

A Comparative Evaluation of Group and Private Piano Instruction
on the Musical Achievements of Young Beginners

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Abstract

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This study compares the relative influence of group and individual piano instruction on the musical achievements of young beginning piano students between the ages of 5 to 7. It also investigates the potential influence on these achievements of an individual teacher's preference for either mode of instruction, children's age and gender, and identifies relationships between these three factors and the two different modes of instruction. Forty-five children between the ages of 5 to 7 without previous musical training completed this empirical study, which consisted of 24 weekly piano instruction and a posttest evaluating their musical achievements. The 45 participants included 25 boys and 20 girls. The participants were comprised of twenty-seven 5-year-olds, nine 6-year-olds, and nine 7-year-old participants. Twenty-two children participated in group piano instruction and 23 received private instruction. After finishing 24 weekly lessons, participants underwent a posttest evaluating: (1) music knowledge, (2) music reading, (3) aural

discrimination, (4) kinesthetic response, and (5) performance skill. Results of MANOVA support the main hypothesis that relationship of the two different instructional modes and musical achievements is null. However, significant interaction exists between the mode of instruction and the participants' age, especially within the achievement of kinesthetic response. In this category, children aged 5 who participated in group instruction outperformed peers receiving individual instruction. By contrast, children at ages 6 and 7 receiving individual instruction outperformed their peers undergoing group instruction. Similar trends were revealed in the other musical achievements. This result may be influenced by: (1) different attitudes towards group work between children both younger and older than age 6, (2) growth of self-consciousness, (3) changes in children's sociability, and (4) different achievement motivation. Differences in teacher and gender did not alter the non-significant relationship between modes of instruction and musical achievements.

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Table of Contents

Abstract.....	iii
Acknowledgements	v
List of Tables	viii
List of Figures.....	viii
Chapter One: Introduction	1
Need for the Study	8
Purpose of the Study	10
Research Questions	11
Organization of the Study	12
Chapter Two: Literature Review and Development of Piano Instruction	13
Critical reviews of related research	13
Development of Piano Instruction from the Late 18th Century to the Present	23
I. Prior to the Late 18th Century	23
II. Instruction from the Late 18th Century to the End of the 19th Century	24
III. Piano Instruction in the 20th Century and Thereafter	32
Chapter Three: Method	41
Research Design.....	41
Experimental Procedures.....	44
Location and Equipment	44
Pilot Study.....	45
Recruitment of participants	46
Teachers	47
Class settings.....	48
Treatment	50
Posttest	54
Teacher Questionnaire	57
Chapter Four: Results	58
Hypothesis	58
Report of Results	59

Method of Analysis	60
Outliers.....	61
Relationship of Instruction and Musical Achievements.....	62
Relationship of Teachers and Musical Achievements.....	63
Relationship of Participants' Age and Musical Achievements	65
Relationship of Participants' Gender and Musical Achievements	67
Interactions.....	68
Results of sub-items from kinesthetic response	71
Teacher Questionnaire	76
Chapter Five: Summary and Discussions.....	78
Result Summary	78
Discussion	80
Instruction	80
Teachers	82
Age.....	83
Gender.....	91
Conclusion.....	93
Recommendations for Teaching Strategies.....	98
Limitations of the Study.....	104
Suggestions for Future Studies.....	106
References.....	108
Appendices.....	113
Appendix A Assent Form.....	113
Appendix B Parent/Guardian Permission Form	116
Appendix C Samples of Lesson Plan.....	120
Appendix D Posttest	133
Appendix E Grading Matrix	146
Appendix F Letter to Judges Grading Sheet.....	147
Appendix G Teacher Survey	156
Appendix H How to Read and Understand a Boxplot	167

List of Tables

Table 3. 1 Correlation of judges' scores (N=45)	57
Table 4. 1 Participant Distribution.....	59
Table 4. 2 Comparison of Musical Achievements between Group- and Privately-instructed Students.....	63
Table 4. 3 Comparison of Musical Achievements between Students of the two Teachers	64
Table 4. 4 Comparison of Musical Achievements between Participants at Age 5 and Ages 6 to 7	66
Table 4. 5 Comparison of Musical Achievements between Boys and Girls	68
Table 4. 6 Interaction between Instruction and Age in Kinesthetic Response	70
Table 4. 7 Comparison of Sub-items from Kinesthetic Response between Participants at Age 5 and Ages 6 to 7.....	73
Table 4.8 Comparison of Four Sub-items from Kinesthetic Response between Participants at Age 5 and Ages 6 to 7	75

List of Figures

Figure 4. 1 Distribution of Five Achievements	61
Figure 4.2 Score Distributions of Five Achievements between Private and Group Instruction...	62
Figure 4.3 Score Distributions of Five Achievements between Two Teachers.....	64
Figure 4.4 Score Distributions of Five Achievements between 5-year-olds and 6- to 7-year-old Participants.....	66
Figure 4. 5 Score Distributions of Five Achievements between Boys and Girls	67
Figure 4. 6 Distribution from Kinesthetic Response between instruction and age groups.....	70
Figure 4. 7 Interaction between Instruction and Age on four sub-items in Kinesthetic Response	74
Figure 4. 8 Score Distribution of the Four Sub-items between Two Age Groups.....	75
Figure 5. 1 Comparison Between Instruction and Age on Music Knowledge, Music Reading, Aural Discrimination and Performance skill.	84

Chapter One

Introduction

The dominant mode of piano instruction by far is the private lesson, in which one student at a time receives guidance from a teacher. Less common is group piano instruction, in which two or more students receive instruction simultaneously. The current research seeks to determine quantitatively whether one of these modes of instruction is demonstrably superior to the other as a means of introducing the piano to young beginning students, aged 5 to 7, or if the mode of instruction does not influence their achievements. The results of this investigation may assist a prospective piano teacher in his or her decision to offer group instruction. If it can be shown that group piano instruction is at least as efficient as private instruction to achieve this goal, further considerations such as economic benefit or personal preference may then be engaged in the determination of whether group piano instruction is a desirable and viable pedagogy for an individual teacher. Before undertaking an exposition of the current research, I present a brief overview of the historical emergence of group piano as a pedagogy with regard to its underlying motivations and philosophies, and its possible advantages or disadvantages.

The development of keyboard instruction through the centuries is deeply related to the development of society. Before the 19th century, instrumental instruction usually took place in a familial context, as in the Bach family, which was a lineage of professional musicians, or private instruction in elite or aristocratic families. In some cases, instruction was made available in a master/apprentice context to individuals who showed exceptional promise. In a sense, then, keyboard training was limited to those musicians intending to become professional keyboardists. A keyboard player was expected to manage different keyboard instruments, improvise pieces, accompany other instruments with figured bass, and even conduct a choir or an

orchestra. Therefore, keyboard treatises at that time were typically comprehensive with regard to musicianship, but just gave general guidelines to technique.

Beginning in the early 19th century, piano builders published methods for amateurs in order to attract new customers for their instruments. Coveted by families belonging to the newly emergent middle-class, the market for pianos expanded greatly at this time. Meanwhile, the flawless and flashy skills of virtuosic pianists became fashionable. By the end of the 19th century, many published piano methods became more-or-less equivalent to a collection of technical finger exercises intended to increase speed and strength of execution, at the expense of musical aesthetics and other matters of musicianship (Uszler, Gordon & Mach, 1991). Examples of such methods include the works of Charles Hanon (1820–1900), Henri Herz (1803–1888), and Josef Pischna (1826–1896), some of which are still widely used today.

Although the piano business declined sharply in the beginning of the 20th century, especially in Europe and the United States, piano instruction, especially in the United States, underwent a gradual yet significant transformation and renewal allowing it to maintain its privileged status with regard to all instrumental instruction (James & Jackson, 2000; MTNA, 2005). From the 20th century, piano instruction was no longer restricted to performance skill training, but was increasingly considered by music educators and the public as fundamental to all aspects of musicianship and musical knowledge. The content of contemporary piano method books reflects this change, with reduced coverage of finger technique, and the incorporation of such activities as singing, rote-playing, note reading, rhythmic and aural trainings, harmonization, and creative activities (James & Jackson, 2000). Written under the influence of early childhood education and science research during the second half of 20th century, modern piano methods are designed with respect to a child's cognitive ability, psychomotor

development, and attention span. Current piano methods also emphasize the elements of tone production such as weight and relaxation technique, and embrace more general musicianship skills like ear-training, musical perception, and sight-reading (Uszler, Gordon & Mach, 1991).

Learning piano in one-on-one private instruction is a long-standing tradition, and it continues to be the main context for piano instruction in the present. Although group piano instruction is not as popular as private instruction, it continues to serve as an enduring alternative to or a supplement of private instruction. Responding to increasing demand for piano lessons throughout the 19th century, instructors began to offer group piano instruction, both as a means of accommodating the growing numbers of students, and as a means of increasing their teaching income.

The earliest and the most well-known group piano system was established by Johann Bernhard Logier in 1815. Although 20th century studies have demonstrated that learning instruments with peers yields positive results, Logier's primary motivation for his group teaching system was merely economic. Originally established in Dublin, Logier's schools quickly expanded to London and later the continent. Their popularity faded just as quickly, with most of his franchises being closed by 1822 (Loesser, 1954). However, group teaching styles did not vanish completely with the demise of the Logier schools, with great musicians like Clara Schumann, Franz Liszt and Felix Mendelssohn all teaching piano or other instruments in a group setting (Parakilas, et al., 1999).

The earliest evidence of group piano instruction in the United States is seen in a letter to the editor of *The Etude* magazine written in 1860 by a group of private piano teachers in Holly Springs, Mississippi strongly opposed to this new style of teaching (Richards, 1962). By the end of the 19th century, teaching piano in a group setting seems to have been gradually accepted in

the United States. Group piano instruction was offered in private studios and privately-owned music schools. Even the United State Office of Education began to promote group piano instruction near the turn of the 20th century (Richards, 1962).

Calvin Bernard Cady, a professor at the University of Michigan, was one of the earliest music educators to advocate group piano instruction in the United States. Starting in 1887, Cady wrote a series of articles addressing the pedagogy of group piano teaching. His teaching philosophy influenced subsequent group piano teaching and earned him the title “the father of piano class instruction” in the United States (Richards, 1962, p.28).

Cady felt that students could learn from their classmates, and that the desire for peer approval and a spirit of emulation and even competition motivated the class to learn. Although he was a strong advocate of group instruction, he recognized that not every student would benefit from group piano instruction. He identified three goals essential to the success of a piano class: (a) development of “musical thought powers” or musical ideas, (b) development of the power to express those ideas, and (c) musical experience. In order to accomplish all three goals, Cady felt that small classes of three students were essential. Larger classes could not provide enough time for the third goal--musical experience. Many ideas expressed by Cady were prominent at his time. For instance, he suggested students should not always play simultaneously because "independent work and plenty [of it] is essential". Recognizing that “the staple ideas of one composition are found to be common to all, only in different forms and modes of expression,” Cady emphasized the necessity of time sufficient to investigate these common challenges in new and different contexts in a group setting, and to develop procedures and solutions to meet them successfully. Active listening and participation in the group, according to Cady, are necessary for each member (Richards, 1962)

Shortly after Cady's articles appeared, many schools of music wrote about their success in group teaching. For example, in 1891 Constantine Sternberg, an owner of a private school of music in Philadelphia, wrote two articles arguing that piano classes stimulated the interest of the average student, and that the class tuition fee brought piano instruction within the range of the average family. Sternberg's own piano class focused on the development of musical aesthetics rather than performance skill¹ (Richards, 1962). Teachers who owned private studios also began to experiment with group teaching. In 1896, a private teacher, Hella Prince Stockey, wrote an article in *The Etude* sharing her group teaching experiences. She insisted that new students take ten weeks of piano fundamentals in a class setting before beginning private lessons (Richards, 1962).

In 1913, American public schools began to offer class piano in order to foster musicianship, rather than performance skill. Similar to the rise and fall of Logier's system, class piano became prevalent in the United States for a while, and even influenced other countries, but largely disappeared after 1930s due to the Great Depression and the World War Two. In fact, many piano pedagogy programs at universities and colleges were originally established to train class piano teachers (Richards, 1962). Ironically, years after the economic revival following the Great Depression and the Second World War, and the establishment of piano pedagogy degrees, class piano never came back to public schools. Instead, the class piano setting largely migrated to a university setting, in which secondary piano courses provide fundamental keyboard training to non-piano music majors and non-music major students.

In the meantime, scholars who encountered the golden period of class piano during the first half of the 20th century and experienced the effectiveness of learning piano in a group

¹ Constantine Sternberg, "Musings on Class Teaching", *the Etude*, IX (February, 1891), p. 29.

setting at first hand continued to promote the concept of teaching piano in group in their writings. For instance, well-known piano pedagogy scholars such as Robert Pace, James Bastein, Frances Clark, and James Lyke all advocated group piano classes, despite differing viewpoints on how to best structure a group piano class (Fisher, 2010). Pace's system uses one partner lesson and one large group lesson per week for the beginning piano students with an average between age 5 to 7. Lyke suggested teaching children in small groups of four students, twice a week: one lesson for repertoire and technique, and one lesson for training in musicianship. Clark preferred a combination of both group and private lessons for beginning students (Fisher, 2010).

Music educators continued to recognize group piano teaching as a significant component of piano pedagogy, especially after the 1970s. As early as 1955, the Music Teachers National Association (MTNA) began including group piano workshops on its national convention program. Piano periodicals like *American Music Teacher*, *Piano Quarterly*, *Keyboard Companion*, and *Clavier* have published many articles emphasizing group piano instruction and addressing this topic from a variety of perspectives. From 1963 to 1977, when Robert Pace served as director, the National Piano Foundation sponsored workshops for group piano teaching. After Pace retired, Martha Hilley and Marguerite Miller continued the workshops under the name of "World of Piano" seminars (Fischer, 2010).

After the 1990s, more new resources for the group piano teaching began to appear. The first online keyboard journal, *Piano Pedagogy Forum* (established in January 1998), always includes at least one article per issue specifically dedicated to group piano teaching and related topics. In 1999, the MTNA devoted the entire Pedagogy Saturday workshop explicitly to group teaching during its annual national conference (James & Jackson, 2000). From 2000 to present,

the National Group Piano and Piano Pedagogy Forum continues to meet biannually. The conference is mainly focused on the discussion of group piano teaching at the collegiate level (Fisher, 2010).

It is interesting that although group piano instruction has existed for about 200 years, and its proponents have generated a significant pedagogical literature, the percentage of teachers offering group piano lessons at the turn of the 21st century is still relatively low. According to Suzanne Schons's survey in 2004, of 598 piano teachers in the United States, only 8.2% taught group lessons exclusively, while 23.3% of those surveyed taught both private and group lessons. The vast majority—78.1%—of the surveyed teachers taught only private lessons (Schons, 2005). A survey of some two thousand teachers made by MTNA in 2005 also reported that only one-third of those surveyed offered group piano lessons.

One reason for their reluctance to teach in a group setting could relate to the lack of their training in group teaching strategies at school. Victoria Leigh Johnson (2002), who investigated topics taught in college piano pedagogy courses, found that most piano pedagogy courses did cover both teaching privately and in a group setting, and that 83% of college piano pedagogy courses required students to *observe* group instruction as well as private instruction, but only 44.21% of undergraduate piano pedagogy programs require students to teach a group class (Johnson, 2002). In light of these discrepancies, in the conclusion of her study, Schons suggests:

Piano pedagogy courses and professional organization should provide students and teachers with a thorough grounding in partner/group instruction and familiarity with its educational and financial benefits. Although most undergraduate and graduate programs do address group teaching, it is not clear how much those programs are helping students find practical ways to transfer knowledge of group and partner teaching to the setting of a home studio, where many teachers are likely to carry out their instruction. (Schons, 2005, p. 113)

In spite of these low percentages, the efforts made by piano pedagogical scholars on behalf of promoting group piano instruction are not totally ineffective. Schons (2005) found 63% of the teachers younger than 46 years old in the greater New York area reported having observed group piano instruction while at college, a rate 20% higher than teachers in older age groups. Teachers in the youngest age group also constituted the highest percentage (34%) of those offering group piano instruction. Schons (2005) suggests that teachers of younger generations, having had more direct experience of group piano instruction, are consequently more amenable to offering it.

Need for the Study

In 2010, Christopher Fisher, a professor at Ohio University, published *Teaching Piano in Groups*. Fisher provides comprehensive information about group piano instruction including class types, instruction strategies, suggestions of business/financial planning, etc. Fisher also claims numerous benefits of group piano instruction, such as providing a dynamic and motivational learning environment, developing critical listening skills as students listen to other students perform and provide comments, encouraging the development of a strong rhythmic sense through group eurhythmic activities, and providing a beneficial environment to teach functional musicianship skills like harmonization, transposition, sight-reading and improvisation. However, Fisher did not have evidence to *prove* these elements of group piano instruction would actually positively affect the musical achievement of students. A study that provides an objective comparison of the musical achievements of beginning students in an exclusive private

or group context could prove valuable to current and prospective teachers contemplating offering group piano instruction.

In fact, three studies comparing the influence of private piano instruction and group piano instruction on students' musical achievements exist: (a) Rita Johnson Hutcherson's study in 1955; (b) William Forrest Rogers' study in 1974; and (c) Diehl's study in 1980. In summary, all three studies suggest that students in group instruction achieved at a level equal or superior to their counterparts in private instruction. However, as all three studies were published more than 30 years ago, updated research is needed. Moreover, all three previous studies investigated average-age students between the ages of 6.5 to 10. Additionally, Hutcherson investigated the achievements of college students taking group piano. It is necessary to investigate the efficacy of group piano instruction regarding students of other age ranges, younger and older.

Beginning in the 1980s, scientific studies (Schellenberg, 2004; Schellenbert, Harris & Karen, 2006) began to appear demonstrating the benefits of teaching music to young children, prompting many parents to enroll their children in piano lessons at an early age. Ann Collins, a professor of music at Western Illinois University, writes, "It is very likely that in the next few years, the 'average-age beginner' will be four instead of seven" (Lyke, Enoch & Haydon, 1996). Meanwhile, many new piano methods dedicated specifically to preschool students (ages 4 to 7) have been published in recent years, such as *Music for Little Mozart* by Christine H. Barden, Gayle Kowalchuk and E. L. Lancaster, *My First Piano Adventure* by Nancy Faber and Randell Farber, and *Progressive Piano Method for Young Beginners* by Gary Turner and Andrew Scott. As no related research on students younger than 6.5 years old exists, and as a child's first experience of musical instruction can be determinative of their future relationship to

musical performance, I decide to compare the relationship of two different modes of piano instruction and very young beginners' (between aged 5 to 7) musical achievements.

Purpose of the Study

In this study, I investigate the relative influence of group piano instruction and individual piano instruction on the musical achievements of young beginning piano students after they take twenty-four weekly piano lessons. Students receiving group piano instruction constituted the experimental group, and those receiving individual instruction constituted the control group. The age of participants (students) researched is between 5 to 7 years old with no preceding piano education. Items considered in this study as musical learning achievements include: (a) music knowledge, (b) music reading, (c) aural discrimination, (d) kinesthetic response, and (e) performance skill. The working hypothesis of this study is that no significant difference exists between the experimental and the control groups in all five musical achievements investigated.

I also considered the potential influence of teachers as another factor affecting learning outcomes. According to Rogers' study (1974), which employed four teachers, significant differences in certain learning outcomes were found among the students of various teachers. Rogers attributed these differing outcomes to the abilities of a particular teacher in giving either group or private instruction, the methods employed by the respective teachers, and the possibly different ways in which the students respond to each. In other words, the proclivity of a particular teacher toward either group or private instruction may influence the results of the experiment. To avoid the potential bias created by a single teacher, I invited another teacher besides myself to teach half of the participants. The attitudes of both teachers regarding

individual preferences toward either mode of instruction, are revealed by surveys undertaken both prior to and following the experiment (see Appendix G).

Diehl (1980) reported that group-taught students performed significantly better in sight-reading than privately-taught students. In addition, group-taught male students significantly outperformed privately-taught male students in both public performance and sight-reading. Among participants at the age of 8 and older, group-taught students in Diehl's study achieved at higher levels than the private-taught students in sight-reading. Diehl indicates that the effect of the two piano instruction modalities (private versus group) upon the music learning achievements of students of different genders and age groups could be varied. Therefore, in the present study, I briefly consider whether the relationship between instruction modality and participants' learning achievements differs significantly between different genders and age groups.

Research Questions

The basic questions driving the current research are as follows:

1. Which mode of piano instruction--group or private--enables young beginners (age 5 to 7) to achieve optimally with regard to (a) music knowledge, (b) music reading, (c) aural discrimination, (d) kinesthetic response, and (e) performance skill?
2. Does a teacher's experience and preference of a particular mode of instruction influence participants' achievements?
3. Do the two examined instruction modalities influencing students' musical achievements account for different results among different age and gender groups? As a

result, do students' musical achievements differ between different age groups and gender groups?

Organization of the Study

A summary of related literature is provided in Chapter Two, followed by a brief discussion of the history of piano methods and instruction and how these have changed and developed throughout the past three centuries. A description of the methods and procedures of the research is presented in Chapter Three, and the results of the analysis of data is presented in Chapter Four. Chapter Five contains a summary of the research, discussion of the results, conclusions of the study, and recommendations for further related studies.

Chapter Two

Literature Review and Development of Piano Instruction

Critical reviews of related research

Three previous studies exist comparing the influence of individual and group piano instruction on young students' musical achievements, authored by Hutcherson (1955), Rogers (1974), and Diehl (1980). The three studies and their findings are briefly summarized and evaluated below.

Hutcherson (1955) set up two experiments in the same study. Her first experiment sought to determine whether group and individual piano instruction influenced the learning outcomes of young beginners throughout a fourteen-week period. The items tested included (a): knowledge of music rudiments (including the ability to recognize notational symbols and basic music theory), (b) the ability to visually recognize familiar melodies, (c) the quality of prepared performances in the recital hall, and (d) sight-reading ability. In order to secure comparable groups of students, Hutcherson selected six pairs of young children from ages 7 to 10 years. Each pair of students was selected based upon the researcher's perception of the similarity of musical, mental, physical and social maturity obtaining between the members of each pair. Thus, the pairs were not randomly selected. In each pair, one student underwent group piano instruction (experimental group), and the other received private piano instruction (control group), comprising a total of six students each in the experimental group and the control group.

The students taught in a group setting received three 30 minutes lessons per week, while the students taught individually received one 30 minutes lesson per week. As noted above, the experiment took place over a period of approximately 14 weeks. Hutcherson herself instructed

both the group and the private sessions. Each week, she spent 90 minutes teaching the experimental group and 180 minutes teaching the control group. The content taught was essentially the same for both groups, with the procedures differing only in their adaptation to the group or individual learning situation. The research placed no restriction on students' practice time. At the end of the experimental period, no significant differences were found between the musical achievements of the two groups. Hutcherson concluded that the major advantage in group instruction for this experiment was the economy of time.

Hutcherson's second experiment compared rhythmic proficiency in sight-reading performance at the piano between group-taught and individually-taught non-music major college students at the beginning level. She chose to evaluate this aspect as she had previously noted a difference in rhythmic proficiency between adult students taught in group or private settings, a difference for which she could not account (Hutcherson, 1955, p. 75). Five matched pairs of students were selected by the researcher. Five students were assigned to group instruction (experimental group), and five students were assigned to private instruction (control group). The students in group instruction received three 30 minutes classes per week for 10 weeks, and the students in private instruction received one 30 minutes lesson per week for 15 weeks. Thus, the experimental group received more instruction time, but the control group received its instruction over a longer period, a difference that potentially bears upon the results of Hutcherson's comparison. The experimental group scored significantly higher in only one specific area: performing easy piano music at sight with rhythmic accuracy and security (by which Hutcherson presumably means the confidence level of the performer and its relationship to accurate rhythm).

Due to the small sample size, and the fact that the paired participants were not randomly selected, Rogers (1974) and Diehl (1980) both criticized the results of Hutcherson's studies.

Moreover, with only one teacher providing all the instruction for both experimental and control groups, and that teacher being the researcher herself, the potential exists for the bias of the teacher to bear upon the quality of instruction provided (even if unconsciously), possibly skewing the results of the experiment. The restricted scope of her second experiment, testing only rhythmic proficiency, limits the conclusions that can be drawn from her research (Hutcherson, 1955)

Of the three studies considered here, Rogers (1974) involved the largest sample size and the longest average treatment time for each student in group instruction. Sixty-four beginning piano students whose ages ranged from 7 to 9 years were selected on the basis of scores derived from the Robert Pace Classroom Music Background Tests.² Among the 64 students selected, 32 students were randomly selected to participate in group piano instruction, and the other 32 students were selected to receive private piano instruction. Four teachers were selected from a cohort of graduate music and music education students at Columbia University and trained to teach both modalities of instruction. Each teacher taught eight students in group piano instruction, and eight students in private instruction. Before the instruction began, Richard Colwell's *Music Achievement Test, Level One* was administered as a pretest of aural discrimination ability.³ The same test was administered at the conclusion of the experimental period in order to evaluate the difference after receiving instruction.

² This test was designed to evaluate students' musical background for teachers to understand the particular needs of each prospective student. The test comprises (a) rhythmic response, (b) pitch recognition, (c) singing, (d) finger coordination, (e) rudiments, (f) harmony, (g) reading, (h) previous repertoire, and (i) technique.

³ According to Rogers, "*Richard Cowell's Music Achievement Test I* is a standardized musical test designed to provide an accurate measurement for three musical skills: (1) pitch discrimination, (2) interval discrimination, and (3) meter discrimination. The test requires no skills in music reading; only responses based on auditory tasks." (Rogers, 1976, p. 114)

Rogers adopted Robert Pace's model of group piano instruction in which each student received a 45-minute lesson in pairs, and a 60-minute class per week in a large group consisting of eight students. Students in private piano instruction received a 30 minutes lesson each week. After sixteen weeks of piano instruction, all participants took a posttest evaluating (a) aural discrimination, (b) knowledge of musical symbols, (c) sight-reading, (d) transposition, and (e), improvisation.⁴ The hypothesis assumed that participants in group instruction would earn significantly higher scores in all five areas tested than participants in the private setting.

Rogers reported that participants who received group instruction scored significantly higher ($p>0.05$) than the students who received individual piano instruction on all five variables measured. Rogers also noted differences in results obtained by the students with regard to the particular teacher they studied with, surmising that the effect of the teacher could significantly influence the students' acquisition of aural discrimination skills, knowledge of musical symbols, and the ability to improvise.

Due to its larger sample size and multiple teachers, Rogers' research was more convincing than Hutcherson's. However, as Diehl (1980) noted, rather than deriving from class size alone, the results might be caused or affected by the disparity in lesson time experienced by the experimental and control groups. Each student in group piano instruction received a total of 105 minutes lesson per week, an amount 3.5 times longer than those receiving private instruction (Rogers, 1974).

⁴ The ability to improvise was evaluated on the student's ability to improvise a four-bar musically-appropriate "answer" (consequent phrase) to a given four-bar "question" (antecedent phrase), thus testing the student's acquisition of melodic grammar and procedure (Rogers, 1976).

Within a decade of Rogers' study, Diehl (1980) conducted further research related to the effect of group and individual piano instruction upon objective musical achievement. Aside from suggesting that the results of Roger's study might relate to its unusually large difference in weekly instructional exposure time between those receiving group instruction (105 minutes) and private instruction (30 minutes), Diehl also criticized Rogers' (1974) absence of data regarding the respective practice conditions—controls of practice time and procedure—between the experimental and control group participants. Particularly since most practice presumably took place in the school laboratory, an environment in which these factors could have been controlled or monitored.

To avoid the extreme differences of instructional exposure times that Diehl questioned in Rogers (1974), Diehl set the period of each group instruction (experimental group) at one hour with four to six students participating, and retained the thirty-minute period of private instruction (control group) of her predecessors. Diehl recruited 40 students between 6.5 and 9.5 years of age to participate in this study. All students were pretested for aural discrimination ability with Richard Colwell's *Music Achievement Test, Level One*, and were divided into four categories based on ranking their pre-test scores. Each of the four categories contained 10 students— five students from each category were randomly assigned to group piano instruction, and another five students were assigned to private piano instruction. All classes were taught by the investigator herself. Diehl also tried to control for the involvement of parents and the amount of students' practice time. The parents of students were required to attend the second and the fourth lesson of each month, and they were also asked to monitor and confirm students' practice time by signing off on the weekly assignment sheets.

After completing 24 weeks of piano instruction, all students were required to take a posttest. The tested musical achievements included (a) aural discrimination, (b) knowledge of musical symbols, (c) sight-reading, (d) transposition, and (e) public performance ability. Diehl gave a questionnaire to the parents two weeks prior to the end of the instruction. This questionnaire was designed to provide some insight and feedback from the parents regarding certain home factors, attitudes and studio procedures which may have affected the results.

Diehl's test results showed no significant difference with regard to aural discrimination, knowledge of musical symbols, and ability to transpose between the experimental and control groups. Male students in general, and students of any gender at the age of 8 and older in the experimental group received a significant higher score in public performance than control groups. The experimental group scored significantly higher in sight-reading, especially with students at age 8 and older.

Diehl concluded that students receiving group instruction achieved musically at a level equal or slightly superior to those students who received private instruction. Diehl also discovered that the age and gender of her participants impacted the results of the study. The male students in group instruction outperformed their privately-taught counterparts in sight reading, as did group-taught students of either gender aged 8 or older. The group-taught male students also outperformed the privately-taught males in the category of public performance. The questionnaire given to the parents of the test participants also revealed that students in the group piano class appeared more motivated to practice at home than those receiving private instruction.

As Diehl's study utilized a sample size two times greater than that of Hutcherson (1955), it is more likely to generate meaningful and accurate data. Also, her format of group piano instruction—in which students were distributed in consistent groups of four to five students—more likely resembles the approach to group instruction adopted by the majority of piano teachers, making the results of her study more meaningful to them than the data generated by Rogers (1974), which employs his particular hybrid pair/larger group method. In Roger's format, adapted from his mentor Robert Pace, both group size and duration of instruction constitute variables that must be considered before a meaningful comparison to private instruction can be drawn.

However, since all classes in Diehl's study were taught by the *same* teacher, as was the case with Hutcherson (1955), the teacher's preference for either group or private instruction could become a bias. As Rogers (1974) found, the influence of the teacher and his or her teaching style did affect the results obtained by students in particular categories, namely acquisition of aural discrimination, knowledge of musical symbols, and improvisational ability. Thus, Diehl's results might be affected by subjective factors such as teaching style, or preference for a certain type of classes, factors neglected in her study (Diehl, 1980).

Similar studies exist investigating the efficacy of group piano instruction comparing differently-sized groups and varying age groups. Gates (1975) investigated two different class formats operative in adult group piano instruction. His research aimed to discover whether working in pairs—or what Gates terms “peer group dyads”—produces learning outcomes superior to those obtained by working individually in a group piano instructional context. In the experimental group, 12 students were paired into six dyads. Each pair of students shared one piano. The six students in the control group each had their own piano. All students received two

1-hour class sessions during the 10-week course, and the same materials were used by both the experimental and control groups. The paired students were encouraged to resolve problems by discussion with their teammates, and they depended less on the instructor for guidance, while the solo students received more comments and guidelines from the instructor. After 10 weeks, Gates concluded that these two types of class formats did not influence the results obtained in the categories of rhythm, note accuracy and performance. As the experimental group contained twice as many students as the control group in the paired setting, the time that the teacher spent on each student was only half that of the solo setting. Moreover, with 12 students in one class instead of six, the paired setting maximized the function of the piano lab and each student only need to pay a half of the tuition. Therefore, Gates concluded that utilizing a paired setting within group piano instruction was preferable on the basis of further benefits it provides in terms of teacher time, piano lab utilization and student cost.

By working with groups of two, four, six and eight students, Jackson (1980) investigated whether class size affects the development of basic keyboard skills of beginners. Jackson's study also involved different age groups. To conduct her study, she recruited 12 preschool students, eight elementary school students, 12 high school students, and 12 college sophomores. Each age group was divided into one small group (with two or four students), and one large group (with six or eight students). Jackson evaluated the progress of the various groups after each had received six 1-hour lessons (preschool students received twelve 30-minute lessons). No significant difference was found between the control and experimental groups.

Researchers also studied the results of group instruction on instruments other than piano. Following experiments with high school vocal beginners, Sim (1961) concluded that the achievements of students learning in a group setting compared favorably to those of the

privately-taught students. Seipp (1976) compared the progress of college trumpet students taught either collectively or individually over the course of a school year. He discovered no significant differences in (a) trumpet performance, (b) interpretive judgment, (c) auditory-visual music discrimination (aural dictation and transcription), and (d) the quantity of musical material—technique exercises, etudes and solo pieces—performed by each student. However, students receiving group instruction in Seipp’s study scored significantly higher in sight-reading, a result corresponding to the results of studies by Hutcherson (1955), Rogers (1974) and Diehl (1980).

As we can see from the previous research cited above, the musical progress of students taught in a group setting was typically equal to or slightly superior to that of those taught privately. In other words, no significant differences are observable in the results obtained by the two modalities of instruction—group or individual—in elementary piano (or other instruments).

Rogers (1974) was the only one reporting that group-taught students scored significantly higher achievements in *all* aspects of musical progress tested. Sims (1961) indicates that group instruction is better for beginning vocalists of high school age. Hutcherson (1955) and Seipp (1976) found the group-taught college students performed better in sight-reading; the same result was also found in Diehl’s study, albeit limited to male students and all students at the age of eight or above. However, all of these studies are potentially affected by factors that were either not controlled or otherwise neglected. For instance, the experimental and control groups in Rogers’ study received instruction of unequal duration, a variable that in my view was insufficiently considered, as one would reasonably presume that a student receiving more hours of instruction might outperform one who received less. The instruction given in studies of Hutcherson (1955), Sims (1961), Seipp (1976), and Diehl (1980)—in terms of quantitative

analysis, the “treatment”—was all completed by a single teacher, typically the researcher herself, which according to Rogers’ study, might create a bias. Another potentially limiting factor shared by most of the studies cited above is that of relatively small sample size. Excepting studies of Rogers (1974) and Diehl (1980), which comprised 64 participants and 36 participants all the other studies utilized much smaller sample sizes, consisting of 24 or fewer participants .

In consideration of the limitations of the previous studies, for the present study, I decided to increase the sample size to 48 participants , to control the lesson length between experimental and control groups, and to add one more instructor, both to prevent possible bias deriving from teaching style and to investigate the influence of the teacher on the learning achievements of the students. Given the current trend of an increasing number of piano students to begin lessons at preschool ages (from ages 4 to 6), I elected to investigate the relative influence of group and private piano instruction on beginning students aged 5. This is the first such study to compare the impact of group versus individual instruction on the musical achievements of participants younger than 6 years old.

In addition, the present study investigates two new items of musical achievement centered on aural skill, both involving the connections between aural stimulus and kinesthetic response: melodic play-back—in which the student repeats a melodic phrase played by the teacher—and rhythmic clap-back, the repetition by the student of rhythms played by the teacher. Notation is not used for these activities. The aural discrimination component of the studies cited above investigates only the connections between the aural versus visual senses (as in asking the student if a notated example corresponds to the music heard), but ignores the connection between aural and kinesthetic senses proven critical to musical performance and sight-reading (Brown & Palmer, 2013; Hayward & Eastlund Gromko, 2009). Given the importance of the interaction

between the aural and kinesthetic senses attested by such studies, I considered it crucial to devise items in the current study to evaluate these connections as they develop in group and individual instruction of young beginners.

Development of Piano Instruction from the Late 18th Century to the Present

Before proceeding to the methodology and results of the current study, in what follows I provide an overview of the historical development of piano instruction in Europe and the United States, showing how its scope is deeply related to and affected by the evolution of those societies. In particular, I trace the emergence of group piano instruction and the philosophies that informed its development in varying locations and eras. With such an understanding in place, it will be easier to contextualize and interpret the current research.

I. Prior to the Late 18th Century

Until the later 19th century, formal music instruction was largely limited to elite or aristocratic families. Others able to receive formal music training were either the children of musical families, or those who showed exceptional talents at a young age. Children of musical families whose members served as professional musicians in the churches and courts, like Louis and Francois Couperin, J.S. Bach and sons, Domenico Scarlatti, Mozart, and Beethoven, received their initial music training from parents or relatives. Those born to ordinary and non-musician families who demonstrated exceptional talent, such as Handel and Haydn, sometimes became apprentices of master musicians and received musical training by working as an assistant.

Unlike most musicians today, who typically specialize in one instrument, musicians of the past were relatively more versatile. As the goal of these students was to become a

comprehensive musician able to serve at a church or court, their musical training required them to master multiple instruments, obtain sufficient knowledge of music theory, and develop proficiency in counterpoint and composition. For example, J.S. Bach taught his children all the principles of music, encompassing theory, composition, and performance. Haydn received instruction in voice, violin, and keyboard at St. Stephen's Cathedral in Vienna, under the tutelage of Georg Weutter. By living or working daily with their masters (or family), the apprentices were constantly involved with musical activities. Technique and knowledge was refined by virtue of intense and close interaction with their teachers in a variety of musical settings. Therefore, the concept of "practice", as we understand it today, did not exist. In fact, some masters seemed to prefer that students not practice on their own. Friedrich Marpuerg suggested in his treatise, *Die Kunst das Clavier zu Spielen*, if students practiced on their own they might well ruin what their teachers had already helped them to achieve. When Francois Couperin gave daily harpsichord lessons to the daughters of Parisian aristocrats in their houses, he locked the harpsichord at the end of the lesson to ensure that his students didn't form any bad habits by practicing without his supervision (Parakilas et al, 1999)

II. Instruction from the Late 18th Century to the End of the 19th Century

From the late 18th century onwards, the industrial revolution in Western Europe led to an increase in the population, and an expansion in the numbers of middle class, bringing increased wealth to more families outside of aristocratic society. Previously the nearly exclusive privilege of upper-class society, art music increasingly became a fashionable entertainment for the new middle-class.

Promoted successfully by talented entrepreneurs and players, the piano rose to a dominant status among all other instruments, becoming the most popular instrument. Owning a piano became a symbol of a family's wealth and social status. Piano lessons became standard for young women in wealthy families, as the ability to play piano well was viewed as a female accomplishment conducive to securing a more favorable marriage situation (Loesser, 1954). After marriage, playing the piano was not just a way to occupy a woman's leisure hours. It was also her duty to perform competently both for the recreation of her family, and to represent her family as cultured at parties and social gatherings that might affect its reputation.

As the 19th century progressed, the piano no longer belonged strictly to upper-class and middle-class families. The piano increasingly became the center of entertainment and familial gathering in many homes. Speaking somewhat condescendingly of the proliferation of pianos in the 19th century, a *Le Charivari* columnist, writing in 1844, observed, "As the piano has become an indispensable piece of furniture, and that is found today in practically every salon, in every apartment, and in every porter's loge, manufacturers see themselves as obligated to whip up these instruments in such a manner that they will fit into the tiniest little corners" (Parakilas et al., 1999).

Piano Instruction

The demand for piano instruction by both amateurs and prospective professional pianists increased enormously in the 19th century. The growing popularity of the piano greatly increased performance opportunities for pianists, attracting many talented adolescents to pursue their dreams of become a concert pianist. At the same time, piano lessons became a necessary

component of education for women in increasingly affluent middle-class families. These circumstances allowed famous pianists like Czerny and Chopin to obtain a decent income merely by teaching piano. Increased demand for formal music training also led to the formation of music conservatories, becoming widespread in Europe after the first modern conservatory, National de Musique, was established in Paris in 1795 (Parakilas et al., 1999).

Excepting those members of wealthy families who could afford the tuition of professional piano teachers, aspiring amateurs were usually taught by someone who knew how to play piano, but who had no formal musical training. Some amateurs were not able to afford regular lessons or lived in rural areas where they had limited access to instruction. Music publishers produced several method books for such students to be able to teach themselves. For instance, Johann Peter Milchmeyer claimed that his book, *Die wahre Art das Pianoforte zu spielen*, was written for amateurs and beginners without a teacher, or for village teachers who were for the most part “far removed from the perfection of artistic cultivation” (Rhein, 1993). Clementi’s tutorial, *Clementi’s Introduction to the Art of Playing on the Piano Forte*, was likewise written as an autodidactic “user manual” in order to attract new piano buyers who had never learned piano. The book included an introduction to hand position, musical terms, technique exercises, and also featured a wide range of compositions by well-known composers from previous centuries to the present. As Parakilas (1999) comments, “Clementi’s *Introduction* shows piano students the full range of musical experience that the piano can open up for them, from the classic to the popular and from orchestral and vocal transcriptions to the natively pianistic”.

The great popularity in the 19th century of the virtuosic playing style and astonishing technique of such players as Liszt and Chopin also had an impact on piano instruction. Such masters were greatly admired by the public for their virtuosity. The fashion for virtuosic and

flawless playing initiated an era of piano instruction largely defined by technical studies and etudes. Over time, many pianists and piano instructors tended to focus on finger speed, power, and flawless musical execution, at the expense of aesthetics, imagination, interpretation, and expression. For instance, the piano method published by Sigismund Lebert and Ludwig Stark in 1865 emphasized practicing pieces loudly with no dynamic changes in the early stages, and advocated that “all the fingers must on an average be held firmly about one inch over the keys [...] strike rapidly and perpendicularly and just as rapidly return to their first position”.⁵ Charles Hanon claimed that playing through his entire book of exercise every day would allow the fingers to play evenly and securely. Other examples of pedagogues who advocated similar methods include Louis Plaidy, Josef Pischna, Isidor Philipp and Ernst von Dohnányi. Their exercise manuals were widely used well into the 20th century (Uszler, Gordon & Mach, 1991).

The over-emphasis on technical execution advocated by these methods caused many prominent musicians to worry about the loss of overall musicality and aesthetic sense. As pedagogues, Schumann, Mendelssohn and Liszt all strove to teach young musicians comprehensively. Robert Schumann, whose career as a professional pianist was ruined by an injury caused by using a finger-strengthening device, was an opponent of finger exercise methods. In 1848, Schumann published *Album for the Young*, a set of poetic pieces intended to engage the distinctly childish imaginations of students (Parakilas et al., 1999). He also wrote a guide book in the same year, *Musikalische Haus-und Lebens-Regeln* (Advice to Young

⁵ Levert and Stark assert that “The mechanism of the piano, whose most important principle rests upon the rapid rising of the hammer from a fixed point, and the equally rapid falling back into its first position requires a corresponding counter action on the part of hand. All the fingers must on an average be held firmly about one inch over the keys strike rapidly and perpendicularly and just as rapidly return to their first position” (p.7-8).

Musicians: Musical Rules for Home and in Life), instructing younger students how to become a “true musician”. Schumann asserts:

The cultivation of the ear is of the greatest importance—Endeavour early to distinguish each several tone and key. Find out the exact notes sounded by the bell, the glass, the cuckoo, etc. it is not only necessary that you should be able to play your pieces on the instrument, but you should also be able to hum the air without the piano. Strengthen your imagination so that you may not only retain the melody of a composition, but even the harmony which belongs to it.⁶ (Schumann, 1860)

While Schumann recommended practicing scales and other finger exercises frequently, he also pointed out that merely practicing these exercises is not sufficient. The impressive sales of *Album for the Young* inspired other composers to compose imaginative pieces for children. For instance, Tchaikovsky’s *Children’s Album*, Op. 39, composed in 1878, included twenty-four short pieces for young students.

Serving as the first director of the Leipzig Conservatory during the last four years of his life, Felix Mendelssohn established a three-year curriculum intended to give incoming students a comprehensive music education. The curriculum included music history, theory, and basic keyboard and singing skills. Mendelssohn’s goal was to provide a balanced educational experience for all students, no matter what their instrument was. However, his broad curriculum fell apart quickly after his death. After this time, Leipzig and other conservatories in the Europe tended to focus on performance skill alone, at the expense of other aspects of musical education.

⁶ Robert Schumann, *Musikalisch Haus- und Lebens-Regeln*, 2–4.

As the preeminent virtuoso of the 19th century, Franz Liszt devoted his last 20 years to educating young pianists. Recognizing the pitfalls of the mechanistic technique then being emphasized in the conservatories, Liszt concentrated on music *interpretation*, and encouraged his students to be imaginative in performance. Of course, Liszt recognized the centrality of technique to musical execution, but he also warned against the lack of artistry inherent in merely performing “finger gymnastics” (Parakilas et al., 1999).

In the late 19th century, after piano manufacturers enlarged the size of the instrument, adopting a cast-iron frame and heavier keys, playing with curved fingers and limited movements of arms and wrists as suggested in early methods became inappropriate. Pianists like Ludwig Deppe, William Mason, Rudolf Maria Breithaupt, and Tobias Matthay became pioneers of arm weight technique, devoting themselves to newly emergent concepts emphasizing freedom of motion and relaxation. This approach came to influence 20th-century piano pedagogy (Uszler, Gordon, Mach, 1991).

- *Teaching Piano in Group*

Throughout the 19th century, the traditional master-apprentice model was the most popular format of piano instruction. However, the high demand for piano instruction inspired Johann Bernhard Logier (1777-1846) to form the new class format of teaching piano in a group setting. Logier was a wind-instrument player in a military band. Besides teaching piano, he was also a composer, inventor, and successful businessman, selling the “chiroplast”, an implement he devised to help students develop good hand shape for playing piano. Living in Dublin, Ireland, Logier saw that it was difficult for piano teachers to make sufficient income solely by teaching private lessons. Moreover, private instruction could be costly for prospective students. The group class served to ameliorate both concerns. By teaching a group of students simultaneously,

a teacher could earn significantly higher hourly wages, while students spent much less than they would taking private lessons. In 1815, Logier designed a class format that could accommodate as many as thirty students. The economic benefits for both teachers and students caused Logier's system to grow rapidly, crossing two oceans in the process. In 1818, Logier's system could be found in 28 academies in Great Britain, Ireland, the United States (New York and Philadelphia), and India (Calcutta) (Loesser, 1954).

As well as instituting group piano classes, Logier's further innovation lay in devising a class format in which he was able to teach beginners as well as more advanced students in the same class period. Since his system focused on introducing fundamental musical theory and keyboard harmony rather than perfecting students' technique, Logier arranged pieces with multiple voices that comprised simple harmonic progression and variations. In the two-hour class, beginners played a simple bass line in strict rhythm, while intermediate or advanced played more elaborate parts, creating a layered texture of varying complexity. The teacher occasionally invited a single student or a small group of students to play, in order to evaluate the progress of the individual.

The widespread popularity of Logier's new teaching system initiated the earliest disputes pitting advocates of the private lesson against those favoring the group lesson format. In April and May 1817, a series of caustic letters to the editors of the *Weekly Chronicle* and *The Caledonian Mercury* were written attacking Logier's piano class. Opponents of the method argued the teacher would have to divide his attention among the members of the class so much that the student would not receive enough individual attention. Moreover, since the eight to ten pianos utilized in the group class could not be tuned to exactly the same pitch, the procedure of having the students play simultaneously could create acoustical discrepancies detrimental to the

proper training of the musical ear, as could students making mistakes and playing out of rhythm. However, even the opponents of group piano conceded that class instruction could accelerate the progress of learning. One letter declared:

Not only by the spirit of emulation excited, but also by the conversations which pupils of a certain age naturally hold on the subject of their studies, in which they often succeed in explaining to each other what their master did not make them understand. (Richards, 1962)

Due to the high overhead of renting, equipping, and maintaining large studios, Logier's system began to decline quite rapidly in England beginning in 1822. He also experienced a seasonal fluctuation in attendance due to his summer students returning to their home countries when vacations were over (Loesser, 300). At this time Logier also accepted a government post in Prussia to institute his method there. Despite its decline in England, his system survived and thrived elsewhere. Logier's son Frederick continued to utilize his father's system in Cape Town, South Africa. As late as 1943, the Logierian system was discussed at the South African Association for the Advancement of Science (Richards, 1962).

- *Group teaching from great music masters*

Although it became the subject of heated debates, the concept of teaching piano in a group setting undoubtedly inspired musicians of the day. Clara Schumann, for one, liked to teach her students in small groups of not more than three pupils, twice a week, enabling them to learn from each other (Booth, 1996). During the last twenty years of his life, Liszt devoted most his teaching time to master classes—a concept he originated—instead of private lessons. Taking place three or four times weekly, these master classes were usually more than two hours long.

He gave his students both freedom of choice in repertoire, and in deciding when they were ready to play for the class.

Group teaching also took place in conservatories. Felix Mendelssohn, the first director of the newly established Leipzig Conservatory (1843), created a new system for instrumental lessons placing three to six students of similar advancement in groups for their lesson. In this setting, students could learn from their companions, and teachers could earn a higher hourly rate. The system of teaching piano, as well as other instruments, in small groups remained the norm in Europe and the United States until the turn of the 20th century, when American schools began to favor private lessons (Parakilas et al., 1999).

III. Piano Instruction in the 20th Century and Thereafter

Broadly speaking, piano instruction in the United States during the 20th century departed significantly from the practices of the 19th century. Piano instructors gradually prioritized enhancing fundamental musicianship over the development of finger technique, especially with beginning students. This evolution, according to previous literature (Uszler, Gordon & Mach, 1991), is crucially influenced by the development of class piano in the early 20th century.

Class Piano

The term “class piano” in this section, refers to group piano classes offered by public schools from the 1910s to the 1970s (or 1980s) consisting of six or more students. According to Richards (1962), the purpose of the class piano format was to establish a solid foundation of music, including: (1) understanding of music rudiments pertinent to the printed page; (2) grasp of chords and key; (3) development of the tactile sense (basic technique); (4) rhythmic security; (5)

development of a discriminating ear; (6) understanding of the principles of phrasing, tone, pedal; (7) sight reading; (8) transposition, and (9) opportunity for creative experience.

Just prior to the turn of the 20th century, the class piano format was promoted by James C. Fillmore at the U.S. Office of Education. Fillmore believed teaching piano in a group setting could spare the teacher the necessity of time-consuming repetitious explanations to individual students, and broaden the musical experience of the student by having them play for a group, and have the experience of listening to their peers. Students could also gain self-confidence by playing before others. Fillmore also believed strongly in the complete utilization of time in the piano class. In his conception, the classroom was the locus of the dissemination and reception of concepts, and that practice should take place at home.

Starting in 1913, group piano classes began to be offered in American public schools (Richards, 40). Within several years, class piano was widely accepted in many cities. With generous support from the National Bureau for the Advancement of Music, the decades of 1920s and 1930s saw the apex of the popularity of class piano at American public schools (Richards, 1962; Diehl, 1981). The National Bureau for the Advancement of Music (NBAM) was an organization founded in 1916 by C. M. Tremaine as a business venture. Adopting the slogan, "Foster music in order to promote music," Tremaine obtained financial support from many music retailers who hoped that the efforts of his organization to promote music education might counteract the declining sales they experienced during the Great War and thereafter. The most ambitious project undertaken by NBAM was a national survey of class piano and the formation of a class piano committee, resulting in the publication of the influential tutorial entitled *Guide for Conducting Piano Classes in the Schools* in 1928. Within a year, more than 4,800 different American towns and cities requested a copy of the guide. The surge of interest in class piano

also spread abroad, with requests for the guide being received from Egypt, Japan, Korea, and South Africa, among other countries (Tremaine, 1928).

Unfortunately, however, the broad popularity of class piano did not translate into greatly increased piano sales, as the sponsors had hoped. Piano sales were deeply impacted by the Great Depression, a downward spiral from which they still have not recovered. Class piano also encountered the same fate, declining rapidly after 1935 due to the financial depression and a lack of teachers trained sufficiently in group piano teaching skills. According to a survey undertaken by the Research Division of the National Education Association, by 1963 only 13.4 percent of all elementary schools offered group piano instruction (Diehl, 1980).

Influences of Class Piano on American Piano Pedagogy

Although class piano declined quickly in public schools in the mid-19th century, due to budget shortfalls and difficulties recruiting well-trained teachers, its influence remains deeply rooted in American piano pedagogy. This pervasive influence tends to reinforce the image of the piano as the primary instrument through which one builds comprehensive musicianship skills. Such a concept gave the piano renewed importance in music education, and retained its prominence among all musical instruments in the public eye. Teaching materials for class piano such as the *Oxford Piano Course* (1929) became the prototype for subsequent methods for beginners of all ages. Concepts in the *Oxford Piano Course*, such as singing before or while playing the piece, transposition and harmonization skills, still remain important in contemporary methods. Many class piano teachers became pioneers of pre-school and adult piano methods. For instance, class piano instructors Fay Templeton Frisch and Ada Richter shifted their focus to

students of preschool ages and created age-appropriate materials for group instruction (Uszler, Gordon & Mach, 1991).

The traditional class piano format was adopted by instructors of fundamental keyboard courses for general students and non-piano music majors at most American colleges and universities. Similar to traditional class piano, these new university group piano courses greatly emphasized basic musicianship training such as transposition, harmonization and ensemble playing.

The rapid growth of class piano during the first half of the 20th century had an impact on the development of piano teaching training. As we have seen, the rapid growth of class piano courses in the public schools, with its special combination of piano teaching and class teaching, made it chronically difficult to find a sufficient number of teachers adequately trained in both components of class piano teaching skills. It is important to recognize that there is a significant difference between traditional private instruction and group instruction, and not every individual is equipped to execute both modalities of instruction capably without training. As Ella Mason Ahearn (1929) states, “The piano class teacher is one combining musicianship and a definite understanding of piano pedagogy with the knowledge of educational principles, psychology and group procedures.” (Richards, 1962, p 93) Just because a pianist may be able to teach well in a private setting does not necessarily mean that he or she will possess the skills necessary to teach effectively in a group setting. Conversely, a skilled educator lacking piano skills will also struggle to teach effectively. To solve this problem, many universities and colleges began to offer courses in group piano pedagogy. The number of American universities and colleges offering piano pedagogy courses increased from 43 to more than 150 between 1929 and 1931 (Richards, 1962). Today, although class piano almost vanishes in public schools, courses of

piano teaching became a standard even for piano performance major students. According to the standards of the National Association of Schools of Music, piano performance majors are required to take piano pedagogy courses in order to receive the bachelor degree, as it is assumed that the vast majority of pianists will find it necessary to at least supplement their income through teaching throughout their professional careers.

Influence of Scientific and Educational Psychology Research on Piano Instruction

- ***The development of preschool piano methods***

In addition to the influence of class piano, research related to educational psychology, medical science, and neuroscience has also made a great impact on piano instruction in second half of the 20th century, especially on preschool piano methods. In the 1960s and 1970s, due to the increase of full-time working mothers, the daycare business began to boom in the United States. Psychologists, parents, and educators all began to consider early childhood education to be as important as education at older ages. On top of it, theories from developmental psychologists, such as Montessori, Piaget, Vygotsky and Bruner, all suggest that “natural musical instincts are enhanced when music is experienced early” (Jacobson, 2015, p.276). With these influences, music education systems for preschool students such as Dalcroze’s, Orff’s and Kodaly’s program, which had already existed for decades in Europe, started to become popular in the United States (Uszler, Gordon & Mach, 1991).

As Dalcroze’s, Orff’s and Kodaly’s musical programs gained popularity, many writers of piano methods were encouraged to publish piano methods intended for the preschool beginner. Madeleine Carabo-Cone’s *A Sensory-Motor Approach to Music Learning* (1969), James Bastien’s *The Very Young Pianist* (1970), Robert Pace’s *Music for Moppet’s, Child’s Book* (1971), and Ann Collins and Linda Clary’s *Sing and Play* (1981) are all intended for teaching

preschool-age students. In the same period, methods published abroad, such as the *Suzuki Piano School* (1978), and *Yamaha Music Education System* (1978) also claimed to be appropriate for students at a preschool age. Among the listed methods above, Madeleine Carabo-Cone's *A Sensory-Motor Approach to Music Learning*, Robert Pace's *Music for Moppet's, Child's Book*, and *Yamaha Music Education System* were designed for group instruction.

In fact, methods for preschool students for both individual and group instruction have existed much earlier (since the 1930s). The earliest examples include *Louise Robin's Teaching Musical Notation with Picture Symbols* (1932), Ada Richter's *Kindergarten Class Book* designed for group instruction, and May B. Kelly Kirby and John Kirby's *Kindergarten Piano Method* (1939). More preschool piano books were published in the 1940s and 1950s, some of which influenced subsequent modern piano methods. The *Music Readiness Books* (1946) by Sister M. Xaveria present the earliest off-staff directional reading system with letter names appearing on note-heads. Frances Clark's *Time to Begin* (1955) presented another type of off-head reading approach by using two, three and four lines before introducing five-line and grand-staff reading. Both systems are still frequently used in current preschool and average-age methods.

However, many methods for preschool students were not published by major publishers until 1990s. The trend that preschool methods were heavily promoted by publishers in 1990s might relate to a great amount of research citing the multiple benefits of music education for children in the same period. The most famous of these studies is that of Rauscher, Shaw, and Ky (1993), which identifies the so-called "Mozart Effect"—the apparent improvement in spatial-temporal reasoning among those children who listen to the music of Mozart. The popularity of the "Mozart Effect" experiments inspired more adjacent research investigating the influence of music learning upon children's development. For instance, Bilhartz, Bruhn, and Olson (1999)

found the greatest improvement in Bead Memory⁷ scores (short memory) in those children who participated most fully in music exercises. Schellenberg (2006) found that the duration of music lessons in childhood was positively associated with IQ development. Several studies also found early music instruction corresponds with and can increase spatial-temporal reasoning abilities (Costa-Giomi et al., 2001; Gromko & Poorman, 1998; Hetland, 2000; Rauscher et al., 1997; Rauscher & Zupan, 2000).

The appearance and popularization of research correlating childhood music study with enhanced performance on IQ tests and the strengthening of neural connections listed above, aroused parents' awareness of the possible benefits of music education. Studies reporting the benefits of learning music at preschool ages encourage parents to enroll their young children in music programs. With the historical image of piano instruction as the fundamental musical class, piano instruction usually becomes parents' first choice for early childhood music study.

Although both group and private piano instruction for preschoolers has existed for more than eight decades, none of the previous studies cited above evaluating the results of group versus private piano instruction investigated students at preschool ages. As we have seen, the majority of the studies cited at the beginning of this chapter demonstrate that no significant differences in learning outcomes for beginning piano instruction was found between students taught privately or in a group setting; moreover, the format of group instruction—whether in dyads, small groups, or one individual to a piano—does not seem to impact the outcomes greatly. The important point to be drawn here is that the evidence suggests that group piano instruction is at least as effective for the beginning student as private instruction. Given the increasing trend

⁷ A test for short term memory by using beads

for preschool piano instruction, it is necessary to determine if similar results apply to the preschool-aged cohort. As studies (Butler & Walton, 2013; Master & Walton, 2013) have found the increase of motivation from preschool students when they conduct group-relevant tasks, group piano instruction may positively affect children at preschool age than older children. The present study exists in part to address this question, as the majority of the participants are 5 years old.

- ***Piano Teacher***

Teachers today benefit from research related to psychology and cognition in better understanding their students. Such research includes theories developmental stage and phase (Piaget, Brunner, Sosniak), learning styles (Barbe, Swassing, Milone, 1979), achievement motivation (Cain & Dweck, 1995; Heyman & Dweck, 1998), and studies investigating correlation between musical performance and the brain (Altenmüller, Kesselring, & Wiesendanger, 2006).

One of the most current and influential theories for piano teachers is the so-called “learning modalities” (Barbe, Swassing & Milone, 1979). The authors theorize that three primary learning modalities exist through which information is received and processed—the visual, auditory, or kinesthetic. A learner typically favors one of these learning modalities above the others. Familiarity with the theory of three learning modalities compelled some piano instructors to suspect that although learning to read music notation is important, the ability to read music is not the *only* avenue through which students may engage music and piano playing. Students with a strong auditory sense, for example, learn better by imitating what they *hear*, and students with a strongly developed kinesthetic/tactile sense might find it easier to understand musical concepts through body movements. Responding to the growing awareness of different

learning styles in the latter 20th century, piano methods began to embrace various activities to accommodate the different learning styles of children (Garcia, 2002).

Perhaps with less available research of peer-interaction, achievement motivation and cognitive development, these authors did not investigate the correlation between results and psychological and cognitive development in the previous related studies (Hucherson, 1955; Rogers, 1974; Diehl, 1980). In this study, I will investigate whether psychological and cognitive development correlate to the results of the current study.

Chapter Three

Method

This chapter explicates the design and experimental procedures of the current research, including recruitment of participants, class designs, teaching plans and a posttest.

Research Design

This study used a posttest-only quasi-experimental design to determine whether the relationship between group piano instruction and students' musical achievements differs significantly from that of privately instructed students. Students receiving group instruction served as the experimental group, while the privately instructed students constituted the control group.

To conduct this research, I recruited 48 children ranging in age from 5 to 7 with no formal music learning experience and divided into two groups. The experimental group of 24 participants took group lessons, and the control group of 24 participants took private piano lessons. All participants were expected to take 24 weekly piano lessons either in group or private piano instruction. Considering the possibility that a particular teacher's teaching approach, experience, and his/her personal preferences for a particular type of instruction can influence students' musical achievements, I decided to include two teachers in order to mitigate the possible biases arising from a particular teacher's approach to teaching. Each teacher was assigned to teach 12 private lessons, and four group lessons to groups consisting of three students. After completing 24 lessons, all participants were required to take a posttest evaluating their mastery of the five designated musical achievements: (a) music knowledge, (b) music reading, (c) aural discrimination, (d) kinesthetic response, and (e) performance skill.

Data Analysis

- **Independent variables**

Four factors were considered as independent variables: (a) instruction, (b) teacher, (c) age, and (d) gender. The mode of instruction—group or individual—constitutes the “main factor” or the determinative question to which this study is addressed. Three other factors are tested here to verify the consistency of the results pertaining to the main factor. The study also aims to discover whether the relationship of instruction to students’ musical achievements remains constant across different age and gender groups. It may be possible that one type of instruction is particularly effective for certain age and gender groups.

- **Dependent variables**

The musical achievements evaluated by this research comprise five topics: (a) music knowledge, (b) music reading, (c) aural discrimination, (4) kinesthetic response, and (5) performance skill. These five musical achievements were selected as dependent variables. The study expects that musical achievements between the experimental group and control group will show no significant difference—a so-called “null hypothesis”.

Definitions and Purposes of the Five Achievements

Playing a musical instrument is an activity involving multisensory connections between the visual, auditory and kinesthetic senses (Lee & Noppeney, 2011). Performing a piece from a score requires a musician to translate the notations comprehended visually into appropriate motor commands nearly instantaneously. In the meantime, his/her auditory sense functions to ensure that the visual-motor connection is correct, and helps adjust the player’s movement to correspond to the notation. It is also important for a musician to be able to transform the visual score to an

auditory representation (inner hearing) which helps him/her to imagine and anticipate the sound in mind, in order to perfect the quality of performance (Altenmuller, Weisendanger, & Kesselring 2006). The faster the connections operate between visual, auditory and kinesthetic (tactile) senses, the more thoroughly one can master musical performance.

In the present study, the instruction was structured to help students establish common musical knowledge and develop links between their visual, auditory, and kinesthetic senses, as measured by the five achievement categories I created. Some of these achievements resemble those evaluated by prior research; others are unique to the present study. Definition of these five achievements and their functions of developing sensory coordination are as follows:

1. *music knowledge* refers to the comprehension of musical symbols and notes. These symbols are the medium through which the player associates sound and movement. When the symbols are comprehended correctly, the player knows which specific movement(s) will correctly produce the notated sound.
2. *Music reading* indicates the visual ability required to recognize similar or identical musical patterns (sequences), musical intervals (steps and skips) and melodic direction as they appear in an actual notated melody. Simple note-spelling with stepwise and skipping movements are included in this section.
3. *Aural discrimination* refers to the aural ability to identify meters, written rhythmic patterns and melodic patterns through listening. This item tests the connection between the auditory and visual senses by requiring the student to match an aural example with notated examples.
4. *Kinesthetic Response* comprise four test items: (a) melody playback, (b) rhythmic

- clap back, (c) sight-reading, and (d) rhythmic reading. Melody playback and rhythmic clap back are items related to auditory-motor connections. As for sight-reading and rhythmic reading, these two items are involved with visual-motor connections. However, Hayward and Gromko (2009) found auditory skills are also fundamental to mastering sight-reading. Therefore, sight-reading should be considered as activities involving all three sensory modes, instead of two (visual/motor).
5. *Performance skill* refers to the ability to play an entire piece fluently with correctly executed notes, rhythms, and appropriate dynamic changes. The four items listed above serve as preparation for performance quality.

Experimental Procedures

In order to simulate the working environment and practical circumstances of real-world teachers, and obtain realistic results, I decided to conduct the research as a private teacher without financial assistance from sponsors or the university. This meant that the researcher accrued expenses in establishing the group instruction context, just as a private teaching studio would, primarily with regard to the acquisition of digital pianos sufficient to equip the group instruction context.

Location and Equipment

To conduct the research, I established a music studio on a major street in the city of Bellevue, Washington. The fifth largest city in Washington State, with a population of 134,400 people, Bellevue lies ten miles due east of Seattle. According to the demographic data provided

by the United States Census Bureau in 2010, the majority of residents are Caucasian (62.2%), followed by Asians (27.6%) and Hispanics (7%).

The studio size is about 800 square feet with a waiting area, an office and two classrooms. The first classroom is a large room of about 400 square feet that accommodates three Yamaha digital pianos and a Chickering baby grand piano. The large studio provides enough space for students to do group activities, and for parents to observe the class. This classroom is a suitable location for both group and private lessons. All three Yamaha digital pianos have weighted keys, enabling players to execute different volumes and articulations. The second classroom is smaller, and contains a Boston grand piano and two chairs. Both pianos are well-maintained and tuned regularly. Both classrooms have sufficient teaching supplies for the study, including a whiteboard, flash cards for note-spelling and rhythmic training and a stereo system to play music from CDs and mp3 files.

Pilot Study

The purpose of the pilot study was to allow the researcher to finalize the curriculum and the content of the posttest before the formal treatment began, to ensure that the design of the curriculum and the posttest are designed properly for children aged 5 to 7 years old. In total, five participants were recruited to join the pilot study from October 2011 to May 2012. Three of them at the ages of 5 and 6 received 50 minutes each of group instruction, and two of them at the age of 6 received 30 minutes of private instruction. All five participants finished 24 weekly instruction and completed the first version of the posttest. Observation of the participants'

weekly progress and the result of the posttest proved invaluable to assist the researcher in adjusting and fine-tuning the curriculum and the content of the posttest.

Recruitment of participants

The recruitment was facilitated through the researcher's personal and professional networks. The parents of the participating students received a 50% discount on tuition for their participation in the study. In total, the recruitment procedure took about five months to complete (from August 2012 to January 2013).

(1) Distribution of recruitment information

Due to my Asian ethnic background and my personal network of Asian acquaintances, I was able to post the recruitment information to members of the Chinese Microsoft Employee Network (CHIME) and a social group for Taiwanese mothers in Seattle on Facebook. The recruitment information was also posted in public areas such as super markets, local community centers, one art studio and one dance studio in Bellevue.

(2) Interview

Parents who were interested in allowing their children to participate in the study could contact me to set up an interview. The interview was used to ensure potential participants were qualified to participate in the study, and had no previous experience of taking piano or any music lessons. Those with previous musical knowledge or experience were excluded from participation. In addition to explaining the procedures and the curriculum of the study to the candidates and their parents during the interview, I performed several music activities to test the candidate's maturity of kinesthetic response, listening ability and reading ability. Since many

candidates were of a young age, and came from families whose primary language was other than English, I also had to make sure students were able to speak and understand English sufficiently, and were able to recognize the alphabet. At the end of the interview, the accepted participants were asked to sign the assent form (Appendix A), and their parents were asked to sign the parental consent form (Appendix B). as proof of agreement to participate the study. The participants and their parents could choose either group or private piano instruction unless their preferred instruction had no availability. If participants and their parents did not have a preference of instruction, I would make an arrangement for them based upon the availabilities.

(3) Participants

Forty-eight participants in all were selected from the pool of applicants for this study, all of them between the ages of 5 to 7. Twenty-four of the participants were girls, and 24 were boys. Forty of them came from Asian families, and eight of them came from families belonging to other ethnic groups, including Caucasian, Latin American and African American. The higher percentage of Asian participants in the study can be attributed to the researcher's personal background and the consequent higher distribution of recruitment information to local Asian communities. As for constituency of age groups, 30 participants were 5 years old, nine participants were 6 years old and nine participants were 7 years old.

Teachers

Both group and private piano instruction (treatment) during the experimental period were taught by the same two teachers. The first teacher was myself, an Asian female, with more than ten years of teaching experience young children. The second teacher was a Caucasian male graduate student at the University of Washington majoring in piano performance. While the

second teacher had no formal prior teaching experience, his musical knowledge, patience, and positive attitude in the face of challenges served him well in teaching young beginners.

During the pilot study, the second teacher received one month of teaching training from the researcher. During his training period, the second teacher studied the curriculum, observed, and co-taught several private and group lessons with the researcher in the pilot study. After formal lessons began, teachers continued to have weekly meetings to evaluate the progress of instruction in order to keep the teaching content as similar as possible in both group and private settings.

Class settings

Although group instruction and private instruction followed the same curriculum in this study, the inherent differences between the two different types of instruction, may lead teachers to make adjustments in class content. The two teachers were free in each context to choose musical activities or material they found most conducive to the students' acquisition of knowledge and skills. Thus, the content of each instructional setting, while similar, was not in all cases identical.

(1) Group piano instruction (experimental group)

Each group piano lesson consisted of three students and one teacher. To avoid the side effect caused by the age gap between participants (presuming a generalized higher degree of aptitude on the part of older children), I only included participants of the same age in the same instruction group. Participants completed the 24 class sessions with the same peers and teacher. Each class length was 50 minutes, plus 10 minutes of discussion with parents following the lesson. Parents were encouraged but not required to observe

the lessons. About 50% of the parents observed their child's lessons consistently. However, all parents were required to participate in the 10 minutes post-lesson discussion session in order to know the students' progress, and to be able to oversee the assigned homework.

As stated above, although teachers participating in this study were required to follow the same curriculum for both group instruction and private instruction, the different dynamics characteristic to the two types of instruction may lead teachers to make adjustments to their class content. As Guy Duckworth points out in his article, "Why Do You Advocate Three or More Teaching", a group piano instruction can provide "a social environment in which a student is supported and motivated, even challenged by peers." (as cited in Fisher, 2010) In a peer group setting, students not only learn from their teacher but also from their peers through observing and imitating them. With this understanding of the peer-group class dynamic, and due to the longer lesson session for group instruction, teachers are able to introduce group activities reinforcing music concepts, a lesson component inaccessible to those receiving private instruction. However, since each group instruction involves more than one student, the class content is less flexible, and the lesson pace is usually slower than that of the private instruction in order to ensure that all three students in the group are able to make adequate progress.

Although several activities invited or compelled peer interaction in the group lesson context, such as being a leader to create a rhythmic pattern for peers to follow, or listening and correcting the performance of their peers, the curriculum for the group lesson was not specifically designed for collaborative learning, as most activities still took place within the traditional context of a teacher-directed model. In a collaborative

learning curriculum, students are encouraged to learn something together with interaction. The teacher should not function as a knowledge provider but to help students cooperate each other in order to reach their common goal.

(2) Private piano instruction (control group)

For the purposes of this study, the teachers offering private instruction only taught one student in a 30-minute private piano lesson. As in the group instruction format, the parents of the privately-instructed students were required to meet with the teacher after each lesson in order to follow up on the progress of the participants and be able to administer homework similar to that given to the group-instructed participants.

One benefit of private instruction is that a student receives the full attention of his or her teacher. Meanwhile, the teacher can assess the student's personality and abilities more closely, and adjust the pace of the class in response to each student's needs and proclivities. Due to aspects of personality and psychology, some students might feel more comfortable in private instruction, and thus make better progress than they might in a group setting. A possible disadvantage of private instruction is diminished motivation resulting from the relative lack of stimulation from peers. Moreover, since the lesson time is shorter, there is less time available in the private lesson for activities designed to reinforce learning as there might be in the group instruction setting.

Treatment

The treatment of this study refers to the 24 weekly piano instruction. All 48 participating students were required to finish the 24 sessions of piano instruction before taking the posttest. Students were required to take a weekly lesson; however, some students skipped one or two

weeks of lessons due to illness or unexpected family situations. Missed lessons from absent weeks are made up in consecutive weeks until all students completed 24 lesson sessions. Students missing group instruction sessions received 15 to 20 minutes of private instruction as a make-up session.

It was not necessary for participants to begin the treatment at the same time. Therefore, they usually began the treatment within two weeks from the interview, with the exception of some group instruction units requiring additional time to fill all three spots in the group. After participants started the first lesson, they were not allowed to switch to another type of instruction. The entire treatment period began in September 2012 and was completed in August 2013.

(1) Curriculum

The purpose of the curriculum was to help students develop the five musical achievements tested in the posttest: (a) music knowledge; (b) music reading; (c) aural discrimination; (d) kinesthetic response; and (e), performance skill. To ensure the curriculum was adequate for students with different preferred sensory learning styles (See Chapter 1), each musical subject was introduced by multiple activities engaging the visual, auditory and kinesthetic senses. For instance, when introducing note values and rhythmic patterns, teachers might first present flashcards to introduce different note values and pattern, and then invite students to “clap back” the patterns they saw, an approach well-suited to the visually-oriented students in the group. Alternately, teachers might first clap the pattern to familiarize students with the sound, and show the flashcards later, an effective approach with aural-oriented students. Teachers might tap the rhythmic pattern on students' shoulders or hands to let them feel the pulse before

presenting flashcards or aural examples, ensuring that the kinesthetic-oriented students likewise had an opportunity to encounter the new concept in a manner befitting their orientation. As the sensory learning styles are not necessarily mutually exclusive, this multi-faceted approach provide multiple and mutually reinforcing opportunities for all students to gain an understanding of the concepts presented. In a group class, the teacher might apply all the activities when the class possibly includes students of different preferred learning styles. In a private lesson, the teacher might focus more on one type of activity dependent on the need of the individual student and their learning style.

All participants were basically treated by the same curriculum. However, due to different learning paces and learning styles between students and classes, teachers were permitted to change their teaching plans in order to help students master the class content. To ensure that the teaching content of both teachers' lessons were similar, I created a standard goal for each musical ability identified above that teachers could help participants achieve by the end of the treatment, and a sample of a teaching plan that covers the 24 sessions was provided to the teachers (See Appendix C).

Although the class content could be slightly varied, all participants were expected to achieve certain musical goals, as follows:

(1) All participants should be able to recognize basic music terms including time signatures (2/4, 3/4, 4/4), four dynamics symbols (*p*, *mp*, *mf*, *f*), rhythmic notations (eighth note, quarter note, half note, dotted half note, whole note, quarter-rests, and half rest), bar lines and double bar lines, measures, repeat signs, staves (five lines and four spaces), and pitch notation ranging from bass C (C3) to treble G (G4).

(2) All participants were expected to identify music directions and patterns by sight which include music direction (ascending or descending), intervallic distance between pitches (as defined by step or skip) and music patterns (melodic and rhythmic).

(3) All participants should be able to identify different sounds, patterns and basic forms by ear. They should be able to recognize the difference between high and low pitches, loud and soft dynamics, meters, music forms (A-B form and A-B-A form) and music patterns (melodic and rhythmic) by listening.

(4) All participants were expected to play back short melodic patterns, composed of C-five-finger-patterns with intervals of 2nds and 3rds, and rhythmic patterns through listening and sight-reading, composed of whole notes, half notes, quarter notes, and eighth notes.

(5) All participants were expected to learn any piece within the notation range from bass C (C3) to treble G (G4).

(2) Teaching materials

As stated in the introduction, the present study is designed to allow current piano teachers to understand and evaluate the respective impacts of private and group lessons upon the progress of students. In order to make the study more accessible to these teachers, I chose one of the most currently popular method book series to be the primary teaching material, as many teachers are already familiar and comfortable with its contents and design. These books are equally applicable to use in both the private lesson and group piano context.

I chose Level A and B of *My First Piano Adventure* by Nancy and Randall Faber as the primary materials for the curriculum of the experiment. *My First Piano Adventure* is a series of method books specially designed and intended for young beginners, and is commonly used by many private teachers in the United States. The series has three levels from A to C. Each level has a “Lesson Book” including a CD and a “Writing Book”. Each unit of the Lesson Books introduces new music concepts and terms with pieces for learning and performance that include the new terms. The CD, featuring all the playing pieces contained in the Lesson Books, is convenient for students to review when practicing at home. The Writing Books provide writing exercises to help learn the musical terms and concepts introduced in the Lesson Books. The curriculum for this study covered the content in Level A and Level B. I also selected a list of additional songs and listening excerpts from ‘*Making Music*’, *Grade-K and Grade 1* published by Silver-Burdett for group activities, dancing, singing and play to help motivate their learning interest and reinforce the music concepts presented in the lessons. Other lesson supplements include flashcards that are utilized to display music symbols and signs such as clefs, time signatures, dynamic marks, rhythm patterns and notations.

Posttest

Because no suitable test of musicianship and piano skills for preschool students currently exists, I decided to create one with reference to several published method books for young beginners, including several theory and sight-reading books. The test was reviewed by the second teacher and two professors from the doctoral committee to ensure it was appropriate to the age of the participants and the duration of the treatment, stringent enough to evaluate their

achievement levels accurately, and detailed enough to supply the data required by the experiment. The posttest (Appendix D) was administered to participants after they completed the treatment. The test is comprised of five parts corresponding to the goals of the curriculum discussed above:

(1) General music knowledge: The first part covers the meanings of music symbols. Participants were expected to identify the name of each symbol, and to be able to recognize and correct symbols that are positioned incorrectly. Identification of single notes presented on flash cards, note values, time signatures and meters were included in this part.

(2) Music-reading: This part of the exam tests participants' visual recognition of melodic direction, intervals (steps and skips), music patterns and forms. Identifying notes with the intervallic concept is also tested in this section.

(3) Aural discrimination: this part tests participants' accuracy of audio perception and its linkage to the corresponding visual image. Test items include the identification of simple music forms (AB or ABA forms), time signatures, aural recognition of melodic and rhythmic patterns, and the ability to recognize similarity and difference between phrases of music presented successively.

(4) Kinesthetic response: this part tests multi-sensory connections through four items: (a) melody playback; (b) rhythmic clap back; (c) sight-reading; and (d) rhythm reading. Items (a) and (b) test the connection from auditory perception to kinesthetic response. Item(c) involves visual, auditory, and kinesthetic modalities simultaneously. Item (d) tests the visual-motor skill.

(5) Performance skill: To evaluate performance ability, participants were asked to practice four assigned pieces without the teacher's help. The difficulty of each song is varied. Based on my evaluation, two of the pieces are relatively easy, one piece is of average difficulty, and one piece is more challenging for the students. During the final lesson, the four pieces and recordings of them were given to participants to practice at home. The evaluation of their performance is based on precision of the participants' execution of notes, rhythm, dynamic changes, and the overall fluency of their performance, as determined by the performer's ability to play at tempo without pausing or stopping.

For purposes of evaluation and grading according to a grading matrix developed by the researcher (see Appendix E), all tests of kinesthetic response and performance were video-recorded.

Test length

The maximum time allotted for the posttest was about 90 minutes. In consideration of the participants' young age and the demands placed by the exam on their ability to concentrate over a long period, the test was divided into two sessions of 45 minutes apiece. The interval between the two sessions was one week. In the first session, participants played two of the four performance pieces given a week prior to the test, and completed the test of music knowledge, music reading and aural discrimination. In the second session, participants played the other two performance pieces and completed the test of kinesthetic response.

Evaluation of the Tests

A perfect score on each part of the test comprised 40 points. Evaluation of the posttests was completed by two judges. One judge was myself, and the second judge was a piano teacher who was not involved with the study during the treatment period. However, not all parts of the posttest were graded by two judges. Since the questions had only one correct answer each, for the musical knowledge, music reading, and aural discrimination tests, one judge could grade objectively. Scores of kinesthetic response and performance ability, in contrast, were graded by two judges after review of the video clips. In the interest of neutrality, the videos were assigned identifying numbers for the judges, so that the participants' personal information remained confidential. Both judges followed the same grading procedure (see Appendix F). As shown in Table 3. 1, correlations between the two judges' scores were strong (Cohen, 1988). Therefore, scores from the two judges were averaged for use in further analyses.

Table 3. 1 Correlation of judges' scores (N=45)

Grade Items	Pearson's r
Melody Playback	.99
Rhythmic Clap-back	.74
Sight-reading	.86
Rhythmic Reading	.82
Performance Skill	.96

Note: Results are all significant at $p < .01$

Teacher Questionnaire

At the end of the experimental period, both teachers completed a questionnaire. The questionnaire was designed to find out teacher's attitude to the two different types of piano instruction before and after the experimental period. Discussion of teacher questionnaire will be presented in the next chapter (Appendix H).

Chapter Four

Results

This chapter presents the results of the experiment. The main purpose of this study is to determine the relationship between the two types of piano instruction—group and individual—and the respective musical achievements of young beginning piano students. To reprise, the achievements selected include (1) knowledge of music; (2) music reading; (3) aural discrimination; (4) kinesthetic response; and (5) performance skill. Each achievement outcome was evaluated according to the scores from the 5-part posttest that participants accomplished after the 24 weeks of treatment. The full score on each part is forty points. A higher score indicates a better achievement. The study also inquired into whether other factors, including teachers, as well as the age and gender of participants, would influence the result of the main factor (modes of instruction) and the musical achievements cited above.

Hypothesis

The musical achievements of piano beginners receiving group instruction will have no significant difference from piano beginners receiving private instruction. Additional variables such as teachers, age and gender of participants should not significantly change the relationship between the mode of instruction and the five musical achievements. Teachers, age and gender of participants should make no significant impact upon the musical achievements of young beginners.

Report of Results

Forty-eight participants from age 5 to 7 were recruited for the treatment of 24 weekly piano instruction and 47 participants completed the entire treatment. During the posttest period, two participants left without accomplishing the test. Therefore, results of this study are dependent on the 45 participants ($N=45$) who completed the posttest. Among the 45 participants who completed the treatment and the posttest, 22 participants were treated by group piano instruction which is considered as the experiment group ($n_{\text{experiment}}=22$). Another 23 participants were treated by private instruction which is identified as control group ($n_{\text{control}}=23$).

One teacher taught 22 participants —10 participants in the experimental group, and 12 participants in the control group. The other teacher taught 23 participants —12 participants in the experimental group, and eleven participants in the control group. As for the age distribution, 27 participants were 5 years old, and 18 participants were between the ages of 6 and 7. Gender distribution is as follows: 25 males and 20 females (Table 4.1).

Table 4. 1 Participant Distribution

		Group ($n=22$)	Private ($n=23$)	Total $N=45$
Teacher	One	10	12	22
	Two	12	11	23
Age	5	13	14	27
	6 & 7	9	9	18
Gender	Male	13	12	25
	Female	9	11	20

Method of Analysis

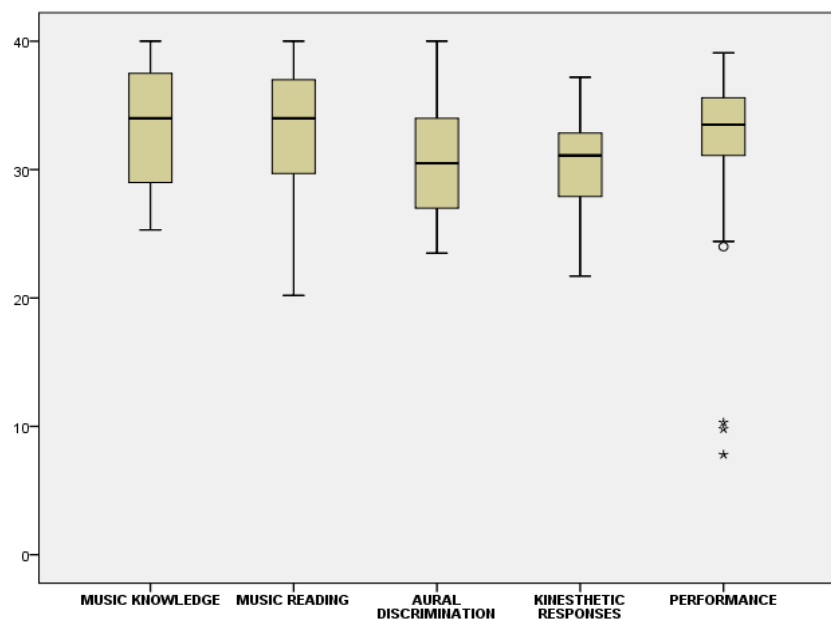
I selected the factorial multivariate analysis of variance (Factorial MANOVA) as the primary analysis method. Factorial MANOVA simultaneously investigates the relationship between multiple independent variables and multiple dependent variables. It can also analyze interactions⁸ between multiple independent variables, allowing the researcher to determine if the relationship of one independent variable to dependent variables changes when another independent variable is involved. Besides investigating the relationship between the four independent variables and the five musical achievements, this study intends to discover if the teacher, age and gender of participants alter the relationship of instruction and the five musical achievements. These investigations are undertaken by examining the *interactions* between instruction and the other three factors. Although MANOVA can analyze interactions between the four independent variables of the current study, I was unable to test some of these interactions due to the limited number of students. Therefore, interactions not related to the hypothesis are excluded from the test models. Besides the four independent variables—(1) instruction, (2) teacher, (3) age and (4) gender, the study only includes three interactions in the test model—(1) instruction and teacher, (2) instruction and age, and (3) instruction and gender. If any independent variable and interaction showed its significant association with musical achievements in general, Factorial ANOVA—another analysis model—is employed to test its relationship to each individual achievement.

⁸ An interaction between two factors occurs whenever the mean differences between individual treatment conditions or cells, are different from what would be predicted from the overall main effects of the factors (p.482) (Frederick J. Gravetter; Larry B. Wallnau, 2009)

Outliers

Three extremely low outliers⁹ were found in the achievement of performance. Figure 4.1 presents score distributions of the five musical achievements in the form of boxplots. The three stars under the category of Performance represent three extremely low scores averaging about 10 points apiece. To examine whether these outliers influence the result, I tested two analyses—one including outliers, and the other excluding them. Results showed no significant difference between the two analyses. Since there is no outlier in the other four achievements tested, and the three outliers does not significantly influence the result, I decided to include the outliers in data analysis.

Figure 4. 1 Distribution of Five Achievement



⁹ In statistic, outliers refer to samples with extremely high or low scores which could affect the results.

Relationship of Instruction and Musical Achievements

The result of the Factorial MANOVA revealed instruction not significantly associated ($p > 0.05$) with musical achievements in general. This result supported the main hypothesis that the musical achievements of piano beginners who receive group instruction did not differ significantly from piano beginners who receive private instruction (Figure 4.2, Table 4.2). Figure 4.2 compares the score distribution of the five achievements between participants in private instruction and group instruction. Boxplots (Figure 4.2) of the two instruction types present the similar distribution between two different modes of piano instruction in all five achievements.

Figure 4.2 Score Distributions of Five Achievements between Private and Group Instruction

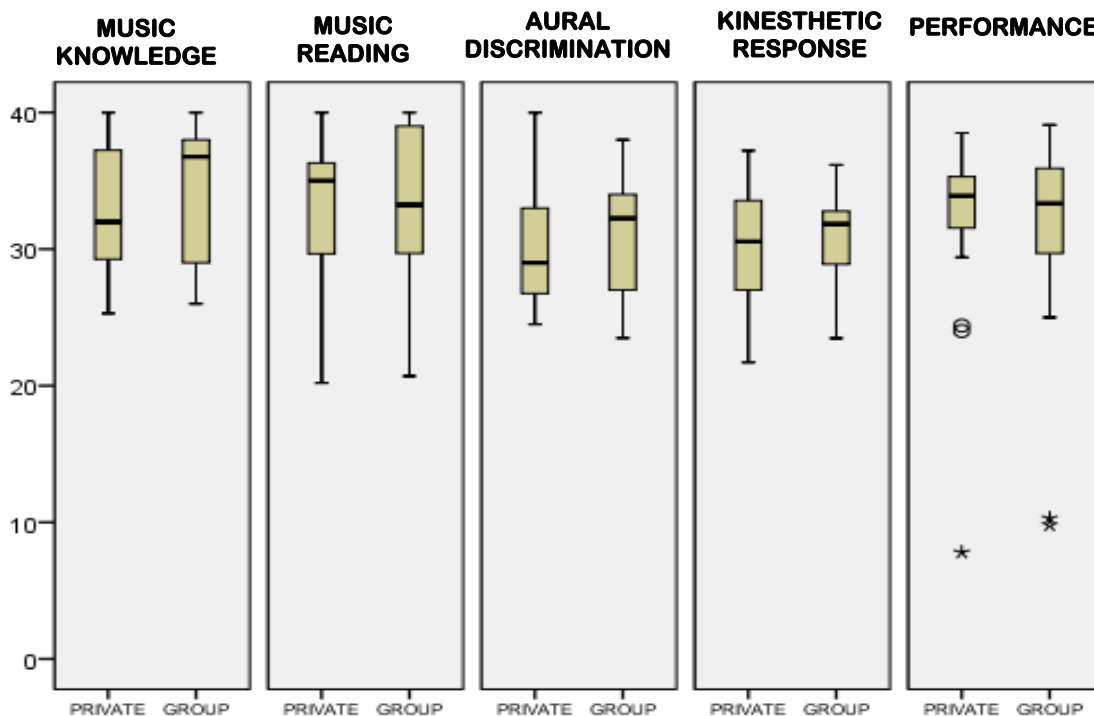


Table 4.2 Comparison of Musical Achievements between Group- and Privately-instructed Students

Dependent Variables	Group (n=22)				Private (n=23)				F	p	Effect Size
	M	SD	95% CI		M	SD	95% CI				
			LL	UL			LL	UL			
1 Music Knowledge	34.08	1.01	32.03	36.13	32.77	0.98	30.79	34.74	0.88	.36	.02
2 Music Reading	32.99	1.13	30.70	35.29	33.77	1.09	31.57	35.98	0.25	.62	.01
3 Aural Discrimination	31.15	0.96	29.21	33.10	30.88	0.92	29.01	32.76	0.04	.84	.00
4 Kinesthetic Response	30.90	0.70	29.48	32.33	30.70	0.68	29.33	32.07	0.04	.84	.00
5 Performance Skill	31.18	1.60	27.94	34.42	32.50	1.54	29.37	35.62	0.35	.56	.01

Relationship of Teachers and Musical Achievements

The result of the Factorial MANOVA supported the hypothesis that teachers did not strongly influence to students' musical achievements. The distribution of the participants' scores in the five achievements is similar between two teachers (Figure 4.3, Table 4.3).

Figure 4.3 Score Distributions of Five Achievements between Two Teachers

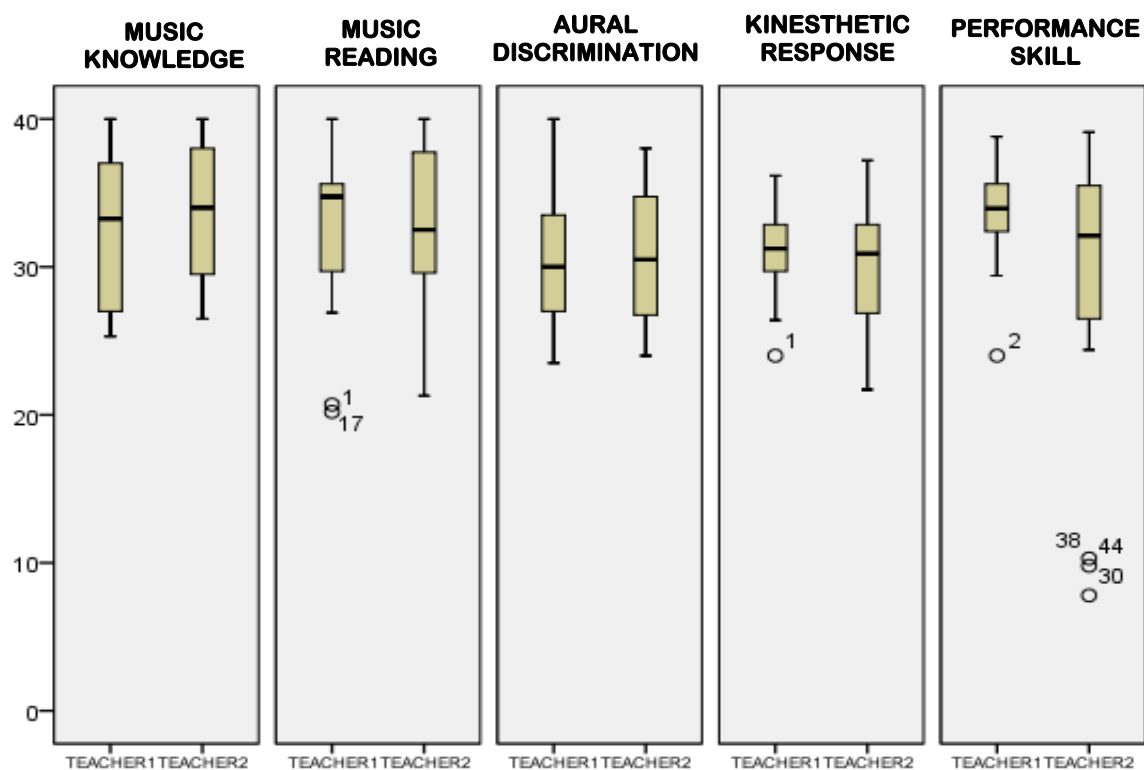


Table 4.3 Comparison of Musical Achievements between Students of the two Teachers

Dependent Variables	1 st Teacher (n=22)			2 nd Teacher (n=23)			F	p	Effect Size		
	M	SD	95% CI		M	SD				95% CI	
			LL	UL						LL	UL
1 Music Knowledge	32.69	1.00	30.66	34.72	34.16	0.99	32.16	36.16	1.09	.30	0.03
2 Music Reading	33.49	1.12	31.22	35.76	33.28	1.11	31.04	35.52	0.02	.90	0.00
3 Aural Discrimination	30.73	0.95	28.81	32.66	31.30	0.94	29.40	33.20	0.18	.68	0.01
4 Kinesthetic Response	31.00	0.70	29.59	32.41	30.60	0.69	29.21	32.00	0.16	.69	0.00
5 Performance Skill	33.68	1.58	30.48	36.89	30.00	1.56	26.83	33.16	2.74	.11	0.07

Relationship of Participants' Age and Musical Achievements

Given that the result of MANOVA revealed the p value was very close to the significance level (Wilks' $\lambda=0.726$, $F[5,33]=2.49$, $p=.051$, $\eta^2=.27$), I decided to run factorial univariate analyses (factorial ANOVA) to find out whether the musical achievements revealed significantly different between two age groups—aged 5 and aged 6 to 7. The result of the factorial univariate analysis showed significant difference between the two age groups on three of the five musical achievements—music reading ($F [1,37]=5.74$, $p<.05$, $\eta^2=.13$), aural discrimination ($F [1, 37]=5.52$, $p<.05$, $\eta^2 =.13$), and kinesthetic response ($F [1,37]=6.19$, $p<.05$, $\eta^2 =.14$). Since the effect size (η^2 =partial eta squared) of these three achievements are considered medium to large, in the terms established by Cohan (1988)¹⁰, the study concludes that students at the age of 6 and 7 had achieved significantly better in the categories of *music reading*, *aural discrimination*, and *kinesthetic response* than did students at the age of 5. This finding rejected the hypothesis of null relationship between age and all five musical achievements.

Figure 4.4 presents the score distribution between participants at the age of 5 and participants at the ages of 6 to 7. The boxplots below show that the scores of participants at the ages of 6 to 7 in music reading, aural discrimination and kinesthetic response are clearly higher than those of participants at the age of 5. Table 4 showed the p-values of music reading, aural discrimination and kinesthetic response which confirm the significance of age.

¹⁰ Cohan's suggestion of small, medium and large effect sizes: small: 0.01; medium:0.06; large: 0.14

Figure 4.4 Score Distributions of Five Achievements between 5-year-olds and 6- to 7-year-old

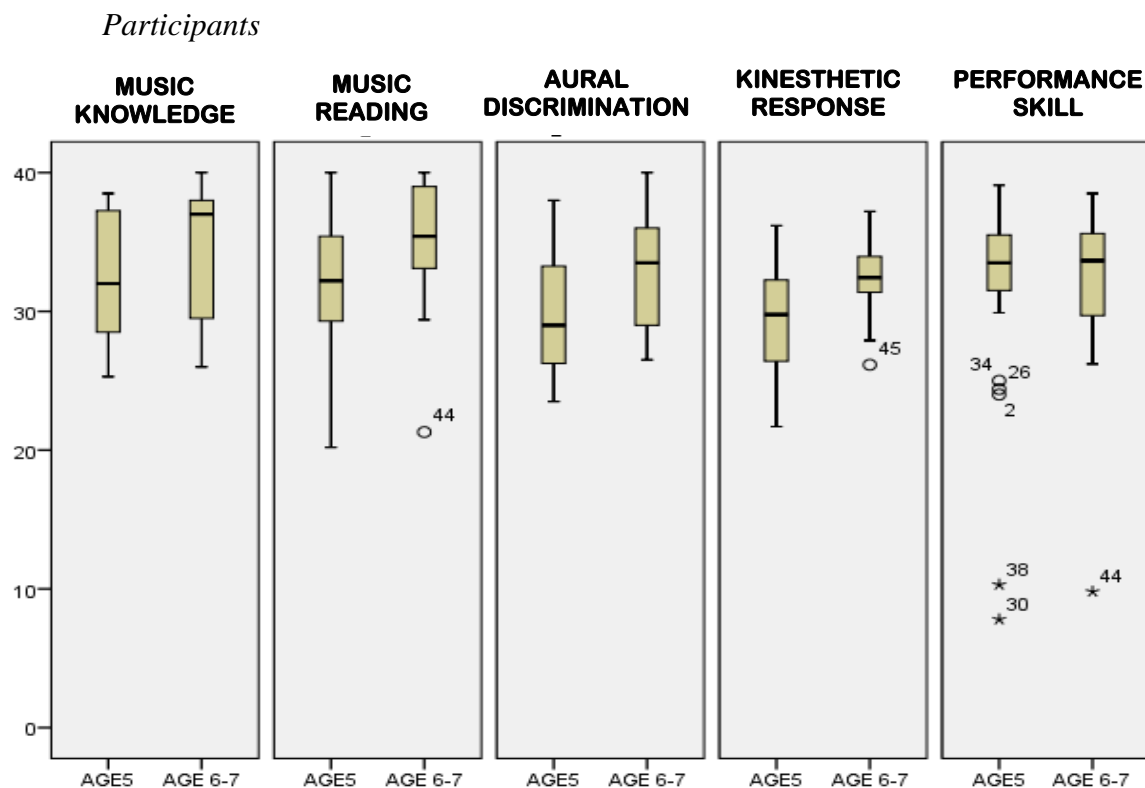


Table 4. 4 Comparison of Musical Achievements between Participants at Age 5 and Ages 6 to 7

Dependent Variables	Age 5 (n=27)			Age 6 & 7 (n=18)			F	p	Effect Size		
	M	SD	95% CI		M	SD				95% CI	
			LL	UL						LL	UL
1 Music Knowledge	32.42	0.88	30.64	34.19	34.43	1.11	32.18	36.68	2.01	.17	.05
2 Music Reading	31.48	0.98	29.49	33.46	35.29	1.24	32.78	37.80	5.74*	.02*	.13
3 Aural Discrimination	29.43	0.89	27.75	31.12	32.60	1.05	30.47	34.74	5.52*	.02*	.13
4 Kinesthetic Response	29.57	0.61	28.33	30.80	32.03	0.77	30.47	33.60	6.19*	.02*	.14
5 Performance Skill	31.48	1.39	28.67	34.29	32.20	1.75	28.65	35.75	0.10	.75	.00

* indicates the value pass significant level ($p < .05$).

Relationship of Participants' Gender and Musical Achievements

The Factorial MANOVA revealed no significant difference in the results of the five achievements between male and female participants. This finding supported the null hypothesis that the variable of gender was not strongly associated to musical achievements. The distribution of participants' scores in the five achievements are similar between boys and girls (Figure 4. 5). The p-values from Table 4. 5 also suggests that gender was not associated with musical achievements.

Figure 4. 5 Score Distributions of Five Achievements between Boys and Girls

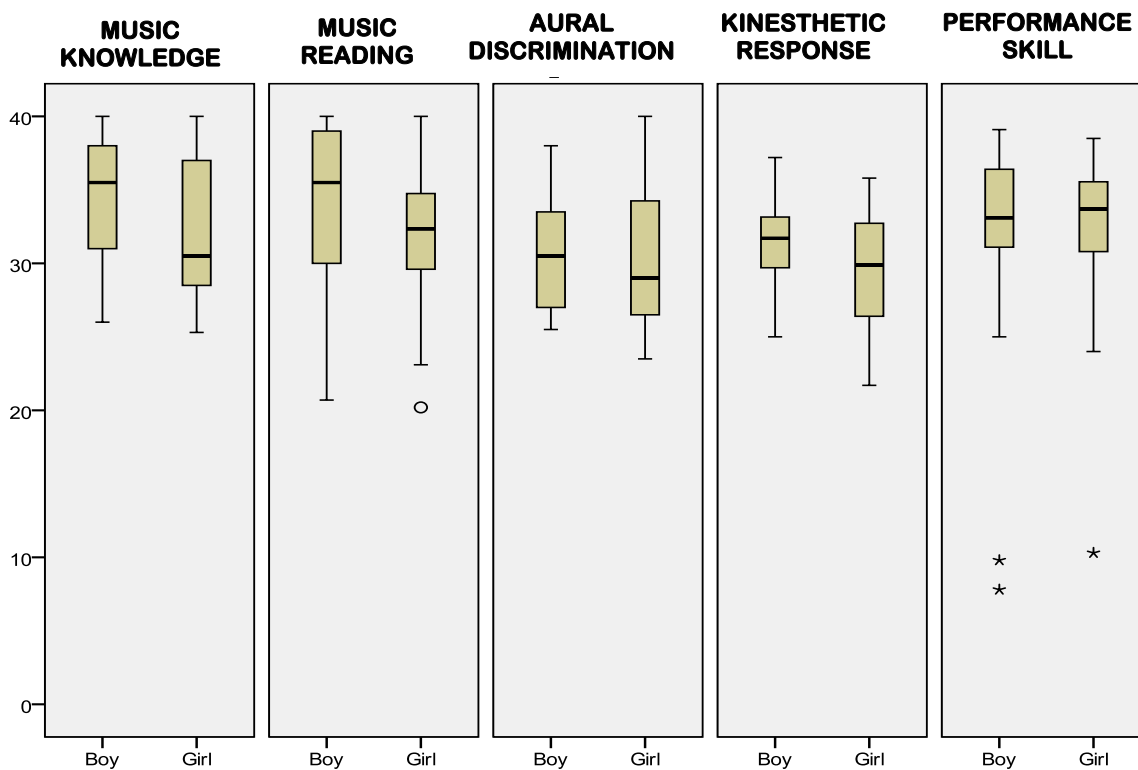


Table 4. 5 Comparison of Musical Achievements between Boys and Girls

Dependent Variables	Boy				Girl				F	p	Effect Size
	M	SD	95% CI		M	SD	95% CI				
			LL	UL			LL	UL			
1 Music Knowledge	33.99	0.92	32.14	35.84	32.86	1.06	30.72	35.01	.66	.42	.02
2 Music Reading	34.42	1.02	32.34	36.49	32.35	1.18	29.96	34.75	1.76	.19	.05
3 Aural Discrimination	31.14	0.87	29.38	32.89	30.90	1.00	28.87	32.93	.03	.86	.00
4 Kinesthetic Response	31.54	0.64	30.25	32.83	30.06	0.74	28.57	31.55	2.34	.14	.06
5 Performance Skill	31.91	1.45	28.98	34.83	31.77	1.67	28.39	35.16	0.00	.95	.00

Interactions

Analyses of the three interactions—(1) instruction versus teacher, (2) instruction versus age, and (3) instruction versus gender— could investigate whether null relationship between instruction and musical achievements remain the same when comparing participants taught by two different teachers, two age groups and between genders. Among the three tested interactions in the Factorial MANOVA, interactions between *instruction versus teacher*, and *instruction versus gender* revealed no significant relationship on the five achievements. These two null interactions supported the null hypothesis that teacher and gender did not change the null relationship between instruction and the five musical achievements.

However, *interaction between instruction versus age* was found to be significant (Wilks' $\lambda=0.692$, $F[5, 33]= 2.85$, $p<.05$, $\eta^2=.30$). This interaction required further study of the univariate

analysis (ANOVA) in order to distinguish which achievements were significantly related to this interaction. The result showed the significant interaction between instruction and participants' age *only* appeared in the achievement of Kinesthetic Response ($F[1, 37]=12.49, p<.01, \eta^2=.25$). The large effect size ($\eta^2>.14$) assured the significance of this interaction.

Figure 4. 6 presents this significant interaction between instruction and age. Within participants at the age of 5, participants in group instruction had a higher score distribution than those participants receiving private instruction. By contrast, participants at the ages of 6 to 7 who received group instruction had a lower score distribution than those participants receiving private instruction. When comparing participants in private instruction (white boxplots), participants at the ages of 6 to 7 achieved much higher scores than participants at the age of 5. In group instruction (grey boxplots with lines), score distributions between participants at the age of 5 and those aged 6 and 7 are much closer. The medians (depicted by the middle line in each boxplot) between the two age groups are close, but the distribution of the upper 50% is higher at the age of 5 than it is at the ages of 6 and 7. The distribution of the lower 50% also has a similar range between the two age groups (See Appendix H for a guide to interpreting boxplots). A comparison of the mean scores between participants at the age of 5 and participants aged 6 and 7 receiving group instruction shows a close similarity between the two age groups (Table 4. 6). However, among those participants receiving private instruction, the difference of mean scores between the two age groups is wider.

Figure 4. 6 Distribution from Kinesthetic Response between instruction and age groups

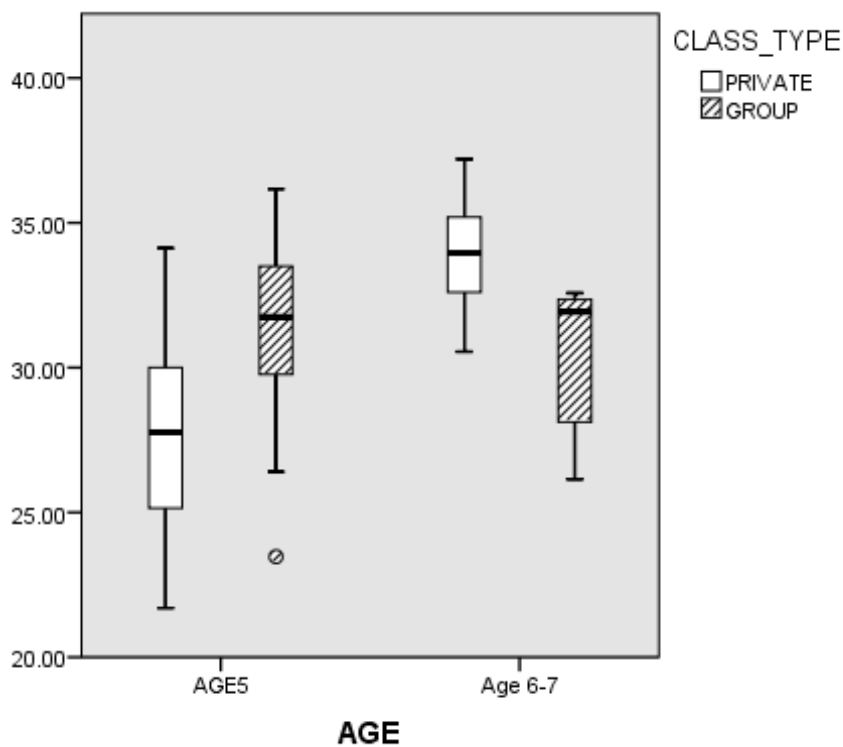


Table 4. 6 Interaction between Instruction and Age in Kinesthetic Response

	GROUP			PRIVATE		
	n	M	SD	n	M	SD
AGE 5	14	31.42	0.88	13	27.72	0.85
AGE 6-7	9	30.38	1.10	9	33.68	1.08

Results of sub-items from kinesthetic response

The achievement of kinesthetic response comprises four sub-items: two items for auditory-motor skill (melody play-back and rhythmic clap-back) and two items for visual-motor integration skill (sight-reading and rhythmic reading). As the null hypothesis was rejected in the achievement of kinesthetic response due to a significant difference between two age groups, and a significant interaction between instruction and age, I decided to investigate these four sub-items further in order to find out which item(s) predominantly influenced the results.

In addition, several previous studies found students achieve significantly better on sight-reading by taking group piano instruction across different age ranges (Hutcherson,1955; Rogers, 1974; Diehl,1980). Therefore, it is important to investigate whether the result of sight-reading is supported or rejected from the current study.

To make this further investigation, I conducted another factorial MANOVA by using the same model with four independent variables and three interactions. However, the dependent variables were changed to (1) melody playback, (2) rhythmic clap-back, (3) sight-reading, and (4) rhythmic reading. Result of the MANOVA showed a significant interaction between age and instruction (Wilks' $\lambda=0.73$, $F[4, 34]= 3.19$, $p<.05$, $\eta^2=.27$). Results of further univariate analysis (ANOVA) revealed a significant interaction between age and instruction with regard to (1) melody play-back($F[1,37]=9.33$, $p<.01$, $\eta^2=.20$) , (2) rhythmic play-back ($F[1,37]=5.57$, $p<.05$, $\eta^2=.13$), and (3) sight reading ($F[1,37]=8.07$, $p<.01$, $\eta^2=.18$), but not on rhythmic reading (Table 4.7).

Participants at the age of 5 in group instruction achieved higher scores on all four sub-tests than the 5-year-old participants in private instruction, including the rhythmic reading component,

in which no significant interaction between age and instruction is evident (Table 4.7, Figure 4.7). They also outperformed older participants in group instruction on three sub-items except the rhythm reading. By contrast, participants at the ages of 6 and 7 in private instruction evinced higher achievements in the categories of melody play-back, rhythmic play-back, and sight-reading than other groups. However, in the category of rhythm reading, score from 5-year-old participants in group instruction and 6- and 7-year-old participants in group and private instruction appears more evenly distributed.

Although participants at ages 6 and 7 made significantly higher scores on the achievement of kinesthetic response (Table 4. 4), the same result did not appear on the sub-items (Table 4. 8, Figure 4.8). This difference is caused by the sum of score in the achievement of kinesthetic response. The difference between two age groups are not significant, but participants at ages 6 and 7 in general achieved slightly higher scores on all four sub-items than participants at the age of 5. Figure 4. 8 also shows that participants at the age of 5 had a much wider range of score distribution in all four sub-item than older participants. This disparity of range is not obvious when considering the mean score. By contrast, participants at ages 6 and 7—especially those who achieved in the top 50% in sight-reading and rhythmic reading—were more tightly clustered in a similar range. Therefore, when comparing the means from the sum of the scores (score of kinesthetic response), the difference between the two age groups does become significant.

The results from the current sight-reading tests did not support results from the studies of Hutcherson (1955), Rogers (1974) and Diehl (1980) which had concluded that participants in group instruction achieved much better than those in private instruction, since participants at ages 6 and 7 in private instruction outperformed in sight-reading. Findings of the better sight-reading results from participants at the younger age in group instruction and at the older age in private instruction, opposed Diehl's findings for the older age group.

Table 4. 7 Comparison of Sub-items from Kinesthetic Response between Participants at Age 5 and Ages 6 to 7

Dependent Variables	Age 5 (n=27)		Age 6 & 7 (n=18)		F	p	Effect size
	Group	Private	Group	Private			
	M(SD) [95% CI]	M(SD) 95% CI	M(SD) 95% CI	M(SD) 95% CI			
1 Melody Playback Total	7.6 (0.39) [6.83, 8.42]	6.1(0.38) [5.33,6.87]	6.99(0.50) [5.99, 8.00]	8.18 (0.49) [7.20, 9.17]	9.34	.004*	.20
2 Rhythm Clap-back	8.07(0.24) [7.60, 8.56]	7.49 (0.23) [7.02, 7.96]	7.72 (0.30) [7.11, 8.33]	8.41 (0.30) [7.81, 9.01]	5.57	.02*	.13
3 Sight-reading	7.76 (0.39) [6.98, 8.54]	6.46 (0.37) [5.70, 7.22]	7.33(0.49) [6.34, 8.31]	8.51(0.48) [7.54, 9.48]	8.07	.007*	.18
4 Rhythmic reading	8.39 (0.30) [7.79, 9.00]	7.57 (0.29) [6.99, 8.15]	8.75 (0.37) [8.00, 9.51]	8.55 (0.37) [7.81, 9.30]	0.88	.36	.02

Figure 4. 7 Interaction between Instruction and Age on four sub-items in Kinesthetic Response

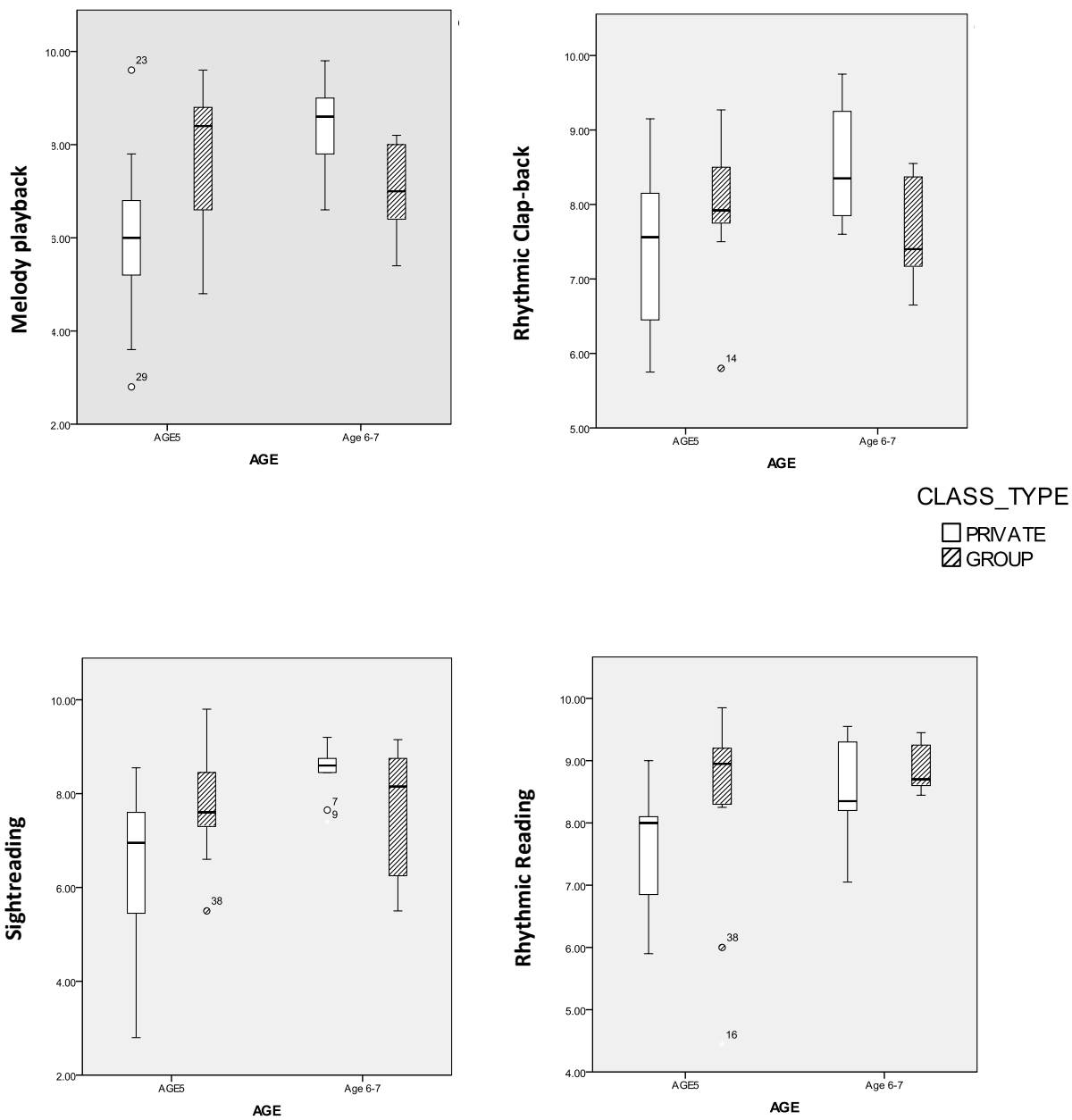
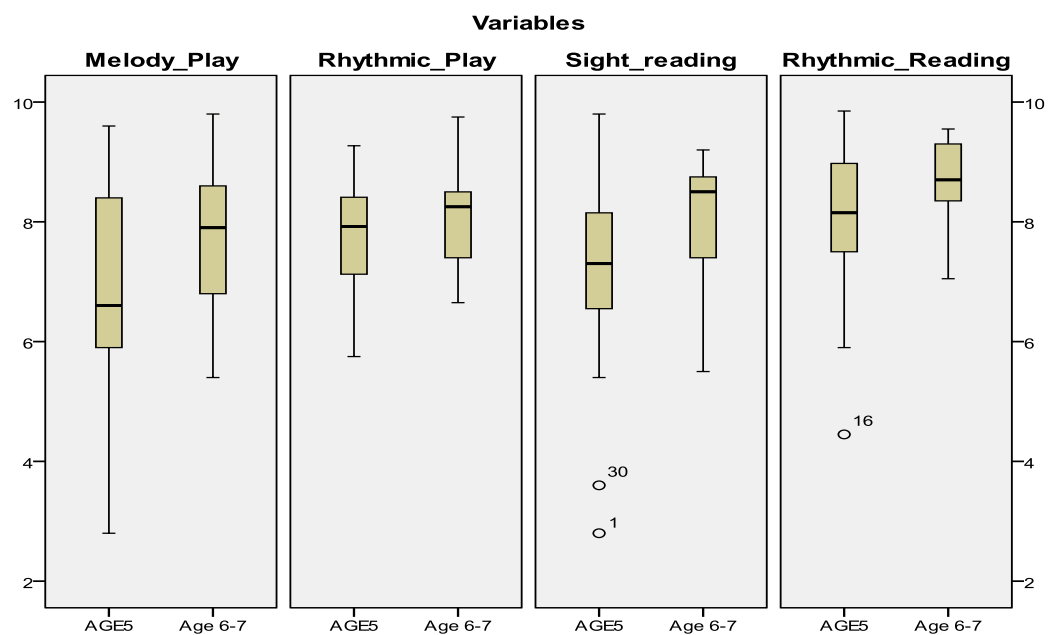


Table 4.8 Comparison of Four Sub-items from Kinesthetic Response between Participants at Age 5 and Ages 6 to 7

Dependent Variables	Age 5 (n=27)				Age 6 & 7 (n=18)				F	p	Effect Size
	M	SD	95% CI		M	SD	95% CI				
			LL	UL			LL	UL			
1 Melody Playback	6.86	0.27	6.31	7.42	7.59	0.35	6.89	8.29	2.66	.11	.07
2 Rhythm Clap-back	7.78	0.17	7.45	8.12	8.06	0.21	7.64	37.80	1.06	.31	.03
3 Sight-reading	7.11	0.27	6.56	7.65	7.92	0.34	7.23	8.61	3.46	.07	.09
4 Rhythmic Reading	7.98	0.21	7.56	8.40	8.65	0.26	8.12	9.18	3.98	.05	.10

* indicates the value pass significant level.

Figure 4. 8 Score Distribution of the Four Sub-items between Two Age Groups



Teacher Questionnaire

After the experimental period, the second teacher and I completed a questionnaire designed to investigate teachers' attitudes toward both types of piano instruction (appendix G). The questionnaire comprises three parts. Part I contains the first 10 questions aimed at our expectations of teaching the two different types of instruction before taking this teaching position. Part II (Question 11 to 28) focuses more on evaluating their attitude toward each instruction. In Part III, teachers were expected to report back about their teaching experience in this experimental study, and express how they see the changes between different age and gender groups, and two different modes of piano instruction.

Before teaching this experimental research, two teachers had different expectations on the two different types of instruction. The second teacher strongly preferred teaching private lesson than group lesson before teaching the experiment. He also predicted private lesson is more adequate for young beginners as they should be more concentrate in private lesson. Although I had no preference on teaching either instruction, I felt group instruction should be more suitable for young beginners because from my previous experience, students were motivated in group lesson.

After the experimental period, both teachers had some different opinions. The second teacher changed his viewpoint. Instead of private instruction, he considered group instruction is more beneficial for young beginners although he still prefers to teach private lesson as he felt more comfortable than teaching group lesson.

Before teaching the treatment, I considered group instruction should be more adequate for young beginners. However, after the experimental period, I felt that the relative benefits of

the two different instruction modalities might correlate to the differing personalities of the students. For instance, group instruction in general can easily motivate extroverted students who find it easy to adapt to a new environment and interact with new peers. By contrast, for the introverted students who are shy and find it difficult to interact with new peers, private instruction might be a more comfortable instruction setting to them to begin. When students—especially younger students—become hyperactive with their peers, and the teacher finds it difficult to maintain control of the class, private lesson becomes a better choice, as group instruction might impair their learning process.

Both of us shared several similar comments. For instance, we both found group activities and games helped to increase students' motivation. However, it was difficult to control the lesson pace in group instruction, especially when there was a gap in ability between students, and it was difficult to distribute equal attention to all students. In general, students at age 5 in group instruction were more motivated than older students since they were more willing to participate in activities and follow the teacher's authority. By contrast, students at ages 6 and 7 were less interested in joining group activities and more easily distracted by other peers. As for private instruction, we both felt the advantage to be its flexibility in customizing the curriculum based upon each student's need. In general, students ages 6 and 7 progressed faster and had better concentration in the private lesson than students at the age of 5.

Chapter Five

Summary and Discussions

Result Summary

A summary of the results is presented below:

- The results supported the main hypothesis that the mode of instruction has no significant relationship to the musical achievements of young piano beginners.
- The non-significant interaction between the teacher and mode of instruction supported the hypothesis that the teacher did not influence the null relationship between mode of instruction and the musical achievements.
- Comparison of musical achievements between participants taught by myself and the participants taught by the second teacher revealed no significant difference. Therefore, this result revealed that a difference in teacher did not introduce significant bias into the participants' musical achievements.
- Participants at age 5 receiving group instruction exhibited significantly better kinesthetic achievements than those who received private instruction. By contrast, participants in private instruction at ages 6 and 7 exhibited significantly better kinesthetic achievements than those in group instruction.
- Participants at ages 6 and 7 achieved significantly higher scores in music reading, aural discrimination, and kinesthetic response, than participants at the age of 5. This finding rejected the hypothesis of a null relationship between the participants' age and musical achievements.

- The results in the four sub-items constituting the achievement of kinesthetic response (melody playback, rhythmic clap-back, sight-reading, and rhythmic reading) revealed that 5-year-old participants in group instruction outperformed those who took private instruction in all four sub-items. Surprisingly, the group-instructed 5-year-olds also achieved better test results on melody playback, rhythmic clap-back and sight-reading than 6- and 7-year-olds who participated in group instruction. However, privately-instructed participants at the ages of 6 and 7 achieved the highest average overall scores in melody playback, rhythmic clap-back and sight-reading. Participants at the age of 5 in group instruction and participants at ages 6 and 7 in both group and private instruction achieved similar results in rhythmic reading.
- The non-significant interaction between gender and instruction revealed that neither male nor female students showed a preference for a particular instruction mode. The result also supported the null hypothesis that there is no significant association between gender and musical achievements.

Discussion

The preceding chapter, and the first part of the current chapter, have attempted an objective presentation of data obtained by the current study. In what follows, I further explicate and clarify the results, and attempt to illuminate and clarify the possible factors underlying them, with reference to results obtained by previous related research, and how the current research either supports or opposes the results of that research. I draw on related research in childhood development and educational psychology to support the suppositions at which I arrive.

Instruction

As the two modes of instruction showed no significant difference regarding their influence on musical achievements, the current study supports the first part of Hutcherson's study (1955) for participants that concluded neither private nor group instruction has a significant influence on musical achievements of students at the ages of 7 to 10. Nonetheless, this result opposes Rogers' study (1974), which concludes that students whose age ranged from 7 to 9 years in group instruction had significantly better musical achievements than privately-instructed peers. Of the research cited, it is the only study asserting that group instruction is significantly more efficacious than private instruction in developing students' capabilities. Diehl (1980) attributes this anomalous positive outcome to the unusually long instructional exposure time for Rogers' group instruction (105 minutes in group instruction versus 30 minutes in private instruction per week). Diehl found that with the sole exception of sight reading, the mode of instruction had no significant influence on the five achievements investigated. Students in group

instruction achieved significantly higher scores in sight reading than students in private instruction.

After considering recent studies reporting the significantly more positive influence of cooperative learning¹¹ models on students' academic and musical achievements than that of the traditional didactic model of instruction, I suspect that the apparent absence of a relationship between the mode of instruction and musical achievements in both the present and previous studies might differ if the curriculum were designed based upon a cooperative learning paradigm appropriate for music instruction. Past research has cited the positive influence of peer interaction upon children's cognitive development such as logic, spatial reasoning, and social perspective (O'Donnell, 1999). Cooperative learning also appears to have a positive influence on academic achievements such as math, science and reading (Ebrahim, 2012; Kuntz, McLaughlin & Howard, 2001; Gillies, 2003; Kutnick, Ota & Berdondini, 2008).

Much recent music education research had discovered that cooperative learning also appears to exert a positive influence on musical achievements such as listening skills (Smith, 1980; Holloway, 2004), rhythmic reading (Johnson 2011) and music creativity (Wiggins, 1999). However, the cooperative learning paradigm does not consist of merely putting students together in a group setting and hoping for the best. The teacher is still required to teach children *how* to interact with peers for more efficient interactive learning, as children tend to work as individuals even when they are placed in a group (Gillies, 2003; Topping, 2005).

¹¹ Cooperative learning is a teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement (Balkcom & United States. Office of Educational Research Improvement. Office of Research, 1992).

In the current study, neither teacher was trained in conducting cooperative learning instruction. Our students were not taught explicitly how to work together to solve problems. Although both teachers designed several activities involving peer-interaction in kinesthetic training, such as various rhythmic clapping games, or in peer review sessions in which students listen to and comment upon songs they play for one another, the curriculum of the current experiment did not intentionally incorporate elements of cooperative learning instruction. We conducted the majority of the lesson components using the traditional didactic mode. It will prove instructive to determine whether the result of the current study remains valid if future research incorporates models of group instruction that incorporate more cooperative learning strategies, such as problem-solving with peers, or learning a new concept by using “jigsaw strategy”¹².

Teachers

No significant difference of musical achievements was observed between the participants taught by different teachers. The similar levels of achievement obtained by the students of either teacher indicate that neither teacher in this experiment created biases due to personal preferences for a particular mode of instruction, or that they exhibited a superior aptitude for teaching one mode or the other (Appendix G).

The choice of teacher in the present study reveals no significant association with participants’ musical achievements. This result suggests that a teacher’s cumulative teaching experience will not necessarily impact the musical achievements of young beginners, provided a

¹²In this strategy of education, each student in a small group is assigned a different piece of information, and all group members have to work together in order to achieve a goal or find an answer (Balkcom & United States. Office of Educational Research Improvement. Office of Research, 1992)

new teacher undergoes sufficient teaching training and has a mentor to monitor and guide his or her teaching. The stereotype that teachers with more years of teaching experience necessarily teach more effectively has been rejected by previous studies investigating the correlation between teachers' experience and students' achievement (Huang & Moon, 2009). For instance, Huang and Moon indicated Wößmann's (2005) study of the experience of mathematics teachers across 15 European countries and the U.S. only confirmed a positive significance of teaching experience in four of the countries investigated. Results obtained from the remaining countries either showed no influence of teaching experience on students' math achievements, or even negative coefficients. Several studies that controlled for students' prior achievement also showed no significant results for teacher experience (Croninger, Rice, Rathbun & Nishio, 2007; Summers & Wolfe, 1977).

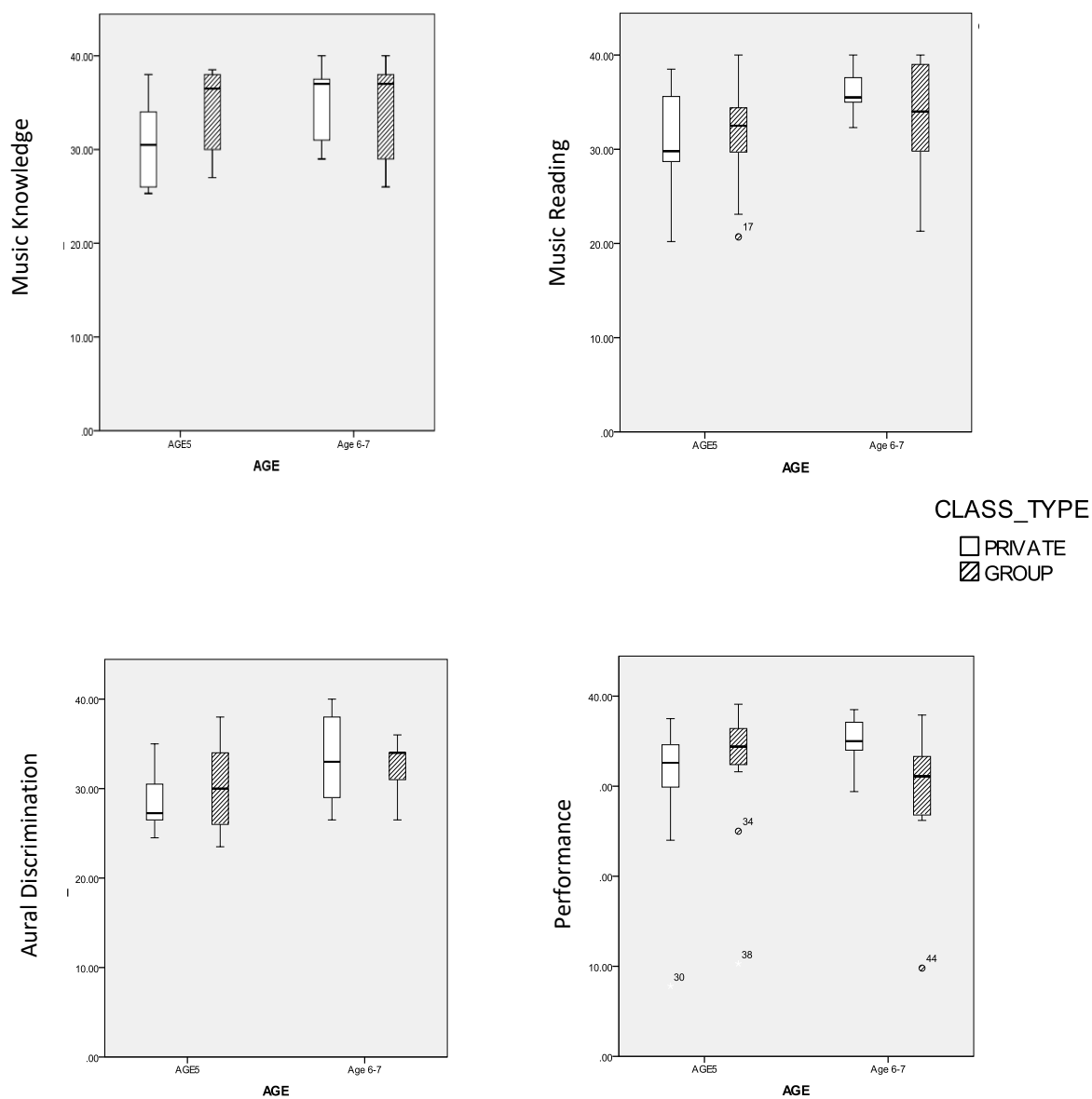
Age

The current study is the first among previous related studies to discover that different *types* of instruction resulted in a difference in achievement for different age groups in at least one category. As was presented above, the result revealed that among participants at the age of 5, those in group instruction exhibited superior kinesthetic response than those receiving private instruction. They even surpassed the older age cohort receiving group instruction in three sub-items from the category of kinesthetic response. However, participants at the age of 6 and 7 in private instruction significantly outperformed all group-instructed students in this category, regardless of age.

Although not significant, a similar correlation between participants' age and type of instruction also appears in the other four achievement categories. The four boxplots (Figure 5.1) show that participants at the age of 5 in group instruction achieved slightly better in these

categories than those in private instruction. By contrast, participants at the ages of 6 and 7 in private instruction achieved slightly better in the same categories than those participants receiving group instruction.

Figure 5. 1 Comparison Between Instruction and Age on Music Knowledge, Music Reading, Aural Discrimination and Performance skill.



Given that this finding did not occur in previous studies, and given that none of the previous studies ever investigated students under the age of 6, the result is possibly due to the difference in attitude towards working in a group setting exhibited by the various age cohorts. Children at the ages of 4 to 5 appear to demonstrate significantly better persistence and motivation to take on performative challenges when they are aware that they are working with peers, even when they are not *physically* in a group with peers (Bulter & Walton, 2013; Master & Walton, 2013). Preschool-aged children seem to be more motivated to engage a task simply by being *told* that another child is doing the same task, or by watching a video of another child engaged in the same task (whether or not that child is actually engaged in the task at the same time) (Butler & Walton, 2013).

In my own experience as a piano teacher, when children reach the age of 6 or 7, they tend to be less favorably disposed towards working in a group setting. This perception is confirmed by related childhood development research (Kutnick, Berdondini & Ota, 2008). As part of their effort to compare learning outcomes of differently-aged (ages 5 to 7) children engaged in cooperative learning (working in groups) to those in traditional teacher-led pedagogy, researchers conducted a questionnaire of children's amenability and motivation to work in groups, and their ability to collaborate and learn effectively with and without indoctrination in peer interaction. In this experiment, children in cooperative learning instruction received additional instruction in order to develop peer interacting skills prior to their work (experimental group). Children in the traditional teacher-led class did not receive peer-interactive instruction (control group). No difference in attitude toward group learning between the experimental and control group was apparent in 5 to 6 year-old children. Nonetheless, at the ages of 6 and 7, the children in the control group seemed less favorably disposed to group work, while those children

who had received peer-interactive conditioning in the group class became *more* motivated to work in a group setting.

However, this apparent change of attitude with regard to group-work between children under and above the age of 6 seems to contradict the development of peer sociability in children. According to Parten's study of children's social play (1932), children's development of sociability begins with "nonsocial activity" (solitary play) and moves to a form of social participation called "parallel play" around the age of 2 or 3. During the preschool years, children begin to develop two more advanced forms of social interactions—"associative play" and "cooperative play"—but the solitary play and parallel play mode remain a stable component of their evolving sociability. When entering the period of middle childhood (ages 6 to 11), the cooperative play mode gradually becomes prevalent as their communication and peer interaction improve. Children typically begin to expand their circles of friends and social contacts significantly.

Contradictions between what Kutnick, Berdondini & Ota (2008) found in their survey and development of peer sociability could possibly be related to changing perceptions of self-esteem and self-attributions of success and failure experienced during the years of middle childhood. Research in childhood development suggests that children between the ages of 3 to 6 years old are "learning optimists" (Berk, 1989; Dweck & Elliott, 1983). Learning optimists typically exhibit highly positive self-evaluations, and appear to be less concerned with the opinions and judgments of others. They tend to over-estimate their abilities somewhat, and believe they can achieve anything. And as they still strongly believe that past "failure" does not forestall future success, learning optimists of this age typically exhibit more persistence in attempting difficult tasks than older children. Instead of becoming *discouraged* by past failures,

they appear to understand these experiences as the necessary foundation of future success (Siegler, DeLoache & Eisenberg 2014). Therefore, besides the natural tendency of this age group to work willingly with others, their relative indifference to the opinion of others tends to reduce shyness in the group setting. Their persistence in mastering a task by repetitive practice assists them in maintaining their motivation when asked to repeat an exercise numerous time in class.

When growing into ages 6 and 7, as the capacity for complex reasoning develops, children's perception of self-esteem appears to become more susceptible to such factors as the opinions of adults, test scores, and self-comparison to peers. As they increasingly engage in social comparison, children generally become more sensitive to the remarks and opinions of others (Siegler et al, 2014). Some of these children begin to view a perceived "failure" as insurmountable, and are more likely to give up when encountering difficulties or receiving feedback they perceive as negative (Berk, 1989). Therefore, some children might opt out of participation in group activities due to fears of "failing" in front of peers, or feeling inadequate by comparison to the achievements of others. As children grow into late childhood, their self-esteem tends to increase steadily, improving their attitude toward group work. While speculative, these factors may help explain Diehl's (1980) results of better sight-reading and performance achievements from the older students who participated in group piano instruction.

Although some 6 and 7 year-old children become sensitive and less comfortable with group activities due to a growing sense of self-consciousness, other children at this age, by contrast, become *more* apt to initiate conversation and otherwise interact with peers. As it happens, however—and both teachers in the current experiment can testify to this—their focus on interacting with others sometimes disrupts their focus on the teacher's instruction, possibly

obstructing their learning. Although the motivation of 5-year-old students to do the same work with peers is high, due to their predilection towards the solitary and parallel play modes, their desire to actually *interact* with classmates might not be as prevalent as in the older students. Therefore, in a group piano lesson, 5-year-old students may focus more on the teacher and less on interaction with their classmates. This may explain why both teachers in the current study felt that it was more difficult to control the pace of the lesson in group instruction of students at ages 6 and 7 than it was with the 5-year-old students. Experiencing less distraction from social interaction between peers, and exhibiting less inclination to initiate potential classroom distractions, the 5-year-olds tended to remain more focused on following the instruction of the teacher.

Distraction resulting from peer interaction may in fact be the major factor affecting the outcome of the current study in which students at the age of 5 in group instruction outperformed the older students in the achievement of kinesthetic response. Unlike the other achievements tested by the study, which students can review and practice through assigned homework, practice of kinesthetic response was conducted mostly during class. Therefore, if students cannot remain focused when doing kinesthetic response exercises, due to disruptive social interactions in class, the outcome of the achievement is directly affected.

Due to the shorter length of the private lesson, students spent proportionately less time on movement training than their peers in the group lesson. However, without distraction from peers, they were able to remain more concentrated and master the movement training. Despite this, lacking the excitement of working with peers, and typically possessing a shorter attention span, the 5-year-old students in private instruction tended to lose focus more easily. Moreover, as their kinesthetic ability is relatively underdeveloped in comparison to that of their slightly

older peers, success in these exercises may well require more time on movement training than could be provided in private instruction within the format of the present study.

In summary, changes of attitude toward group-working, changes of peer sociability, development of self-esteem, and achievement motivation (the persistence in challenging tasks) were obvious in children between the ages of 5 and 7. This may explain why the 5 year-old students in the present experiment undertaking group instruction achieved at a higher level than their peers receiving private instruction, and likewise, why privately-taught students at the ages of 6 and 7 outperformed their group-instructed peers. The greater sensitivity to how others perceive them might make 6 and 7 year-old students feel less confident, consequently diminishing their motivation in the group instruction context. As there is no competition with other students in a private instruction setting, it may be easier for students to build a closer relationship with the teacher, and derive motivation from the encouragement of the teacher.

Although the current study showed a particular interaction between age and mode of instruction, this result does not conclusively prove that group instruction is a better choice for 5 year-old beginning piano students, and less suitable for 6 and 7 year-old beginners, or vice-versa. Other research has found that cooperative learning has a positive impact on children at the ages of 5 to 7 in a general education context (Kutnick, Ota & Berdondini, 2006).

As this study did not employ a specific cooperative learning strategy, most of the group works were completed under a teacher-led model. Although the instructors conferred on the group work in progress, no attempt was made to control for or impose a particular mode of group instruction. Therefore, the results of the current study may differ from a similar study employing cooperative learning activities and instructors trained in collaborative teaching, applying a

uniform method of group instruction. Especially for students at older age, as they are more inclined toward peer interaction, a cooperative learning curriculum may help them to remain more focused than in the traditional teacher-led style of instruction.

Clearly, cooperative learning does not consist merely of placing students in a group and expecting them to work together effectively. Students need to learn *how* to work together under a structured curriculum (Johnson & Johnson, 1990; Slavin, 1995). Therefore, I recommend that further research evaluating the comparative efficacy of group and private musical instructional for beginning students of all ages, especially for the influence of a cooperative learning curriculum.

Relationship between participants' age and musical achievements

Regardless of the mode of instruction, students at ages 6 and 7 significantly outperformed those at age 5 in the achievements of (a) music reading, (b) aural discrimination, and (c) kinesthetic response. Results obtained in music reading and aural discrimination of notated pitches in the present study show that most of the 5-year-old students are still developing their ability to discriminate musical patterns and higher or lower pitches. However, by the age of 6 or 7, most children had already developed a clear sense of patterns and melodic motion (Campbell & Scott-Kassner, 2006).

Although results revealed students at the ages of 6 and 7 achieved significantly higher scores in kinesthetic response, further analysis of the four sub-items in kinesthetic response did not show a significant difference between the two age groups. However, students at ages 6 and 7 scored slightly higher on the two sub-items— sight-reading and rhythmic reading ($p < 0.1$). Results of all four sub-items constituting kinesthetic response showed that items related to

visual-motor integration (sight-reading and rhythmic reading) correlated slightly to the age of participants. However, the relationship between the age of participants and the development of auditory-motor interaction was not as strong. This finding may corroborate the results of previous research suggesting that development of auditory-motor integration occurs at much younger age, and does not increase as significantly from the ages of 5 to 7 as does visual-motor integration (Kager & Clark, 2015).

Gender

Studies have found different patterns of cognitive development between the genders during childhood. For instance, in general, males outperformed females in spatial processing, sensorimotor and motor speed while females are better at attention, word and facial memory, reasoning speed, and all social cognition tests (Gur et al., 2012; Panasevich & Tsitseroshin 2015; Satterthwaite, 2015). As research has confirmed that the playing of musical instruments is strongly related to spatial processing and sensorimotor skills, it may seem reasonable to presume that younger male students would attain higher achievements in music than females. However, amongst a limited number of studies investigating the effects of music instruction (not piano instruction) on cognitive development, most of them did not report difference between the genders (Gromko & Poorman, 1998; Rauscher et al. 1997; Rauscher & Zupan, 2000). One study that investigated the influence of piano instruction on cognitive abilities of young children (Zafran, 2003) found similar cognition abilities between boys and girls before they took piano instruction. However, *after* taking one year of piano instruction (two lessons per week), boys performed better on all tested cognitive abilities. They particularly outperformed girls on a “hand movement task”, and made a significant improvement in the test of “Triangles”, a task measuring simultaneous processing which required students to assemble several identical rubber

triangles (blue on one side, yellow on the other) to match a picture of an abstract design. By comparison, girls did not make as much progress as boys in this task after taking one year of piano instruction.

In their studies, Rogers (1974) and Diehl (1980) both investigated the interaction between gender and the two different modes of instruction regarding musical achievement. The notable difference only occurred in Diehl's study, which found that group-taught male students outperformed privately-taught male students in sight-reading and public performance.

The current study showed no significant difference in musical achievements between male and female students. Neither mode of instruction favored male or female students. However, male students showed slightly better results in music reading and kinesthetic response. This finding corresponds to previous studies indicating males are stronger in spatial processing and sensorimotor skills. Music reading is correlated to the ability of spatial reasoning, and kinesthetic response require both spatial reasoning and sensorimotor skills.

Conclusion

Overall, the current study concludes that there was no significant difference in musical achievements between the two modes of piano instruction. However, 5-year-old students who undertook group piano instruction registered results in musical achievements superior to those of the 5-year-olds receiving private instruction. Six- and 7-year-old students who took private piano instruction achieved at a higher level than those who took group instruction. This outcome is particularly significant in the achievement of kinesthetic response, but less obvious in other four achievements.

This current study speculates that this result—not found in previous studies—may relate to childhood development between the ages of 5 and 7 involving changes in attitude to group-working, increased conception of self and the consequent growth of self-esteem, development of peer sociability, and the differences of achievement motivation. The superior achievements of 5-year-old children in group instruction may relate to the optimal motivation of working with peers transpiring at the ages of 4 and 5 (Butler & Walton, 2013; Master & Walton, 2013). As they are typically less sensitive to how others perceive them, they tend to be less shy in front of others. At the ages of 6 and 7 years old, with increased engagement in social comparison, children tend to increasingly evaluate themselves based upon how friends, teachers and parents see them—in other words, they are seeking external validation. Their greater sensitivity to the opinions and judgments of others, as well as their increasingly critical process of self-evaluation, may constrain their motivation to participate in group instruction and thereby affecting their ability to flourish in this setting. Especially those students who have previously encountered negative learning experiences may come to view their “failure” as permanent (Berk, 1989). Experiencing decreased self-confidence, these older students may be less willing to present themselves in front

of peers in a situation wherein they fear judgment. These students may feel more comfortable in private instruction because the one-on-one relationship between teacher and student mitigates worries of failing in front of other students.

Although the greater sensitivity of children at the ages of 6 and 7 to the opinions and judgments of others may cause some of them to be reluctant to participate fully in group piano instruction, they are nonetheless more apt to *cooperate* with peers in class, instead of merely working on their own in the company of others, as the younger students tend to do. The development of the propensity for cooperative play, and the ability to engage it successfully, is a necessary component of the socialization of children. However, as is discussed above, the growing desire for peer interaction may consequently lead to increased distraction and class interruption.

On the other hand, as some children at the age of 5 may not have developed the requisite social skills to effectively interact with peers, even in a group, they tend not to interact with each other as much as older students. This tendency may explain why both teachers in the current study found it easier to teach 5-year-old students in a group setting than it was for 6 and 7 year-old students. Due to the unpredictable and sometimes uncontrolled interactions of the students, teachers often had to make an extra effort to maintain focus and concentration in class. Therefore, peer distraction may be another reason why 6- and 7-year-old students in the current study in private piano instruction achieved higher scores in all musical categories. By contrast, it is possible that 5-year-old students, experiencing less peer interaction than the slightly older cohort, are more able to concentrate in the group setting.

The design of the curriculum itself may also affect the results. The group instruction curriculum used in this study was not designed based upon the elements for cooperative learning. Although it involved some peer-interactive activities, many activities are still led by teachers. This type of instruction may be more suitable for students at the age of 5, as they tend to be motivated by knowing they are working on the same tasks with others, and they tend to be more willing to follow the teacher in the performance and accomplishment of repetitive music exercises. Rather than proving conclusively that one mode of instruction is superior to the other, the different results from the two age groups under group instruction may merely suggest that the current curriculum is more appropriate for the younger students.

Students of age 6 and 7 may experience the repetitive music exercises as “childish”, and may have less patience for them. The researcher observed that some of her older students seemed to enjoy creating their *own* rhythmic patterns (in a light-hearted or even “silly” way, sometimes), and share these original rhythms with peers rather than following the instructions of the teacher explicitly. Observing the proclivity of her 6 and 7 year-old students to want to interact with peers, the researcher suspects a cooperative learning curriculum may be more suitable for group instruction of this age group. Under the provisions of a cooperative learning curriculum, all group members are expected to work together in order to achieve a common goal. Rather than serving a dominant role as “the font of information”, the teacher in a cooperative learning environment functions as a facilitator of effective group work by encouraging students to work together as a team and modeling appropriate strategies for so doing (Fisher, 2010). Therefore, the cooperative learning paradigm may help students remain more focused in group work, as each participant has a stake in the success of the group as a whole, and an awareness of themselves as playing a part in the process. Cooperative learning techniques have been proven

beneficial to the learning achievements in both academic subjects and music trainings of students of different age groups (Kirk 2000; Ginsburg-Block et a 2003; Kutnick, Berdondini & Ota, 2008; Tsuei, 2012; Gerena & Keiler, 2012). Thus, the researcher suggests that further studies evaluate the comparative influences of a traditional teacher-led curriculum versus cooperative learning curriculum upon the musical achievements of students receiving group piano instruction.

To recapitulate, the researcher adduces several reasons possibly influencing the current result wherein students at age 5 scored higher achievements in group piano instruction while students at ages 6 and 7 achieved higher scores in private piano instruction. These reasons include: (1) different attitudes towards group work. It seems easier to motivate younger students by reinforcing the awareness that they are working on the same tasks, and at the same time with other children (Kutnick, Berdondini & Ota, 2008); (2) growth of self-awareness. In the older age cohort with their greater sensitivity to the opinions and perceived judgments of others, some may feel reluctant and embarrassed to participate in group instruction (Berk, 1989; Dweck & Elliott, 1983); (3) changes of sociability. Older students tend to prefer being in a group that involves more direct interaction with their peers. In contrast, younger students tend to have less peer interaction, although they enjoy the idea of belonging to a particular group; (4) different motivation of achievement. With less developed reasoning ability, younger students tend to over-estimate their abilities. They also appear to be less concerned with others' opinions. Therefore, their experience of failure does not stop them from continuously challenging themselves. By contrast, as the capacity for complex reasoning develops, older students tend to value themselves based on the outcomes of their previous achievements and opinions of others. Therefore, compared to young students, they might be less willing to accept challenges, especially after encountering negative experiences in the past.

Working with others seems to be an important factor helping the 5-year-old students in group instruction remain focused and attain achievements superior to those of their peers receiving private instruction. This is especially true in the achievement of kinesthetic response, wherein students in group instruction evinced significantly better results than those in private instruction. Aside from the apparently higher motivation of the students receiving group instruction, their greater persistence in repetitive practice as another important component of their success. Due to the shorter lesson time, students receiving private instruction were far less likely to experience equivalent practice time in class.

Students at the ages of 6 and 7 undergoing private instruction scored higher in all achievement categories. This result may be due to greater ability to concentrate arising from age-related cognitive development, and greater comfort in the private setting for those experiencing impaired self-confidence, or for those who have become acutely self-conscious. Significantly higher scores in the achievement of kinesthetic response than their colleagues in group piano instruction may suggest that concentration is a more efficient pedagogical strategy than repetition for children in this age range. Moreover, as private instruction allows the teacher to adjust the pace and content of the instruction according to each student's ability, the curriculum of the current study in its present configuration may better facilitate the progress of the older students. While the analytical approach of the current study amalgamates the achievements of all the students, it was clear from the subjective experience of the teachers that, as *individuals*, some 6- and 7-year-old students achieved a higher level under private instruction than their peers under group instruction at the end of the 24-week treatment.

Recommendations for Teaching Strategies (Based on the Result and Explanatory Theories)

Quite probably, childhood learning experiences influence aptitude and motivation for learning later in life. It is thus important for a piano teacher to ensure that students have positive learning experiences with piano and music so that they will continue to enjoy listening, performing, and sharing music with others. In order to achieve this goal, the teacher should realize that children's learning outcomes are closely related to various factors such as different learning models (visual, aural, tactile), pace of cognitive development, achievement motivation patterns, age-related changes of sociability, etc.

Although the result of the current study does not definitively ascertain which type of piano instruction is better *in general*, it does point to the remarkable scope and growth of cognitive development experienced by students from the age of 5 to 7. Thus, regardless of which mode of instruction is deployed, it is critical for piano teachers to perceive the developmental changes typically undergone by children in this age range in order to provide appropriate and effective piano instruction for them, whether as individuals or as members of a group.

In the view of the researcher, age-appropriate teaching strategies help motivate their students achieve their best. The result of the current experiment and the research that informs it appears to confirm this contention. For instance, when teaching younger students such as those at preschool, kindergarten and even the first grade in a group setting, the teacher can motivate her students by reinforcing the idea that they are all part of the same "team" (Butler & Walton, 2013; Master & Walton, 2013). As students at a younger age appear to be highly motivated by the idea of working with others—regardless of the degree of *actual* interaction between them—

the teacher may encourage them to repeat one task as a group until all of its members have mastered it. Teachers can utilize more repetitive activities for members of this age cohort, who as we have seen, tend to be “learning optimists” more likely to attribute success to the degree of their diligence than to their actual objective results.

When teaching a child at a younger age in a one-on-one lesson context, knowing that he or she may lack motivation without the accompaniment of peers, the teacher can create a virtual “study pal”. From my personal experience as a piano instructor, I found that using stuffed animals as a surrogate lesson colleague, or telling the student about another student’s achievement seems to help students remain focused and motivated. The stuffed animal allows the child to feel as if they have a companion or ally besides the teacher to help them navigate the stresses of the lesson, and its presence seems to help rekindle enthusiasm when the child’s motivation has diminished. If the student appears reluctant to participate in the lesson or engage a challenge, being told of how other students of the same age achieved a similar goal, he/she is usually willing to follow suit, playing on the child’s innate desire to identify with a group of peers.

As the cooperative sociability of students matures as they age, the teacher may utilize more collaborative activities to help the older students in a group setting. For instance, instead of leading them in the repetition of rhythmic patterns, the teacher can encourage each student to think of a music pattern and lead the group in following his/her pattern. The teacher can create a challenge that requires everyone to participate collectively in order to execute it successfully. Requesting students to listen to their peers’ performances, and encouraging them to comment positively can help reduce anxiety and nurture the love of performance. Especially for those who seem to be shy or uninterested in interacting with their peers, such activities may help students

overcome inhibition and establish new friendships within the group. This would hopefully increase the collective motivation of the group to participate fully in the lesson. By the same token, students can *lose* focus due to excessive peer interaction (such as distracting conversations, playing while others are playing, physical horseplay, etc.). For this reason, collaborative activities can help students refocus because they understand that they need to work together in order to achieve a common goal.

As a result of growing maturity, children aged between 6 to 9 have generally obtained skills and knowledge sufficient to interact with adults more effectively. These years are often a time of enjoyable and productive relationships between children and adults (Eccles, 1999). Therefore, teachers may find it easier to teach older students in the private setting. The increasing maturity of reasoning also allows students to discover solutions to their own challenges instead of relying on the teacher's feedback. Therefore, when teaching older students in the private setting, the teacher can guide students to discover the right answers by asking leading questions and allowing the students to come up with an answer. The teacher can also begin to train older students to evaluate their own performance, in addition to the feedback they receive from the teacher (which they tend to prize highly), thereby helping these students achieve a degree of independence from sole reliance on an authority figure, and encouraging them to trust in their own ability.

In addition to cultivating an awareness of children's cognitive development, gaining an understanding of the patterns of achievement motivation of students of varying ages can help the teacher select appropriate teaching methods. Childhood psychological research has defined the typical ways in which children undertake the performance of learning tasks (Berk, 1989, 2006; Siegler, DeLoache & Eisenberg, 2014). In general, children's achievement motivation can be

divided into two broad patterns: *entity/helpless orientation* and *incremental/mastery orientation*, both of which are varied by the different self-attributions children make, particularly with regard to their sense of self-worth. Determining which type of achievement motivation pattern a student tends toward can help the teacher find the most effective and appropriate ways to motivate students.

Children with an entity/helpless orientation mainly value themselves based on the approval of others and the success or failure of performance outcomes (i.e., external validation, perceived both subjectively and objectively, as in a grade on an exam), instead of considering and appreciating how much they may have learned from their mistakes. As the self-worth of such children is so dependent upon performance outcomes, they tend to avoid tasks they perceive to be too difficult. Upon identifying an experience as a “failure”, such children can become very self-judgmental and self-critical, developing the perception that they are “just not as smart” or worthy as others. They can feel that they will not be able to attain success, no matter how hard they try. Thus, when teaching a student with the entity/helpless orientation, the teacher can try to reduce the intensity of the challenges they present in order to help the student develop his/her self-confidence and motivation. When teaching in a group setting, the teacher should avoid competitive activities that are prone to adversely influence the self-esteem of the child by a self-perception of failure.

Children with increment/mastery orientation, in contrast, tend to evaluate themselves based more on the quality of their own efforts. Similar to the young “learning optimists” discussed above, learners with this orientation—of any age—believe their temporary “failures” can be improved by sustained effort. Therefore, children with this pattern are more willing to take on challenges and persist in the attempt to achieve their goals. Students with an

increment/mastery orientation are more amenable to being pushed out of their comfort zone in the pursuit of learning and performance challenges. Thus, the teacher can introduce tasks and challenges somewhat exceeding the student's current level of attainment, thus inducing the student to apply themselves vigorously to master them. However, for these students to maintain their self-confidence and self-esteem, the teacher also needs to take care to not overwhelm the student with too many challenges at once, or present them with challenges that far exceed his or her ability.

Hutcherson's (1955) and Diehl's (1980) studies both concluded that while the two modes of piano instruction—group and private—showed no discernible difference in effect upon the quality of students' musical achievements, offering group instruction does offer the pecuniary benefits of generating larger profits for teachers, as well as being more affordable for students. Due to the physical limitations of the research site used by the current study (the room could only accommodate three students at a time), the profit only slightly exceeded those of private lessons. Considering the extra time and effort that teachers typically devote to group class preparation, the group lesson may not actually prove as profitable as suggested by previous studies. There are, however, possible intangible benefits that arise from teaching group lessons. In the group lessons of this study, the positive group chemistry generated by the interaction of the members and the teacher was remarkable. In fact, it was quite rewarding for the teachers to watch students enjoy themselves so much in the lesson. Other researchers have described a similar experience in the group lesson context (Pike, 2012).

Although a group piano lesson comprised of less than four students may not prove as profitable, for inexperienced teachers the small group setting provides an optimal opportunity for teachers to gain experience in teaching a group. When they feel ready to teach a larger group

effectively, teachers can expand the size of the group to four or more. While greater financial benefit is thereby possible, teachers should not oversize their group lessons, as this may compromise the learning benefits to their students. The individual may feel “lost in the crowd” in a very large group, and it is difficult for the teacher to be attentive to the individual needs of many students simultaneously and provide the guidance each student requires to ensure they develop proper skills and achieve their goals.

The development of preschool piano methods for both private and group instruction in the United States has existed for more than eight decades, with popularity increasing greatly since the 1990s. However, no prior research exists investigating the relationship between these two different types of piano instruction on the musical achievements of students younger than age 6. The current study is the first quantitative research to address this question. While the information obtained by the present research is insufficient to generalize, the 5- year-old children in the group setting achieved significantly better on kinesthetic skills than their peers instructed privately. Three of their kinesthetic skills, melody play-back, rhythmic clap-back, sight-reading, even surpassed the children at ages 6 and 7 in the group setting. These students also slightly outperformed their privately-instructed peers in other musical skills such as music knowledge, music reading, aural discrimination and performance. These results await future studies to confirm their reliability. However, as a piano teacher who has mainly taught privately for more than 10 years, through the experience of the current study, I discovered that group piano instruction opens plentiful opportunities for teachers to be creative in devising activities, and saw that group dynamics has the potential to motivate students highly.

This chapter has adduced several topics related to childhood development as possible influences on the different results obtained from the two age groups involved in the current research. Obviously, as individual children between the age of 5 and 7 develop at varying rates, and in different, often very personal ways, the developmental traits described above should be considered as general theoretical trends, rather than as an inflexible matrix equally applicable to all children. In practice, teachers are likely to encounter 5-year-old students as mature as 6 or 7 year-old children, and vice versa.

Limitations of the Study

Although I tried to minimize possible side effects in order to make the results more reliable, I found several factors that may possibly influence the results of the current study:

- (1) As 40 out of 45 participants came from Asian families (predominantly of Chinese origin), results of the current study might relate to the educational values maintained by members of this culture. Future studies sampling a more diverse range of ethnic groups could obtain consequently different and possibly more reliable results.
- (2) The result of “rhythmic playback”—one of the sub-tests from the achievement of kinesthetic response—would be more accurate with a pre-test *before* the treatment, as rhythmic playback only requires the participants to replicate the rhythmic patterns presented. It is possible that some participants possessed of an innate sense of rhythm may be able to perceive those rhythmic patterns prior to any sort of musical training. Since all participants had no previous music education, the researcher did not consider a rhythmic pre-test preceding the treatment to be necessary. As “rhythmic playback” was only one of the four items constituting kinesthetic response, the researcher assumed the influence of innate rhythmic abilities of students on the potential variance in scores should be limited.

- (3) Participants in the current study were not randomly selected, as all of them were required to attend an interview prior to the treatment in order to ensure they were mature enough to participate successfully in the treatment. Without an interview process, I suspect that the result might vary due to the inconsistent maturity of 5-year-olds. As participants were not randomly assigned to one of the two types of instruction, but allowed to choose a type of instruction (in consultation with their parents), the potential influence on results of participating an unwanted mode of instruction was effectively reduced in this study.
- (4) This study only investigated the association of different instructional modes with an individual's musical achievements, but it did not examine the effect of "cluster" within groups. The effect of cluster refers to the influence on an experiment from within a group, deriving from the characteristics and abilities of the individuals of which the group is constituted and how they relate. In group instruction, the personal chemistry between the participants and the dynamics of the interaction between the group and the teacher may affect the achievement of participants. As no related study evaluating the effect of cluster yet exists, it should be investigated in future studies related to group music teaching.
- (5) Although participants' parents acknowledged their duty to ensure participants complete sufficient practice at home, the current study did not strictly control the involvement of parents. As previous studies have found a significant correlation between parental involvement on students' academic achievements. I therefore suggest further study in early childhood piano instruction should control for parental involvement during the treatment, or investigate the correlation between parental involvement and students' musical learning achievements in depth.

(6) On average, participants achieved fairly high scores in all five musical achievements (Figure 4. 1). These results reveal the possibility that the posttest was too easy, making the test less effective in measuring significant differences among mode of instruction, teacher, and gender.

Suggestions for Future Studies

Departing from previous studies, the current study is the first one to investigate students younger than 6 years old, and the first which encompasses the age range from preschool, kindergarten to elementary school. Based upon the findings in the current research, the researcher would like to suggest several topics for future studies:

- (1) The result concluded that students at age 5 in group piano instruction showed significantly better achievement in kinesthetic response than their peers in private instruction. Conversely, students at ages 6 and 7 achieved significantly better in private instruction. However, since the current study is the only one to investigate students from the ages of 5 to 7 with utilizing a limited sample size, there is need for future studies to test the accuracy of the current study.
- (2) Due to the possible skewing of the results and due to the unrepresentative demographic composition of the participants in the current study—most of whom were Asian or Asian-American—the researcher feels that similar studies be conducted with a more diverse ethnic sample in order to test the influence of ethnicity and culture as regards the relative merits of private versus group instruction on musical achievement of young children.
- (3) Previous research has investigated the benefits of cooperative learning on the academic and musical achievements of students of different ages. However, to my knowledge, no

quantitative research yet exists investigating the possible influence of cooperative learning on group piano instruction on young beginners. In his volume of suggestions for group piano teaching, Fisher (2010) also emphasizes the importance of cooperative learning, and shares strategies to conduct cooperative learning in group piano instruction effectively. In order to clearly understand the difference between teacher-led teaching and cooperative learning, there is a need for further investigation into the difference between the two pedagogical approaches in group piano instruction. To ensure the accuracy of influence of these two types of curricula on students' musical achievements, I recommend future studies that narrow the age range investigated to encompass preschool, kindergarten, or elementary students only.

- (4) The current study and most of the previous studies aimed to compare the difference between the one-on-one lesson format and the small group lesson. Only Rogers' group lesson model utilized a combination of a paired lesson (comprised of two students only) and a large group working with Dr. Robert Pace's group piano curriculum. Many piano teachers and studios offer various piano lesson formats combining private and group piano lessons. For example, three weeks of private study with one week of group lessons, weekly private and group lessons, and the alternation of private and group lessons. These types of piano lessons are popular in private studios, but their strengths and weaknesses have not yet been investigated by previous studies. Therefore, future studies may investigate whether hybrid lesson formats (combining private and group) are more beneficial than the traditional private lesson or small group lesson, and exactly where those benefits might lie.

References

- Altenmüller, E., Wiesendanger, M., & Kesselring, J. (2006). *Music, motor control and the brain*. Oxford University Press.
- Anvari, S. H., Trainor, L. J., Woodside, J., & Levy, B.A. (2002). Relations among musical skills, phonological processing, and early reading ability in preschool Children. *Journal of Experimental Child Psychology*, 83(2), 111-30.
- Balkcom, S., & United States. Office of educational research improvement. Office of Research. (1992). *Cooperative learning*. (Education consumer guide; no. 1). Washington, DC]: Office of Research.
- Barbe, W., Swassing, Raymond H, & Milone, Michael N. (1979). *Teaching through modality strengths: concepts and practices*. Columbus, Ohio: Zaner-Bloser.
- Beethoven, J., & Pearson Education, Inc. (2005). *Silver Burdett making music, grade 1*. Parsippany, NJ: Pearson/Scott Foresman : Pearson Education.
- Beethoven, J., Pearson Education, Inc, Scott, Foresman Company, & Silver Burdett Company. (2008). *Silver Burdett making music. Grade K* . Glenview, Illinois : Scott Foresman: Pearson Education.
- Berk, L. (2006). *Child development* (7th ed.). Boston: Pearson/Allyn and Bacon.
- Bilartz, B., & Olson, J.E. (1999). The effect of early music training on child cognitive development. *Journal of Applied Developmental Psychology*, 20(4), 615-636.
- Brown, R., & Palmer, C. (2013). Auditory and motor imagery modulate learning in music performance. *Frontiers in Human Neuroscience*, 2013 Jul 1, Vol.7.
- Bugaj, K., & Brenner, B. (2011). The effects of music instruction on cognitive development and reading skills-an overview. *Bulletin of The Council For Research In Music Education*, (189), 89-104.
- Butler, L.P., & Walton, G.M. (2013). The opportunity to collaborate increases preschoolers' motivation for challenging tasks. *Journal of Experimental Child Psychology*, 116(4), 953-961.
- Cain, K., & Dweck, C. (1995). The relation between motivational patterns and achievement cognitions through the elementary school years. *Merrill-Palmer Quarterly* (1982-), 41(1), 25-52.
- Campbell, P., & Scott-Kassner, C. (2006). *Music in childhood: From preschool through the elementary grades* (3rd ed.). Belmont, CA: Thomson Schirmer.
- Costa-Giomi, E., Gilmour, R., Siddell, J., & Lefebvre, E. (2001) Absolute pitch, early musical instruction, and spatial abilities. *Annals of New York Academy of Science*, 930, 394–96.
- Croninger, R.G., Rice, J. Rathbun, A. ,& Nishio, M. (2007). Teacher qualifications and early learning: Effects of certification, degree, and experience on first-grade student achievement. *Economics of Education Review*, 26(3), 312-324.

- Diehl, L. (1980). *An investigation of the relative effectiveness of group and individual piano instruction on young beginners in an independent music studio utilizing an electropiano laboratory* (Doctoral Dissertation). ProQuest Dissertations and Theses.
- Douglas, S., & Willatts, P. (1994). The relationship between musical ability and literacy skills. *Journal of Research in Reading*, 17(2), 99–107.
- Ebrahim, Ali. (2012). The effect of cooperative learning strategies on elementary students' science achievement and social skills in Kuwait. *International Journal of Science and Mathematics Education*, 10(2), 293-314.
- Faber, N., & Faber, R. (2006) *My First Piano Adventure Lesson Book A*. Dovetree Productions, Inc.
- Faber, N., & Faber, R. (2006) *My First Piano Adventure Writing Book A*. Dovetree Productions, Inc.
- Faber, N., & Faber, R. (2006) *My First Piano Adventure Lesson Book B*. Dovetree Productions, Inc.
- Faber, N., & Faber, R. (2006) *My First Piano Adventure Writing Book B*. Dovetree Productions, Inc.
- Fisher, C. (2010). *Teaching piano in groups*. New York: Oxford University Press.
- Garcia, S. (2002) Learning styles and piano teaching . *Piano Pedagogy Forum*, Vol.5, No.1, <http://www.mtnacertification.org/media/58356/Garcia%20Article.pdf>
- Gates, A. (1975). *I: Use of peer group dyads in beginning adult piano classes. II: Program notes for a doctoral recital (1970). III: Program notes for a doctoral recital (1971)*. University of Washington.
- Gilbert, J. (1980). An assessment of motor music skill development in young children. *Journal of Research in Music Education*, 28(3), 167-175.
- Gillies, R. (2003). Structuring cooperative group work in classrooms. *International Journal of Educational Research*, 39(1), 35-49.
- Gromko, J. E. (2005). The effect of music instruction on phonemic awareness in beginning readers. *Journal of Research in Music Education*, 53(3), 199–209.
- Gromko, J. E., & Poorman, A. S. (1998). The effect of music training on preschoolers' spatial-temporal task performance. *Journal of Research in Music Education*, 46(2), 173–181.
- Gur, R. C., Richard, Jan, Calkins, M. E., Chiavacci, R., Hansen, J. A., Bilker, W. B., . . . Rao, S. M. (2012). Age group and sex differences in performance on a computerized neurocognitive battery in children Age 8–21. *Neuropsychology*, 26(2), 251-265.
- Hayward, C., & Gromko, J. E. (2009). Relationships among music sight-reading and technical proficiency, spatial visualization, and aural discrimination. *Journal of Research in Music Education*, 57(1), 26-36.
- Hetland, L. (2000). Learning to make music enhances spatial reasoning. *Journal of Aesthetic Education*, 34(3–4), 179–238.

- Heyman, G., & Dweck, C. (1998). Children's thinking about traits: implications for judgments of the self and others. *Child Development, 69*(2), 391-403.
- Holloway, M. (2004). The use of cooperative action learning to increase music appreciation students' listening skills. *College Music Symposium, 44*, 83-93.
- Huang, F. L., & Moon, T. R. (2009). Is experience the best teacher? A multilevel analysis of teacher characteristics and student achievement in low performing schools. *Educational Assessment, Evaluation and Accountability, 21*(3), 209-234.
- Hutcherson, R. (1955). *Group instruction in piano an investigation of the relative effectiveness of group and individual piano instruction at beginning level* (Doctoral Dissertation). ProQuest Dissertations and Theses.
- Jackson, A. (1980). The effect of group size on individual achievement in beginning piano classes. *Journal of Research in Music Education, 28*(3), 162-166.
- Jacobson, J. (2015). *Professional piano teaching: A comprehensive piano pedagogy textbook for teaching elementary-level students*. Los Angeles: Alfred Publishing.
- James, M., & Jackson, A. (2000). Celebrating 100 years of progress in American piano teaching: Part I: 1900-1950. *The American Music Teacher, 50*(2), 29-32.
- James, M., & Jackson, A. (2000). Celebrating 100 years of progress in American piano teaching--part II: 1950-2000. *The American Music Teacher, 50*(3), 24-28.
- Johnson, E. (2011). The effect of peer-based instruction on rhythm reading achievement. *Contributions to Music Education, 38*(2), 43-60.
- Kagerer, F., & Clark, A. (2015). Development of kinesthetic-motor and auditory-motor representations in school-aged children. *Experimental Brain Research, 233*(7), 2181-2194.
- Kuntz, K., McLaughlin, T., & Howard, V. (2001). A comparison of cooperative learning and small group individualized instruction for math in a self contained classroom for elementary students with disabilities. *Educational Research Quarterly, 24*(3), 41.
- Kutnick, P, Berdondini, L, & Ota, C. (2008). Improving the effects of group working in classrooms with young school-aged children: Facilitating attainment, interaction and classroom activity. *18*(1), 83-95.
- Lamb, S. J., & Gregory, A. H. (1993). Learning to make music enhances spatial reasoning. *Educational Psychology, 13*, 19-27.
- Lebert, S., & Stark, Ludwig. (1800). *Grand theoretical and practical piano-school: For systematic instruction in all branches of piano playing from the first elements to the highest perfection*.
- Lee, H., & Noppeney, U. (2011). Long-term music training tunes how the brain temporally binds signals from multiple senses. *Proceedings of the National Academy of Sciences of the United States of America, 108*(51), E1441-50.

- Loesser, A. (1954). *Men, women and pianos : A social history*. New York: Simon and Schuster.
- Master, A., & Walton, G. (2013). Minimal groups increase young children's motivation and learning on group-relevant tasks. *Child Development*, 84(2), 737-751.
- O'Donnell, A., & King, A. (1999). *Cognitive perspectives on peer learning* (Rutgers invitational symposium on education series). Mahwah, N.J.: L. Erlbaum.
- Panasevich, E., & Tsitseroshin, A. (2015). The ability to successfully perform different kinds of cognitive activity is reflected in the topological features of intercortical interactions: Sex-related differences between boys and girls aged five to six years. *Human Physiology*, 41(5), 487-502.
- Parakilas, J. (1999). *Piano Roles : Three hundred years of life with the piano*. New Haven [Conn.]: Yale University Press.
- Rauscher, & Zupan. (2000). Classroom keyboard instruction improves kindergarten children's spatial-temporal performance: A field experiment. *Early Childhood Research Quarterly*, 15(2), 215-228.
- Rauscher, F. H., Shaw, G. L., Levine, L. J., Wright, E. L., Dennis, W. R., & Newcomb. R., L. (1997). Music training causes long-term enhancement of preschool children's spatial-temporal reasoning. *Neurological Research*, 19, 2-8.
- Rauscher, Frances H., Shaw, Gordon L., & Ky, Katherine N. (1993). Music and spatial task performance. *Nature*, 365(6447), 611.
- Rhein, R. (1993). *Johann Peter Milchmeyer's "Die Wahre Art Das Pianoforte Zu Spielen": An Annotated Translation* (Doctoral Dissertation). ProQuest Dissertations and Theses.
- Richards, W. (1962). *Trends of Piano Class Instruction, 1815—1962* (Doctoral Dissertation). ProQuest Dissertations and Theses.
- Rogers, W. (1974). *The Effect of Group and Individual Piano Instruction on Selected Aspects of Musical Achievement* (Doctoral Dissertation). ProQuest Dissertations and Theses.
- Satterthwaite, T.D., Wolf, D. H., Roalf, D. R., Ruparel, K., Erus, G., Vandekar, S. , . . . Gur, R. C. (2015). Linked sex differences in cognition and functional connectivity in youth. *Cerebral Cortex*, 25(9), 2383-2394.
- Schellenberg, E. (2004). Music lessons enhance IQ. *Psychological Science*, 15(8), 511-514.
- Schellenberg, E. Glenn. (2006). Long-term positive associations between music lessons and IQ. *Journal of Educational Psychology*, 98(2), 457-468.
- Schons, S. (2005). *Piano Teachers' Attitudes about Piano Pedagogy Course Topics*. (Doctoral Dissertation) ProQuest Dissertations and Theses.
- Schumann, R. (1860). Advice to young musicians.
- Seipp, N. (1976). *A comparison of class and private music instruction*. ProQuest Dissertations and Theses.

- Siegler, R., DeLoache, S., & Eisenberg, N. (2014). *How children develop* (Fourth ed.). New York, NY: Worth , a Macmillan Higher Education Company.
- Sims, F. (1961). *An experimental investigation of the relative effectiveness of group and individual voice instruction at the beginning level to high school students* (Doctoral Dissertation). ProQuest Dissertations and Theses.
- Smith, C. M. (1980). *The effects on listening perception skills of two approaches to teaching music appreciation to non-music majors at the college level* (Doctoral dissertation). Dissertation Abstracts International 41 (03), 978A.
- Summers, A., & Wolfe, B. (1977). Do schools make a difference? *The American Economic Review*, 67(4), 639-652.
- Topping, Keith J. (2005). Trends in peer learning. *Educational Psychology*, 25(6), 631-645.
- Tremaine, C. (1928). Guide for school piano class teaching. *The Journal of Education*, 108(14), 352-353.
- Uszler, M., Gordon, S., & Mach, E. (1991). *The well-tempered keyboard teacher*. New York : Toronto : New York: Schirmer Books ; Collier Macmillan Canada ; Maxwell Macmillan International.
- Wiggins, J. (1999). The nature of shared musical understanding and its role in empowering independent musical thinking. *Bulletin of the Council for Research in Music Education*, (143), 65-90.
- Zafranias, N. (2003). *The effects of piano-keyboard instruction on cognitive abilities of female and male kindergarten children*, PQDT - UK & Ireland.

Appendices

Appendix A

Assent Form

University of Washington
Assent Form

Group vs Private

Study of the Effects of Group Piano versus Private Piano Instruction on
Music Achievement of Beginning Piano Students

Researcher: Pai-Yu(Jessica) Chiu, Doctoral Candidate in Musical Arts.

Contact Information: (425)802-1669. E-Mail: labellemusicstudio@gmail.com

Faculty Advisor: Prof. Craig Sheppard. Email Address: mufeng@u.washington.edu

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UW

My name is Pai-Yu Chiu. I am doing a science project about how kids learn to play the piano. I want to know which is better- taking piano class alone or learning the piano with other kids in the same class. If you would like learn the piano, you are very welcome to join my study.

If you decide you want to be in my study, you get to choose what type of class you want to do. You can take the piano class by yourself or you can be in a group class with other kids.

Both types of classes will learn how to play piano. read the music note, singing, dancing and playing games in the class, I will video-tape lessons, like making a movie. After you finish all the classes in six months, your teacher will give you a little quiz to see how much you learn. Your quiz will be graded by me and another teacher who does not teach in this project.

By yourself: If you want to take the lesson by yourself, your class will be 30 minutes long.

In a group: If you want to take the lesson with other kids, your class will be 50 minutes long but you will play more games with other children.

Your teacher will give you some homework to do, just like other music students. You do not have to do anything different or special for the science project.

When I tell other people about my science project, I will not use your name. so you do not need to worry about me talking about you.

Even if your parent says it's OK for you to be in the study, you get to choose if you want to do it 100. If you don't want to be in the study, no one will be mad at you. If you want to be in the study now and change your mind later, that's OK. You can stop at any

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My telephone number is 425-802-1669. You can call me if you have questions about the study or if you decide you don't want to be in the study any more.

I will give you a copy of this form in case you want to ask questions later.

Agreement

I have decided to be in the study even though I know that I don't have to do it. Pai-Yu Chiu has answered all my questions.

Please write down your name if you want to participate in this science project.

Signature of Study Participant

Date

Signature of Researcher

Date

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Appendix B
Parent/Guardian Permission Form

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UNIVERSITY OF WASHINGTON
PARENT/GUARDIAN PERMISSION FORM

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Group vs Private

*(Research of the Effects of Group Piano versus Private Piano Instructions on
Music Achievement of Beginning Piano Students)*

UW

Researcher: Pai-Yu (Jessica) Chiu, Doctoral Candidate in Musical Arts.

Contact Information: (425)802-1669. E-Mail: labellemusicstudio@gmail.com

Faculty Advisor: Prof. Craig Sheppard. Email Address: mufeng@u.washington.edu

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JUN 19 2012

UW Human Subjects
Review Committee

Researchers' statement

We are asking your child/children to be in a research study. The purpose of this consent form is to give you the information you will need to help you decide whether to let your child/children be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you and your child/children to do, the possible risks and benefits, you and your child's/children's rights as volunteers, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be let your child/children in the study or not. This process is called "informed consent." We will give you a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of this study is to see the differences of learning piano in group versus individual instruction on young beginning piano. The items being tested include (1) knowledge of music symbols and terms, (2) Sight-reading ability, (3) Aural Discrimination, (4) Kinesthetic Response and (5) Performance skill.

STUDY PROCEDURES

The study is going to recruit 24 children to take private piano class and 24 children to take group piano class. You and your child/children can choose to join either group piano class or private piano class when there is opening in both classes. When one class filling up 24 students, you can choose to participate another class or not participate the research.

All classes will be taught with same curriculum designed to develop comprehensive musicianship. The curriculum includes multiple activities including piano playing, singing, rhythmic training, listening, sight-reading, and music theory.

Description of class types:

1. Private piano class: One subject will study with one teacher and meet 30 minutes every week.
2. Group piano class: Three subjects will study with one teacher and the class will meet 50 minutes every week.

All classes will meet once every week until the twenty-four-week curriculum is completed.

Musicianship Exam: After completing this 24-week piano course, children who join the project will be requested to take a test to evaluate their achievement of music knowledge, music reading skill, listening skill and music playing/performing ability. Students will take the exam individually with their teachers. This

musicianship exam is designed to measure students' learning achievement for this research only. All subjects' musicianship exam will be evaluated by the researcher and another judge through the video recordings.

Parent Questionnaire: I will have a questionnaire for you (parent/guardian) to fill out after your child complete the study. The purpose of this questionnaire is to let me know about your thought of this experience.

RISKS

Some people feel uncomfortable being video-recorded or sharing information for research purposes. Please see the OTHER INFORMATION section for more about how I will protect privacy and address any concerns about the videos.

BENEFITS OF THE STUDY

As mentioned, your child/children will be taught the similar curriculum as other piano students at La Belle Music Studio will receive, there are no additional benefits to participation in the research. I hope that the research will one day help improve music development curriculum.

OTHER INFORMATION

Withdraw

Subjects are free to withdraw from this study at any time without penalty.

Personal Information and Test Data

All of the information about you and your child/children's will be confidential. We have no plans to release your personal information outside the research team. All test scores from Musicianship Exam will be destroyed by 12/31/2013.

Video recording: All classes will be video recorded for teachers and the investigator to check the progress. The video recorder will also be used in musicianship exam for evaluation purpose. The recordings of subjects' musicianship exam will be reviewed primarily by the researcher and another judge. Recordings will not be released from the research site. Recordings from classes will be destroyed a week after the musicianship exam is completed. Recordings of musicianship exam will be destroyed after the musicianship exam is completed.

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Printed name of study staff obtaining consent Signature Date

Parent/Guardian statement

This study has been explained to me. I agree to let my child/children take part in this research. I have had a chance to ask questions. If I have questions later about the research, I can ask the researcher listed above. If I have questions about my child/children's rights as a research subject, I can call the Human Subjects Division at (206) 543-0098. I will receive a copy of this consent form.

Name of child/children: _____

Printed name of parent/guardian Signature of parent/guardian Date

Copies to: Researcher
 Parent/Guardian

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 Review Committee

Appendix C
Samples of Lesson Plan

Lesson 1	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	High/Low Loud/Soft Black Keys Finger number	<i>Monster Bus Driver</i> <i>LH/RH Rainbow</i>	High/Low Loud/Soft <i>Mr. Rabbit & Snail's</i> <i>Dance</i> (Long/Short)
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
	Two & Three Black Keys	Steady Beat <i>Hi-Dee-Roon</i>	Draw fingers and mark finger numbers Color two and three black keys


Lesson 2	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	Review: High & Low Loud & soft 2 Black Keys 3 black key Finger number New: Long & Short Forte (<i>f</i>) and piano (<i>p</i>)	<i>Kangaroo Show</i> <i>Katie Score</i>	High/Low: <i>Magic Flute</i> Slow/Fast: <i>Vocalise</i> <i>D major flute concerto</i> Loud/soft: <i>Grizzly Bear</i>
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
		Finger#: <i>What's in the Honey Pot?</i> Steady Beats: <i>Clap Wiggle & Stomp</i> Rhythm exercise: Short & long patterns	<i>Honey Pot</i> , WB, 12-13 <i>LH & RH Twin Sound</i> , WB, 20-21

Lesson 3	<p><u>Concept</u></p> <p>Review: 3 black keys position</p> <p>New Forte & piano Double Bars Repeat Sign Quarter note Half notes</p>	<p><u>Songs</u></p> <p><i>Wendy the Whale</i> <i>Magic Three House</i></p>	<p><u>Listening</u></p> <p>High/Low <i>Carnival of Animal: Aviary & Elephant.</i> <i>Kangaroo Boings (WB, 17)</i></p>
	<p><u>Reading</u></p>	<p><u>Singing /movement</u></p> <p>Singing: <i>Charlie Over the Water</i></p> <p>Steady Beat: <i>Watermelon Man</i></p>	<p><u>Writing Homework</u></p> <p>Draw quarter notes (copy)</p>

Lesson 4	<p><u>Concept</u></p> <p>Reivew Quarter Notes Repeat Sign Half notes</p> <p>New: Upward/Downward</p>	<p><u>Songs</u></p> <p><i>Cuckoo Clock</i> <i>Walking Song</i> <i>Two Questions</i></p>	<p><u>Listening</u></p> <p>Going Up & Down <i>Bumble Bee</i></p>
	<p><u>Reading</u></p> <p>Rhythmic patterns: Flash cards</p> <p>Music Map: <i>Busy Buzzy Bee</i></p>	<p><u>Singing /movement</u></p> <p>Singing: <i>I see a Moon</i></p> <p>Rhythm exercise: <i>Quarter/half notes</i></p> <p>Movement: <i>Here I Go (up &down)</i></p>	<p><u>Writing Homework</u></p> <p>Up & Down <i>Blinker at Night (WB, 24)</i></p>

Lesson 5	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	Review: Up & Down Quarter note Half Notes	<i>Dinosaur Music Night</i> <i>Raccoon's Lullaby</i> <i>I Like Song</i>	<i>Tucker's Pals</i> , WB, 25 Faster & Slower: <i>Get on Board.</i>
	New: Whole Note Fast & Slow Faster & Slower		
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
Rhythmic Patterns: Flash Card	Singing <i>Busy Buzzy Bee</i> Movement Get on Board.	<i>Turkey Talk</i>	

Lesson 6	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	Review: Whole Note	<i>Old Pig Donald</i> <i>Shepherd Count Your</i> <i>Sheep.</i>	High/Low: <i>Magic Flute</i> WDYH: Fast/Slow
	New: CDE Treble Clef & Bass Clef		
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
Flash Card: Quarter/half/whole notes CDE Forte/piano <i>Mouse Rhythms.</i> (WB, 32-33)	Singing Call & Response <i>Dinner Music</i> Movement Up & Down: <i>Frog Song</i>	Supplements: half notes <i>Bass or Treble Sound.</i> (WB, p.36-37)	

Lesson 7	<p><u>Concept</u></p> <p>Review: Treble & Bass Clefs</p> <p>New: Alphabet Order on the piano: A to G.</p>	<p><u>Songs</u></p> <p><i>Little Lost Kitty</i> <i>Monseiur Mouse</i> <i>Hot Cross Thumbs</i></p>	<p><u>Listening</u></p> <p><i>Red Cat, Blue Cat!</i>, (WB, 35)</p>
	<p><u>Reading</u></p> <p>Rhythmic cards: Quarter /half/whole notes</p> <p>Rhythmic Pattern: <i>Dinner Music</i></p> 	<p><u>Singing /movement</u></p> <p>Singing <i>Frog Song</i></p> <p>Call & Response <i>Dinner Music</i></p> <p>Movement <i>Mr. Rabbit & Snails</i></p>	<p><u>Writing Homework</u></p> <p><i>Old Mac's Chick</i>. WB, 40 <i>A Game of Beat</i>. WB,41</p>


Lesson 8	<p><u>Concept</u></p> <p>Review: Alphabet Order on the piano: A to G.</p>	<p><u>Songs</u></p> <p><i>Mary's Rocking Pet</i> <i>Jungle Wedding</i> <i>Riding Escalator</i></p>	<p><u>Listening</u></p> <p>WDYH Up/Down K:4-21-24</p> <p>Melody Playback: CDE</p> <p>Bonga</p>
	<p><u>Reading</u></p> <p>Flash Cards: CDE</p> <p>Rhythmic pattern flash cards with quarter/half/whole Notes</p>	<p><u>Singing /movement</u></p> <p>Upward/Downward <i>Here I Go</i></p> <p>Movement: <i>Bonga</i> (3 beats)</p>	<p><u>Writing Homework</u></p> <p><i>I feel Rhythm</i> WB, 42-43 <i>Alphabet Castle</i> WB, 46 <i>Royal Mix-Up</i> WB, 47</p>

Lesson 9	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	Review: Position of 7 keys Double bars Repeat sign Treble clef & Bass clef	<i>Birthday Train</i> <i>Wishing I Were a Fish</i> <i>This is my C Scale</i>	Tap with Song: <i>Caribbean Leap (K:5-33)</i>
	New: C Five finger pattern		
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
Pitch: ABCDEFGF	Staccato & Legato: <i>Mr. Rabbit & Snails</i>	<i>Boa Constrictor, WB50, 51</i>	
Sight Clap: <i>Animal Riddles</i> WB, 34			

Lesson 10	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	Reivew: C five finger pattern	<i>Oh I Love Snack Time</i> <i>Katie's Dog Tucker</i> <i>Hey Mr. Half Note Dot</i>	<u>Faster/Slower</u> <i>Get on Board (3-35)</i> <i>Fruity Faces WB, 45</i>
	New: Measure & Bar line		
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
Sight Clap: <i>Sepherds, Count Your Beats. WB, 44</i>	Movement <i>Fuzzy Caterpillar:</i> Rhythmic patterns with eighth-notes	<i>Firemen on the C Scale</i> WB, 52 <i>I Love Music Buttons</i> WB, 54	

Lesson 11	<p><u>Concept</u></p> <p>Review: Measure & Bar</p> <p>New: Staff & Grand Staff Eight notes Quarter rest</p>	<p><u>Songs</u></p> <p><i>Katie's Dog Tucker</i> <i>Wishing I were a Fish</i> <i>A fish Tale</i></p>	<p><u>Listening</u></p> <p>Spider's Web (K:3-46)</p>
	<p><u>Reading</u></p> <p>Rhythm</p> <p>Eight Notes: <i>Naughty Tabby Cat</i></p>	<p><u>Singing /movement</u></p> <p><u>Rest, quick beat</u> <i>Naughty Tabby Cat</i></p>	<p><u>Writing Homework</u></p> <p><i>I Look in the Mirror, WB,</i> 55</p>

Lesson 12	<p><u>Concept</u></p> <p>Review: Staff & Grand Staff</p> <p>New: Space & Line notes</p>	<p><u>Songs</u></p> <p><i>Eensie Wensie Spider</i> <i>Graduation Party</i></p>	<p><u>Listening</u></p> <p>Music Expression <i>Vocalise (Sad)</i> <i>Dmajor Flute Concerto</i> <i>(Happy)</i> <i>Spinning Song</i> <i>Erlkonig</i></p>
	<p><u>Reading</u></p> <p>Rhythm: Patterns with eighth notes.</p>	<p>Review: <i>Naughty Tabby Cat</i></p> <p>Melody Playback: C-G G-C</p>	<p><u>Writing Homework</u></p> <p><i>I hear thunder, WB, 56-57</i></p>

Lesson 13	<p><u>Concept</u></p> <p>Review: Up / down Forte/ piano Bar line Measure Repeat sign Clefs Eighth notes</p> <p>New: Notes on grand staff: Middle C</p>	<p><u>Songs</u></p> <p><i>Giddy-Up Pony</i> <i>Ode to Joy</i> <i>The King's Cat</i> <i>The Queen's Cat</i></p>	<p><u>Listening</u></p> <p><i>Bam, Chi-Chi Bam</i></p>
	<p><u>Reading</u></p> <p>Rhythmic patterns from <i>Bam, Chi-Chi Bam</i></p> <p>Create rhythmic patterns</p> <p>Upward/ Downward Melody</p>	<p><u>Singing /movement</u></p> <p>Movement: <i>Bam, Chi-Chi Bam</i></p>  <p>Melody Playback: C-G-C, G-C-G C-D-E, E-D-C</p>	<p><u>Writing Homework</u></p> <p><i>Pony Path, WB, 6-7</i></p>

Lesson 14	<p><u>Concept</u></p> <p>Review: Space and Line on staff</p> <p>New: Step-- line to space or space line.</p> <p>Note D & E</p>	<p><u>Songs</u></p> <p><i>Tub Time!</i> <i>Gliding Goldfish</i> <i>Pumpkin Party</i></p>	<p><u>Listening</u></p> <p>Tempo Change: <i>Get on Board</i></p> <p>AB form: <i>Bonga (Review)</i></p>
	<p><u>Reading</u></p> <p>Draw Bar line Step up and down</p>	<p><u>Singing /movement</u></p> <p>Melody Playback: C-D-E-F-G G-F-E-D-C C-B-A (LH) Rhythm</p>	<p><u>Writing Homework</u></p> <p>Line-Space Game WB, p.10-11 Middle C, WB 12-13</p>

Lesson 15	<p><u>Concept</u></p> <p>Review: Middle CDE Step Eighth notes Quarter rest New: Middle F & G Skip</p>	<p><u>Songs</u></p> <p><i>Mozart's Musical Pattern</i> <i>Hot Cross Bun</i> <i>Ice Cream Dog</i></p>	<p><u>Listening</u></p> <p><u>Feeling/expression</u> Mozart Flute Concerto in D Major, K314</p>
	<p><u>Reading</u></p> <p>Rhythmic Patterns: Quarter rest Eighth Notes</p>	<p><u>Singing /movement</u></p> <p>Singing <i>If you are happy</i></p> <p>Melody playback skips</p>	<p><u>Writing Homework</u></p> <p>Middle D & E:WB 14, 18</p> <p>Steps: WB 16, 17</p>

Lesson 16	<p><u>Concept</u></p> <p>Review: Middle CDEFG</p> <p>New: A & B</p>	<p><u>Songs</u></p> <p><i>Beautiful stars</i> <i>Airplane Pilot</i> <i>Toothy Fairy</i></p>	<p><u>Listening</u></p> <p>Rhythmic Pattern: WB, 19</p>
	<p><u>Reading</u></p> <p>Notespelling Sight-reading short pieces with CDE</p>	<p><u>Singing /movement</u></p> <p>Singing <i>Leaves</i> (up & down. octave)</p>	<p><u>Writing Homework</u></p> <p>Sight-reading exercise. WB, 20-21</p> <p>Exercise for middle F & G</p>

Lesson 17	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	Review: ABCDEFGF	<i>Tucker's Secret Life</i> <i>A-B Bop</i> <i>Russian Folk Dance</i>	Listening Game: Same or not the same melody.
	New: Bass G <i>mf, mp</i>		
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
	Notepspelling Dynamic signs	Singing <i>Bingo</i>	<i>Tooth Fairy Visit, WB, 24</i> <i>Treasure Hunt, WB 26</i>
	Sightreading: CDEFG	Melody Playback: 4 notes patterns with steps but change direction. Ex. E-F-E-D	

Lesson 18	<u>Concept</u>	<u>Songs</u>	<u>Listening</u>
	Review: Bar Line, Measure Dynamic changes	<i>Sound of Beethoven</i> <i>Gallop Pony</i> <i>King of Land</i> <i>Tambourine Party</i>	Listening Game: Identify dynamic changes Identify the melodic line
	New: Time Signature 4/4		
	<u>Reading</u>	<u>Singing /movement</u>	<u>Writing Homework</u>
	Sight-reading: WB, 30- 31	Melody Playback: 4 notes Patterns	Notes value; WB, 28, 29
	Flash card: Bass G to Treble G	Rhythmic clapback	Bass G: Horse & Saddle, WB 34

Lesson 19	<p><u>Concept</u></p> <p>Review: Time Signature 4/4</p> <p>New: Time Signature 3/4 Bass F</p>	<p><u>Songs</u></p> <p><i>Knock! Knock</i> <i>Hush, Little Baby</i> <i>Wolfgang's Theme</i> <i>Ludwig's Theme</i></p>	<p><u>Listening</u></p> <p>Identify same or different patterns; WB 38, 39</p> <p>AB Form: Bonga</p>
	<p><u>Reading</u></p> <p>Flash Card: Bass F to Treble G</p> <p>Rhythmic patterns</p> <p>Sightreading: Middle C Position: WB 30-31</p>	<p><u>Singing /movement</u></p> <p>Singing <i>Down by the Bay</i></p> <p>Melody playback</p> <p>Rhythmic clapback</p>	<p><u>Writing Homework</u></p> <p>Draw bar lines: WB 32-33, supplement copies</p> <p>Sight-reading with Bass G: WB, 43</p>

Lesson 20	<p><u>Concept</u></p> <p>Review: Steps Eighth notes Bass F</p> <p>New: ABA Form</p>	<p><u>Songs</u></p> <p><i>Tap, be Nimble</i> <i>Picnic with Friend</i> <i>Beethoven's Door</i> <i>Pilot, Land Your Plane</i> <i>Scotland Bells</i></p>	<p><u>Listening</u></p> <p>Identify Skip sound <i>Rig-Jig-Jig (ABA form)</i></p>
	<p><u>Reading</u></p> <p>Identify Steps and Skips</p> <p>Sightreading with C scale</p>	<p><u>Singing /movement</u></p> <p>Melody playback</p> <p>Rhythmic clapback</p>	<p><u>Writing Homework</u></p> <p>Time Signature: WB, 36, 37</p> <p>Supplement homework to recognize step and skip</p>

Lesson 21	<p><u>Concept</u></p> <p>Review: Step/skip</p> <p>New: Bass CDE C position on LH Tie</p>	<p><u>Songs</u></p> <p><i>I would like to go to Mars</i> <i>Pearl in the C</i> <i>Octave Blues</i> <i>This is my C Scales</i></p>	<p><u>Listening</u></p> <p>Find the same patterns in a piece Meter: 3 beats or 4 beats</p>
	<p><u>Reading</u></p> <p>Sightreading: Middle C Position, WB 40-41 Rhythmic patterns with ties</p>	<p><u>Singing /movement</u></p> <p>Melody playback Rhythmic clapback</p>	<p><u>Writing Homework</u></p> <p>Review of musical terms: WB, 44-45 Bass C: WB,-49 Sight-reading: WB-51</p>

Lesson 22	<p><u>Concept</u></p> <p>Review: Step & Skip Meter Tie</p>	<p><u>Songs</u></p> <p><i>Pet Dragon</i> <i>Hide and Seek</i> <i>Write, Beethoven</i></p>	<p><u>Listening</u></p> <p>Same or not the same Meter: 3 beats or 4 beats</p>
	<p><u>Reading</u></p> <p>Notespelling Sightreading Rhythmic Pattern</p>	<p><u>Singing /movement</u></p> <p>Melody playback Rhythmic clapback</p>	<p><u>Writing Homework</u></p> <p>Ties: WB, 54 Rest: WB, 58-59 Notespelling: WB, 52-53</p>

Lesson 23	<p><u>Concept</u></p> <p>Review: AB Form ABA For</p>	<p><u>Songs</u></p> <p><i>Hot Chocolate. Whipped Cream Day Rock It & Roll It Alouett</i></p>	<p><u>Listening</u></p> <p>Let's Play Playback, WB 55</p> <p>Pattern match</p>
	<p><u>Reading</u></p> <p>Sight-reading on Left Hand C five finger scale. WB, 50 Notespelling</p>	<p><u>Singing /movement</u></p> <p>Melody playback</p> <p>Rhythmic clapback</p>	<p><u>Writing Homework</u></p> <p>Rhythm Beads: WB 60-61</p>
Lesson 24	<p><u>Concept</u></p> <p>musical terms treble/bass clefs grand staff step/skip dynamics bar line/ double barline/repeat sign measure time signature notes/rests values tie</p>	<p><u>Songs</u></p> <p>Give students the four pieces for posttest</p>	<p><u>Listening</u></p> <p>AB form ABA form Meter</p>
	<p><u>Reading</u></p> <p>Notespelling Identify direction Find patters</p> <p>Sightreading</p>	<p><u>Singing /movement</u></p> <p>Melody playback</p> <p>Rhythmic clapback</p> <p>Sightreading</p>	<p><u>Writing Homework</u></p>

Appendix D

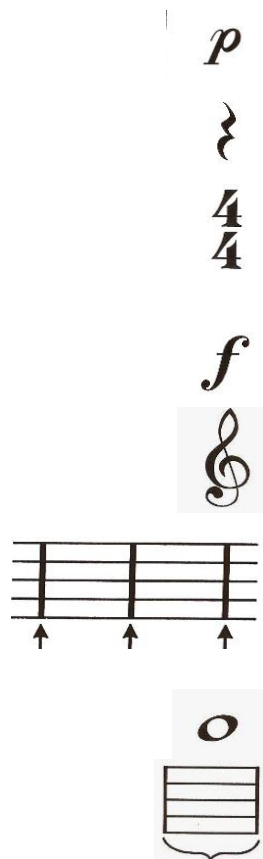
Posttest

Music Knowledge (40 pts)



I .Symbols

Please match music symbols bellow to their meanings. (15 pts)



- Treble Clef
- Loud
- .Measure
- Soft
- Time Signature
- Whole Note
- Quarter Rest
- Bar Line

Correct or complete each statement below

I am a quarter note.

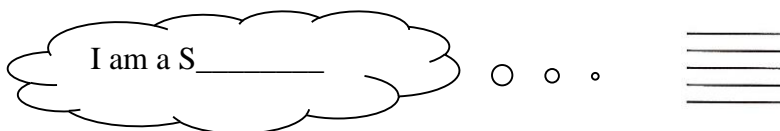
I hold _____ beat

I am a bass clef. I make high/low sound.

The _____ I have is a _____. I need to hold _____ Beats

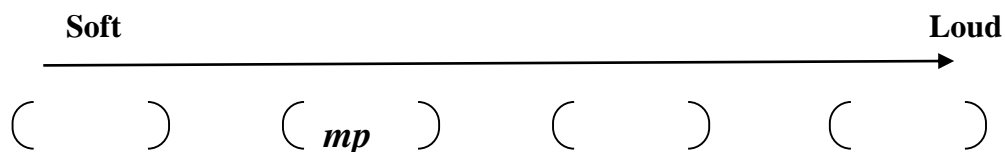
My name is _____ I only come out at the end of

You need to STOP when



Please re-arrange the dynamic order from soft to loud (3)

f *mp* *p* *mf*



Correct the mistakes (3)



Jill composed a short song, but she

makes 3 mistakes. First, she missed the time signature, second, draws the bass clef in wrong place and third,can you find it? Please correct all the mistakes.

II. Meter/Counting (7 pts)

1. Please find the measures that are incorrect (2)



2. Please write down the time signature (1)



3. Please draw the bar lines (1.5)



4. Each of the following measures has one note missing. Fill it $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, or $\frac{4}{4}$. (1.5 pts)



Notespelling with flash card (12 point)

Students have to identify the note on the flash card and play it on the keyboard.

Sight-readig/ Music Contour (40pts)

I. Notespelling (21 pts)

Circle one of the two patterns that match the alphabet letters. (7)

F D F or

C E D or

G E C or

C D or

E F E or

D F E or

A G G B or

Circle the correct answer and write down the name of each note (14)

Two bass clef staves. The first shows a step up from G4 to A4 with a '5' below the first note and 'step or skip' below. The second shows a skip up from G4 to B4 with a '2' below the first note and 'step or skip' below.

Two bass clef staves. The first shows a step up from G4 to A4 with a '2' below the first note and 'step or skip' below. The second shows a skip up from G4 to B4 with a '5' below the first note and 'step or skip' below.

Three treble clef staves. The first shows a step up from G4 to A4 with a '5' above the first note and 'step or skip' below. The second shows a skip up from G4 to B4 with a '2' above the first note and 'step or skip' below. The third shows a skip up from G4 to B4 with a '4' above the first note and 'step or skip' below.

II Pattern Search (18 pts)

1. Do the patterns in red [] move by step or skip? Do they move up or down? Please circle the correct answers on each patterns (3 pts).

Step/Skip
Up /Down

Step/Skip
Up

f Skip-ping rocks, skip-ping rocks, I like skip-ping, skip-ping rocks.

5

Step/Skip
Up /Down

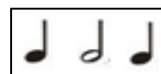
Repeat one octave higher.


First I find a rock that's flat, then flick my wrist, just like that!

(2) Which two phrases are very similar but not the same? _____. Which parts are not the same, can you circle it?

3. Please answer the questions below the piece (5 pts).

1. Please circle the measures that contain the rhythmic pattern



2. Among all the  patterns you circled, which one has "SKIP" movement? Please write down

the measure # _____.

3. There are 3 measures that have the same music pattern, please mark an X on them.

Form (1)

Please look at Leap for the Pinata, is this music a AB or ABA form?

Aural Discrimination (40 pts)



Listen to the Music and circle the correct answers(8)

(1) Same | Different (2) Same| Different (3) AB|ABA (4) AB| ABA

Which Time Signature should you pick on the music you hear? (8)

1.
 $\frac{3}{4}$ *OR* $\frac{4}{4}$
 2.
 $\frac{3}{4}$ *OR* $\frac{4}{4}$
 3.
 $\frac{3}{4}$ *OR* $\frac{4}{4}$
 4.
 $\frac{3}{4}$ *OR* $\frac{4}{4}$



Choose one t that you heard (8)

1. (a)  (b) 


2. (a)  (b) 


3. (a) 

(b) 

4. (a)  (b) 

Please circle the rhythm you hear. (8)

1. A $\frac{4}{4}$  B $\frac{4}{4}$ 

2. A $\frac{3}{4}$  B $\frac{3}{4}$ 

3. A $\frac{4}{4}$  B $\frac{4}{4}$ 

4. A $\frac{4}{4}$  B $\frac{4}{4}$ 

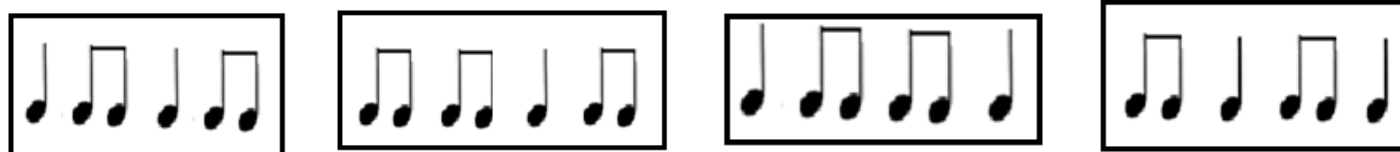
Music Expression (3)

(1) HAPPY | SAD (2) HAPPY | SAD (3) RELAX | NERVOUS

Listen to the music "Go Around the Corn, Sally" (3)

Which pattern is the first phrase_____. Which rhythmic pattern is the second phrase_____

Who sing the second phrase? A Lady | A Man| Children



Kinesthetic Response(40 pts)



I. Melody Playback* (10)

- (1)CDED C (2) GFEDE (3) EFGEC (4) EDCEG (5) CEGFE (6) GGEDE

(C--G F E--D--)

(C--E G--E C)

II. Rhythm Playback* (10)

III. Sight-reading (8)

E.



F.



G.



Performance Skill (40 pts)

Students will be asked to perform a piece they prepare for the posttest. Students' performance skill will be graded base upon the accuracy of notes, rhythm, dynamic, articulation and performance attitude.

Appendix E
Grading Matrix

Music Knowledge	Points		Full Points
Music Symbols			21
Meter			7
Notes identity			12
Total			40
Music Reading			
Notespelling			21
Pattern			18
Form			1
Total			40
Aural Discrimination			
Form			8
Meter			8
Melodic Patterns			8
Rhythmic Patterns			8
Music Expression			3
Music Analysis			5
Total			40
Movement	Judge 1	Judge 2	
Melody Playback			10
Rhythm Clap-back			10
Sight-Reading			10
Rhythm Reading			10
Total			40
Average			40
Performance	Judge 1	Judge 2	
Hungarian Dance			10
Time to Celebrate			10
Running Down the Field			10
Waltzing			10
Total			40
Average			40

Appendix F
Letter to Judges
and
Grading Sheet

Dear Judge,

In the package you received please find a USB drive containing 45 folders. Each folder, labeled by a student's ID number, includes five video clips, scores of the four pieces for students to perform, and grading sheets for the test of Kinesthetic Response and Performance. In five video clips. One video clip named "Movement" was recorded when the student performed the test of kinesthetic response. The other four clips feature each student's performance recording.

Please follow the "Notes for Judges" for grading standards found above each category of the exam forms. When grading students' performance, please use the scores included for the four pieces to mark mistakes. For ease of evaluation, I suggest you use different colors of pens or pencils to mark different types of mistakes. After grading each piece, please insert the number of mistakes you found on each item table, but please leave the table of points blank. The researcher will calculate the total points after you finish evaluating each students' performance. When grading Kinesthetic Responss, please follow the grading rules found above each sub-item. After finishing, please enter the final scores in the boxes on the form.

After completing the grading process, please return to me all materials you recieved in this package. Please contact me if you have any questions regarding any part of this process. Thank you so much for your help with this research project.

Sincerely

Hungarian Dance

Items	mistakes	Points
<i>Notation</i>		÷ 69 =
<i>Rhythm</i>		÷ 56 =
<i>Fluency</i>		÷ 56 =
<i>Dynamic</i>		÷ 5 =

arranged

1 on _?

One, two, three, four, round and round we cir - cle,

f-p on repeat

1 on _?

One, two, three, four, round and round we're danc - ing.

7

3

f Stomp, stomp, stomp, stomp, *p* light - ly step - ping on our toes.

11

5

f Stomp, stomp, stomp, stomp, round and round the mu - sic goes!

Time to Celebrate

Items	mistakes	Points
<i>Notation</i>		÷ 80 =
<i>Rhythm</i>		÷ 76 =
<i>Fluency</i>		÷ 76 =
<i>Dynamic</i>		÷ 3 =

1 4

f Time to cel - e - brate and smile; all my work has been worth-while. Now it's time to

3 1

Detailed description: This block shows the first five measures of the piece. The music is in 4/4 time. The vocal line starts with a forte (*f*) dynamic. The lyrics are: "Time to celebrate and smile; all my work has been worth-while. Now it's time to". There are fingerings 1 and 4 above the first two measures, and 3 and 1 below the first two measures of the piano accompaniment.

6

1

grad - u - ate; my next jour - ney will be great!

p "Ode to Joy" is still my fav - 'rite;

1

*End here
2nd time*

Detailed description: This block shows measures 6-8. Measure 6 starts with a first ending bracket. The lyrics are: "grad - u - ate; my next jour - ney will be great!". Measure 7 begins with a piano (*p*) dynamic and the lyrics: "'Ode to Joy' is still my fav - 'rite;". A double bar line follows measure 8, with the instruction "End here 2nd time". A fingering of 1 is shown below measure 6.

11

I could play it ev - 'ry day. *mf* Now it's time to sing and shout, "Hoo - ray!"

s. *gradually louder*

3

*To end the piece,
repeat measures 1-8*

Detailed description: This block shows measures 11-14. Measure 11 starts with a mezzo-forte (*mf*) dynamic. The lyrics are: "I could play it ev - 'ry day. Now it's time to sing and shout, 'Hoo - ray!'". A mezzo-soprano (*s.*) dynamic marking is placed above measure 12. The instruction "gradually louder" is written below the piano accompaniment. A fingering of 3 is shown below measure 11. A final instruction at the top right reads: "To end the piece, repeat measures 1-8".

Running Down the Field

Items	mistakes	Points
<i>Notation</i>		÷ 60 =
<i>Rhythm</i>		÷ 64 =
<i>Fluency</i>		÷ 64 =
<i>Dynamic</i>		÷ 4 =

In a hurry

Run - ning, kick, and shout, that's what soc - cer's all a bout;

Fly - ing through the air, down the field with - out a care.

Prac - tice, prac - tice time to prac - tice, we must get in to the zone;

If we don't take time to prac - tice, our team will be go - ing home.

Waltz

Items	mistakes	Points
<i>Notation</i>		÷ 34 =
<i>Rhythm</i>		÷ 36 =
<i>Fluency</i>		÷ 36 =
<i>Dynamic</i>		÷ 2 =

The musical score is written in 3/4 time and consists of three systems of music. Each system has a treble and bass clef staff. The lyrics are written below the treble staff, and fingerings are indicated by numbers 1-5 above or below notes. Dynamics include *mp*, *f*, and a instruction to "get softer to the end".

System 1: Treble clef, 3/4 time. Lyrics: *mp* We are waltz - ing. Fingerings: 1, 3, 4, 2. Rhythmic markings: 1 - 2 - 3, 1 - 2 - 3;.

System 2: Treble clef, 3/4 time. Lyrics: Right foot, left foot, 'just watch, you'll see!. Fingerings: 2, 4, 5, 1. Rhythmic markings: 2, 4, 5, 1.

System 3: Treble clef, 3/4 time. Lyrics: Smooth - ly, light - ly, eas - y and free!. Fingerings: 5, 4, 1, 3. Dynamics: *f*, get softer to the end. Rhythmic markings: 1, 2, 1, 3.


Grading Sheet for Kinesthetic Response

I Melody Playback

score

[Notes to judge: 1 point on item (1) to (6); -0.2 point for each missed note. 2 point on item (7) & (8). -0.2 for each missed note and -0.2 for each missed beat.]

(1) CDED C (2) GFED E (3) EFGEC (4) EDCEG (5) CEGFE (6) GGEDE

(7)  C-G F E-D-

(8)  C-E G-D C--

II. Rhythm Playback (10)

[Notes to judge: Item 1&3: -0.2 points per mistake. Item 2, 4, 5, 6: -0.25 points per mistake]

score

(1) $\frac{4}{4}$ 

(2) $\frac{4}{4}$ 

(3) $\frac{3}{4}$ 

(4) $\frac{4}{4}$ 

(5) $\frac{2}{4}$ 

(6) $\frac{3}{4}$ 

III. Sight-reading (10)

[Notes to judge: -0.1 point for a missed note; -0.1 point for rhythmic mistake]

score

IV. Rhythmic Patterns (10 pts)

score

[Notes judge: -0.1 point on each missing beat & rest. -0.1 point on wrong hand]

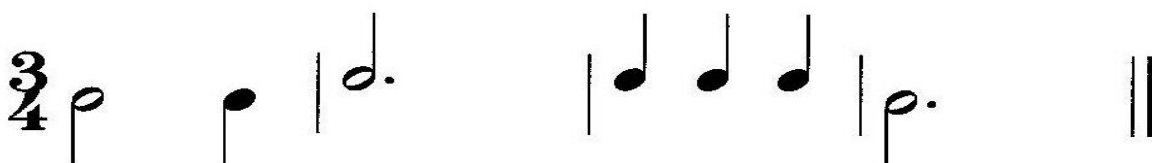
A.



B.



C.



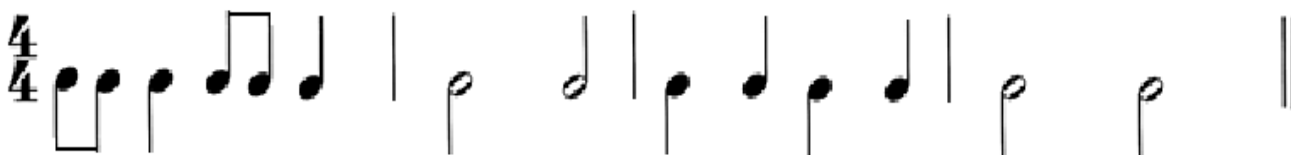
D.



E.



F.



G.



Appendix G
Teacher Survey

Teacher Survey

I had experience in teaching private piano lessons before accepting the teaching position in this project. Yes. No.
Years__10__

I had experience in teaching group piano lessons before accepting the teaching position in this project. Yes. No.
Years__3__

	Strongly Disagree				Strongly Agree
Before joining this research project,					
1) I thought private piano instruction is more suitable for young beginners than group piano instruction.	1	②	3	4	5
2) I thought group piano instruction is more suitable for young beginners than private instruction.	1	2	3	④	5
3) I thought teaching private piano lessons is easier.	1	2	3	④	5
4) I thought teaching group piano lessons is easier	1	②	3	4	5
5) I prefer to teach private piano lessons.	1	2	③	4	5
6) I prefer to teach group piano lessons.	1	2	③	4	5
7) I felt students would be more motivated in private piano lessons.	1	②	3	4	5
8) I felt students would be more motivated in group piano lessons.	1	2	3	4	⑤
9) I felt students would find it easier to concentrate in private piano lessons.	1	2	3	④	5
10) I felt students would find it easier to concentrate in group piano lessons.	1	2	③	4	5

After teaching in this research project,

11) I feel that private piano instruction is more adequate for beginners than group piano instruction.	1	2	③	4	5
12) I feel that group piano instruction is more adequate for beginners than private piano instruction.	1	2	③	4	5
13) Teaching private piano lessons is easier.	1	2	3	④	5
14) Teaching group piano lessons is easier.	1	2	③	4	5

15) I prefer to teach private piano lessons.	1	2	③	4	5
16) I prefer to teach group piano lessons.	1	2	③	4	5
17) I feel students are more motivated in private piano lessons.	1	2	③	4	5
18) I feel students are more motivated in group piano lessons.	1	2	3	④	5
19) Students find it easier to concentrate in private piano lessons.	1	2	3	④	5
20) Students find it easier to concentrate in group piano lessons.	1	2	③	4	5
21) I feel that it is more suitable for a 5-year-old student to begin with private lessons.	1	②	3	4	5
22) I feel that it is more suitable for a 5- year-old student to begin with group lessons.	1	2	3	④	5
23) I feel that it is more suitable for 6- and 7-year-old students to begin with private lessons.	1	2	③	4	5
24) I feel that it is more suitable for 6- and 7 year-old students to begin with group lessons.	1	2	③	4	5
25) I feel that male students learned better in private lesson.	1	2	③	4	5
26) I feel the male students learned better in group lesson.	1	2	③	4	5
27) I feel the female students learned better in private lessons.	1	2	③	4	5
28) I feel the female students learned better in group lessons.	1	2	③	4	5

Please write down your answers to the following questions:

(1). Please compare the differences between teaching a group piano lesson and a private piano lesson. (List some pros and cons from each type of instruction):

Group Lesson: It required more time to make teaching plan for each lesson and it also took more energy to teach the group lesson than private lesson. However, it was quite rewarding to see students get excited and motivated while we did games and group activities. The advantage of teaching group lesson is that with three

students and longer lesson time, I can make up various activities to help them understand the musical concepts and help them re-enforce their motor skill and performance skill.

The down side of the group lesson includes more difficult to control the pace of each lesson, especially when there is a gap of ability between students in one class. Students who learned slower felt frustrated and embarrassed more easily, especially when they noticed other students were waiting for them. Meanwhile, students who were more advanced got bored more frequently when they had to wait other students to achieve tasks they had mastered. Therefore, while teaching a group lesson, it is difficult to distribute equal attention to each student. Students with slower pace usually received more attention from the teacher.

Private Lesson: It is easier to build a close relationship between teacher and student. The teaching pace is more flexible and it can be customized based upon each student's progress. However, without peers, the variety of musical games are limited and some students seem to get bored more easily in the private lesson. On the other hand, to some students who are very shy to interact with other or easily to get hyperactive and distracted with peers, private lesson can be a better lesson type.

(2). Please describe the difference between teaching five year-old students and six year-old students in both group and private instruction.

Group Lesson: When teaching group lessons, it is easier to teach 5-year-old students than teaching six and seven year-old students. Students at age 5 were more willing to participate activities and follow teacher's rules. It was more difficult to control the lesson pace when teaching students at ages 6 and 7. Some of them were reluctant to participate group activities or impatient when I asked them to repeat a musical exercise several times in order to help them improve a certain skill. These older students also liked to chat with others during the lesson so I had to take extra time to bring back their attention and keep them focus. Therefore, some five year-old groups made better and faster progress in class than six and seven year-old groups.

Private Lesson: In general, students at age 6 and 7 made faster progress than students at the age of 5. It seems to be harder for students at age 5 to remain focus in the private lesson.

(3). Please compare the difference between teaching male and female students in both group and private instruction.

There was no obvious difference between two genders in general. However, I feel boys tended to like competitive activities than girls in the group lesson. They tend to be more motivated when there was a competition between peers. As for girls, although they also cared about whether they achieved the goal or receive the sticker from the teacher, the idea of competing with others was not as effective to them as to boys.

(4) Which type of instruction do you prefer to teach young beginners?

I like teaching both. From my observation, some students are more suitable to begin with group lesson and some students can benefit more from private lesson. However, from my experience, the group lesson seems to be more suitable for younger students because they are usually more excited to participate group activities than older students. It really depends on each student's character.

Teacher Survey

I had experience of teaching private piano lessons before taking the teaching position in this project.

Yes.
Years _____

No.

I had experience of teaching group piano lessons before taking the teaching position in this project.

Yes.
Years _____

No.

	Strongly Disagree			Strongly Agree	
Before joining this research project,					
29) I thought private piano instruction is more suitable for young beginners than group piano instruction.	1	2	3	④	5
30) I thought group piano instruction is more suitable for young beginners than private instruction.	1	②	3	4	5
31) I thought teaching private piano lessons is easier.	1	2	3	4	⑤
32) I thought teaching group piano lessons is easier	1	②	3	4	5
33) I prefer to teach private piano lessons.	1	2	3	4	⑤
34) I prefer to teach group piano lessons.	1	②	3	4	5
35) I felt students would be more motivated in private piano lessons.	1	2	③	4	5
36) I felt students would be more motivated in group piano lessons.	1	2	③	4	5
37) I felt students would find it easier to concentrate in private piano lessons.	1	2	3	④	5
38) I felt students would find it easier to concentrate in group piano lessons.	1	2	③	4	5
After teaching in this research project,					
39) I feel that private piano instruction is more adequate for beginners than group piano instruction.	1	②	3	4	5
40) I feel that group piano instruction is more adequate for beginners than private piano instruction.	1	2	3	④	5
41) Teaching private piano lessons is easier.	1	2	3	④	5
42) Teaching group piano lessons is easier.	1	②	3	4	5

43) I prefer to teach private piano lessons.	1	2	3	④	5
44) I prefer to teach group piano lessons.	1	2	③	4	5
45) I feel students are more motivated in private piano lessons.	1	2	③	4	5
46) I feel students are more motivated in group piano lessons.	1	2	③	4	5
47) Students find it easier to concentrate in private piano lessons.	1	2	③	4	5
48) Students find it easier to concentrate in group piano lessons.	1	②	3	4	5
49) I feel that it is more suitable for a 5-year-old student to begin with private lessons.	1	②	3	4	5
50) I feel that it is more suitable for a 5- year-old student to begin with group lessons.	1	2	3	④	5
51) I feel that it is more suitable for 6- and 7-year-old students to begin with private lessons.	1	2	3	④	5
52) I feel that it is more suitable for 6- and 7 year-old students to begin with group lessons.	1	②	3	4	5
53) I feel that male students learned better in private lesson.	1	2	③	4	5
54) I feel the male students learned better in group lesson.	1	2	③	4	5
55) I feel the female students learned better in private lessons.	1	2	③	4	5
56) I feel the female students learned better in group lessons.	1	2	③	4	5

Please write down your comment in the follow questions:

(1). Please compare the differences between teaching a group piano lesson and a private piano lesson. (List some pros and cons from each type of instruction)

- Group Pros: peer fun factor is good for student and can increase motivation, observing and learning from others to learn better, develop more listening skill in order to play together more successfully (peer collaboration is different than student teacher collaboration), opportunities to correct or teach their peers, sometimes more willingness to participate (group confidence), good moods/attitude can spread, competition benefits

(more motivation and excitement for winning games or beating their peer), performance opportunities in the form of duets/trios.

- Group cons: potential discouragement from differing level[s] of skill, students more likely to seek fun over learning, distraction from peers, bad moods/attitude can spread, any individual attention can turn into a lack of attention to the others, too fast a pace for the slower learner too slow a pace for the faster learner, not as much time to ask individual questions and more difficult (but still possible) to customize approach for individual students within the group. Since pairing up certain students for group lessons cannot always be optimized because of schedules, that can make it more difficult to avoid unsuitable matches for forming a group.
- Private pros: more time for the student to ask questions and get direct help, more efficient keyboard technique demonstration, less distraction, easier for teacher to customize their approach for the individual student, no other problems from peer environment, Student can benefit from more duet playing with the teacher who is more accurate than peers in group lesson.
- Private cons: student can feel more intimidated from teacher's direct attention (or shyness), no benefits from peer environment. Whatever effect the parent sitting in the lesson might have, particular negative (distraction, fear of mistakes) might be stronger in the private lesson.

(2). Please describe the difference between teaching five year-old students and six year-old students in both group and private instruction.

Group lessons:

I feel the most important difference between the age groups is the ability to enjoy their time with others and focus on the material without too much self-consciousness (rivalry exists for both age groups, I think). In general, but not always, the vibe of the 6 to 7 year-old group lessons was a little more hesitant than the 5 year olds. In my experience, the 6-7 year olds were a little less motivated for certain games and activities since perhaps they are more self-conscious around their peers and maybe less easily pleased with the specific activities. [Some of these tendencies might have improved by modifying the curriculum to better suit that age group]. The 5 year olds tend to have less inhibition for group fun in general.

Private lessons

I feel that the 6 to 7 year-old students were more able to deal with a constant, directed stream of attention from the teacher than the 5 year olds. On average, their communication with an adult is better, and their attention functions a little better without needing as much fun to keep going. For example, the 5 year olds tend to have less mature verbal communication so they can benefit more from moving around more often or doing some game (less mature to sit still for longer), while the 6 to 7 year olds are more easily engaged with the ideas and conversation directly. There should ideally be some combination of verbal/sitting vs physical activity for any age group, but there is certainly a difference in the best amount of each between the age groups.

(3). Please describe the difference between teaching male and female students in both group and private instruction.

I feel the boys are more susceptible to distraction than the girls in both group and private lessons, and distraction is more of an issue in group lessons. I don't know how much an effect being a male teacher has on the students, so I'm not sure how that plays into it. Also, aside from personality, there might be an effect from the ratio of girls to boys in a group lesson (i.e. 3 boys or 3 girls, 2 boys/1 girl, 1 boy/2girls)

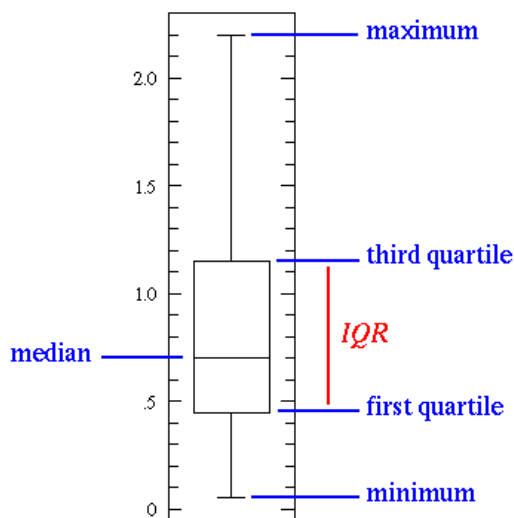
(4) Which type of instruction do you prefer to teach for young beginners?

I prefer private teaching for young beginners because I feel more comfortable than with the group lesson. I think the group lesson is more beneficial for many young beginners, but not always. It depends on each student.

Appendix H

How to Read and Understand a Boxplot

A “boxplot” is a graph representing the distribution of a numerical data set based upon a five-number summary: minimum, first quartile, median, third quartile, and maximum. The example graph below shows where these five numbers are located. First quartile and lower presents the lowest 25% of data. Median refers to the middle of the data set. 50% of data is greater than the median. The third quartile indicates 25% of data is greater than this value. The range from the first quartile to the third quartile is called the *interquartile range*. The main advantage of a boxplot is that it makes the distribution of a data set and the full range of variation visually apparent.



Graphic from: <http://www.physics.csbsju.edu/stats/box2.html>

Reference:

<http://www.physics.csbsju.edu/stats/box2.html>

<http://flowingdata.com/2008/02/15/how-to-read-and-use-a-box-and-whisker-plot/>