, at the beginning, there were a few more technical challenges in integrating everything.
Prefers face-to-face	7	Speaker 1: And what would be the pros and cons of remote piano lessons? Speaker 2: Piano lessons? Well, I think they are more suited to in-person learning. All lessons are probably better in-person than remote. Yes, technically, he might have learned. But the main downside was that the teacher couldn't demonstrate directly how to do something, right? Even if they pointed their camera at their own piano, they still couldn't show precisely, "You're doing it like this, but you need to do it like that." That's the main drawback.
...Difficult to demonstrate		
...Point out to the score / mistake		
It depends on the aims	8	But since my child wasn't a professional-level student who needed intensive learning, it was sufficient for us. I really believe that children whose main instrument at our school is piano had more challenges in this regard.
	9	Speaker 1: I see. And about the child's engagement during lessons—did you notice any differences between remote learning and being physically present with the teacher? For example, was there any change in motivation to play or practice when everything was remote?
	10	Speaker 2: There weren't many differences, probably because everything was remote, and we were always at home. We made sure he joined the lessons, didn't skip them, and practiced before the lessons. That was more on us as parents—we got used to the schedule.
Parental Involvement	11	It happened that my husband's workplace was completely shut down, so he stayed home and monitored everything, making sure everything went smoothly. That's how we managed. But overall, my child understood his responsibility. He would attend, practice, and learn everything without issues. We got that sorted out.
...Responsibility		
Prefers face-to-face	12	As for whether the teacher was satisfied with the quality of his playing, it's hard to say. Of course, I think it's easier for teachers when children learn in person—especially in a school setting where lessons are not just extracurricular activities but part of the core curriculum.
	13	Speaker 1: And as parents, did you help during the remote lessons? Did you sit nearby? How did it work?
	14	Speaker 2: We don't have any musical education ourselves, so our help was purely technical—holding something in place if it fell, like a phone or another device. For the first few lessons, we did sit nearby to ensure everything was set up correctly. I'd check the camera to make sure it was positioned properly and wouldn't fall.
Parental Involvement	15	After a few lessons, he managed everything himself—connecting the cello and piano. Over time, he got used to setting everything up so that the teacher could see him clearly and it was comfortable for both. It wasn't about us showing him what to do, but helping him integrate technically to make things easier for him and the teacher. Everyone was facing the same challenges.
...Independence		

Appendix 14 Data Integration

