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Piano Instruction: Reframing the Master-Apprentice Model Through the Integration of Dialogic Processes

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The dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Rebecca Holman Williams as fulfilling the scope and quality requirement for meriting the degree of Doctor of Philosophy in Musicology.

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Abstract

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Private piano instruction is a niche field within the broader spectrum of pedagogy with idiosyncrasies that separate it from the traditional classroom. The learning in a private lesson encompasses cognitive, affective, and motor skills, often all at the same time, in a relatively intimate setting. Historically, this teaching and learning environment has followed the master-apprentice model of instruction. However, with newer research in learning sciences supporting social constructivist frameworks for student learning, a blended pedagogical approach is suggested. Dialogic pedagogy and cognitive apprenticeship are used in tandem with traditional precision training methodologies to foster student learning outcomes of metacognition, agency, and self-efficacy in addition to mastery and artistry on the instrument.

This study seeks to understand the historical contexts embedded in keyboard pedagogy and analyze the relationship between these contexts and the pedagogical artifacts that were produced. To this end, a textual analysis of historical primary sources will be conducted and analyzed through the lenses of a predetermined set of pedagogical frameworks. Secondarily, several studies will be conducted with students of varying ages, experience levels, and proficiencies from my own piano studio. The same set of pedagogical frameworks will be employed in the case studies to weave together historical artifacts with current pedagogical and research practices.

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Chapter 1

Introduction

Keyboard pedagogy has been a written part of the culture and practice of the instrument for nearly four and a half centuries. The paradigm of instrumental instruction has long followed a master-apprentice model in which the roles of the master (teacher) and apprentice (student) are implicitly understood. According to Constantijn Koopman et al., this model "embodies an extremely precious canon of knowledge of musical training, based on age-old traditions in music and music education."[1] Naturally, this tradition became embedded in music literature as well, with many didactic treatises and manuals published on the subject of keyboard pedagogy. As early as 1593, *Il Transilvano* by Girolamo Diruta discussed organ and clavier playing, technique, and fingering.[2] Didactic materials from Italy, France, and Austria became increasingly popular throughout the eighteenth and nineteenth centuries as the keyboard became a common fixture of middle- and upper-class households.[3] Pedagogy for the piano developed as the instrument was developed and refined over the course of the eighteenth and nineteenth centuries and standardized in the late nineteenth and early twentieth centuries. Of particular interest are the didactic materials published during the eighteenth, nineteenth, and twentieth centuries that served the amateur musician. The language used in these sources is instructive, prescriptive, and describes in detail what one must do to play the instrument well.

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[1] Constantijn Koopman, Nico Smit, Adri de Vugt, Paul Deneer, and Jeannette den Ouden, "Focus on Practice-Relationships Between Lessons on the Primary Instrument and Individual Practice in Conservatoire Education," *Music Education Research* 9, no. 3 (2007): 392.

[2] Marienne Uszler, Stewart Gordon, and Scott McBride Smith, *The Well-Tempered Keyboard Teacher*, 2nd ed. (Belmont, CA: Schirmer Books 2000), 273.

For further reading see Girolama Diruta, *Il Transilvano*. Venice: Alessandro Vincenti, 1593. Translated and edited by Murray C. Bradshaw and Edward J. Soehnlen (Ottowa: Institute of Medieval Music, 1984).

[3] Edwin M. Ripin et al., "Pianoforte," *Grove Music Online*, (Oxford University Press: 2001), Accessed 25 March 2021.

There are dozens, perhaps hundreds of didactic keyboard manuals spanning over the last 425 years. Most of the treatises written in the eighteenth and nineteenth century discuss the physiology, techniques, and aesthetics involved in effective keyboard playing. Discussions of sitting posture, hand position, fingering, pedaling, the correct execution of embellishments, and lessons in music theory are common features. Additionally, most of these sources include exercises for the amateur to play in order to perfect certain techniques.[4] The methods described in these sources will heretofore be described as "precision training methodologies," appropriate for an exacting medium such as keyboard performance which requires much practice and motor and cognitive aptitude to attain mastery.[5]

These types of manuals could be used by an amateur on one's own, to make accessible the wide world of music without the express need of a teacher. Of course, many amateur pianists would choose to work with a teacher to improve their skills, but these manuals attempted to bridge the gap between professional and amateur. To "spread the gospel" as it were. Didactic manuals continued to be written and published during the twentieth century, and there was an additional focus on the teacher and piano pedagogy, or the study of piano instruction. These texts explore the "how" of teaching proper technique and instilling musicality in one's students, often giving examples of exercises and repertoire suggestions for different levels. There were numerous books written on great pianists regarding their teaching frameworks as well as their practice regimens and creative processes as performers.[6]

[4] C.P.E. Bach's *Versuch über die wahre Art das Clavier zu spielen* (1753 and 1762) includes 480 exercises. Johann Nepomuk Hummel's 1828 treatise includes over 2,000 exercises, and Carl Czerny's Op. 500 (1839) includes hundreds of exercises.

[5] Precision training could be applied to any embodied practice such as dance, fine art, theater, and the like.

[6] Several of these books will be discussed in Chapter Four.

While there is no doubt that these sources are instructive and useful to both teacher and student, what is missing from most of them is a discussion of the *relationship* between teacher and student. In this study I will address another element of being an effective teacher; namely the interpersonal dynamic of coaching an individual through an embodied medium that combines motor, cognitive, and affective domains. The purpose of this study is to unpack the emergent nature of private piano instruction, the relational dynamics between teacher and student, and pedagogical frameworks that illuminate this nuanced teaching and learning environment. Dialogic pedagogy and cognitive apprenticeship will be discussed through the lens of piano instruction.[7]

I propose that teaching the technical and aesthetic aspects of playing the piano are only part of the formula of effective piano pedagogy. In fact, I believe these things are of equal importance to the relationship that develops between teacher and student. This belief stems from the countless conversations I've had with friends and students about their experiences learning to play piano. Many of these conversations went something like this: "I really wanted to learn piano, I love music, but my teacher was intimidating/too strict and made me not want to learn anymore." Or "my teacher took the fun out of learning piano," or, "I was afraid to go to lessons without having practiced enough because I didn't want to disappoint my teacher." This common shared experience points to an extremely important aspect of learning the instrument: the way

[7] Dialogic pedagogy is defined as "an approach that seeks to facilitate students' construction of knowledge through the questioning, interrogation, and negotiation of ideas and opinions in an intellectually rigorous, yet mutually respectful manner." (Peter Teo, "Teaching for the 21st Century: A Case for Dialogic Pedagogy," *Learning, Culture and Social Interaction* 21 (2019): 170.) Dialogic pedagogy will be discussed in further detail in Chapters Three and Five. Cognitive apprenticeship is defined as "the focus of learning through guided experience on cognitive and metacognitive, rather than physical, skills and processes." (Allan Collins, John Seely Brown, and Susan E. Newman, "Cognitive Apprenticeship: Teaching the Crafts of Reading, Writing, and Mathematics." In *Knowing, Learning, and Instruction: Essays in Honor of Robert Glaser*. Lauren B. Resnick, ed., Hillsdale, NJ: L. Erlbaum Associates, 1989, 457.) This will be discussed in detail in Chapter Three.

that the teacher and student interact with one another. Research in learning sciences has shown that no amount of expertise as a pianist on the part of the teacher can make up for a learning experience that the student perceives as threatening, demeaning, or stressful.[8] I posit that this is what the student will remember long after they have stopped taking lessons: how they *felt* during the lessons.

To this point, I suggest a pedagogical approach that blends the social constructivist methods of dialogic pedagogy and cognitive apprenticeship with traditional precision training methodologies. I propose that when applied in a combinatory approach, these pedagogies strengthen not only piano mastery, but student success in other realms. This study aims to determine if there is a positive interaction between this blended pedagogical approach and student learning outcomes of metacognition, self-efficacy, and agency.

This study lies at the intersection of musicology, social sciences, and pedagogy, and as such a transdisciplinary research approach has been taken. Initially, a textual analysis of historical primary keyboard pedagogy sources was conducted to examine the language used by the author or pedagogue to discern the pedagogical priorities suggested therein. The prose were analyzed through the lenses of a predetermined set of pedagogical frameworks, including behaviorism, cognitivism, constructivism, social constructivism, dialogic pedagogy, cognitive apprenticeship, precision training methods, technique-based methods, the transmission model, and teaching and learning outcomes including collaboration between teacher and student, student metacognition, self-efficacy, and agency.[9] This textual analysis provided historical context of the

[8] This research will be further explored in Chapters Two and Three in the discussions of social constructivism, dialogic pedagogy, and self-efficacy.

[9] These frameworks will be discussed in detail in Chapters Two and Three, providing historical context, definitions, and relevance to keyboard pedagogy.

methodologies employed in keyboard and piano instruction over the last three centuries, and recontextualized these methods within modern learning sciences.

Subsequently, a qualitative self-study[10] was conducted with four students of various ages and levels from my own piano studio using the blended pedagogical approach to ascertain its efficacy. The study consisted of eight consecutive recorded lessons, after which each student was given a questionnaire that dealt with the student's experiences of dialogic pedagogy, cognitive apprenticeship, and precision training during our lessons. The last component of the study was an interview with each student to discuss their experiences of dialogic pedagogy, cognitive apprenticeship, and precision training, and how these methods affected their feelings of self-efficacy and agency as developing pianists. Transcripts were taken of the lessons and interviews and used for analysis in the next phase of the study.[11]

The third phase of this study consisted of thematic qualitative analysis of the lesson and interview transcripts and questionnaires. The transcripts were analyzed and coded to identify precision training methods, cognitive apprenticeship methods, dialogic pedagogy methods, and the learning outcomes of student metacognition, self-efficacy, and agency. The goal of the analysis was to determine the extent to which cognitive apprenticeship and dialogic pedagogy co-occurred with the learning outcomes of student metacognition, self-efficacy, and agency. This study seeks to discover to what extent the social constructivist methods of dialogic pedagogy and cognitive apprenticeship in private piano lessons foster student metacognition, agency, and self-efficacy beyond technical mastery.

[10] The qualitative self-study methodology will be discussed in Chapter Five.

[11] This research protocol has been approved by the Institutional Review Board at Claremont Graduate University.

The following two chapters present discussions of the social and learning sciences that provide context for this study. Chapter Four provides a literature review and textual analysis of historical keyboard pedagogy sources using the pedagogical frameworks discussed. Chapters Five, Six, and Seven discuss in detail the methodologies employed in this study, the findings and implications of the study, and suggested applications and further research to be performed in the domain of modern piano pedagogy.

Chapter 2

Pedagogical Frameworks of the Twentieth Century

In order to understand the historical pedagogy of keyboard instruments and recontextualize it within modern pedagogical frameworks, this chapter will present key trends in pedagogy and education of the twentieth century; namely behaviorism, cognitivism, constructivism, and social constructivism. These frameworks will then be applied to specific examples in piano pedagogy.

Behaviorism sought to be an objective, measurable science of the behavior of organisms rather than the subjective first-person accounts that were the focus of psychoanalysts Sigmund Freud and Carl Jung during the late nineteenth and early twentieth centuries.[12] Behaviorism focuses on observable behavior without consideration of cognitive states.[13] Three important figures were at the forefront of this ideology, namely Ivan V. Pavlov, John B. Watson, and B.F. Skinner.[14] Pavlov conducted a series of experiments on the conditioning of animals, including the well-known salivary conditioning of dogs with the sound of bells. The behaviorists believed that one could condition or train any organism, including human beings, to respond to stimuli through motivation. To accomplish this, the trainer must introduce, strengthen, and/or eliminate the stimuli to bring about this change as the subject responds to the reward or punishment. As it

[12] For further reading, see Sigmund Freud, *Die Traumdeutung*. Leipzig: Franz Deuticke, 1899. Translated by A. A. Brill as *The Interpretation of Dreams* (Macmillan, 1913); Carl Jung, *Wandlungen und Symbole der Libido*. New York: Moffat, Yard and Co., 1916. Translated by Beatrice M. Hinkle as *The Psychology of the Unconscious*.

[13] Andrew Riemann, "Behavioralist Learning Theory" in *The TESOL Encyclopedia of English Language Teaching* (2018), 1. For further reading on the history of behaviorism, see John A. Mills, *Control: A History of Behavioral Psychology*, (New York: New York University Press, 1998).

[14] For further reading see Ivan Pavlov, *Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex*. London: Oxford University Press, 1927; B.F. Skinner, *Science and Human Behavior*. New York: Free Press, 1953;John B. Watson, "Psychology as the Behaviorist Views It," *Psychological Review* 20 (1913): 158-177.

relates to pedagogy, behaviorism focuses on "repetition in learning, of presenting strong and varied stimuli... planning and sequencing of learning events, and of specifying achievable and verifiable learning objectives in the form of learning outcomes."[15]

In the latter half of the twentieth century two additional perspectives on learning gained prevalence: cognitivism and constructivism. Rather than focusing on strictly observable behaviors, cognitivism, developed by psychologist George A. Miller, focuses on human thought processes including thinking, problem-solving, language, concept formation, and information processing.[16] Cognitivists believe that behavior is an indication of thinking, rather than that thinking is a behavior. Cognitivists, including Swiss psychologist Jean Piaget, renowned for his work on child development, believed that children naturally acquire knowledge as they respond to experience.[17]

Cognitivists see learning as developing strategies for thinking.[18] There is a focus on how information is received, organized, stored, and retrieved by the mind and an emphasis on

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[15] Orison Carlile and Anne Jordan, "It Works in Practice But Will It Work In Theory? The Theoretical Underpinnings of Pedagogy," In *Emerging Issues in the Practice of University Learning and Teaching*, G. O'Neill, S. Moore, and B. McMullin, eds. (Dublin: AISHE, 2005), 15.

[16] Peggy A. Ertmer and Timothy J. Newby, "Behaviorism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective," *Performance Improvement Quarterly* 26, no. 2 (2013): 50. For further reading, see William James and George A. Miller, *The Principles of Psychology* (Boston: Harvard University Press, 1983).

[17] Carlile and Jordan, "It Works in Practice But Will It Work In Theory?," 18. Piaget's work is further explored by music educator Marilyn Pflederer Zimmerman, who states "Piaget views concept development in terms of 'conservation,' which refers to an individual's ability to retain the invariant qualities of a particular stimulus when the stimulus field has been changed. For Piaget, conservation can be traced through a successive growth from the child's perceptually dominated view of reality to a conceptual view." "Zimmerman believes that it is possible to apply Piaget's principle of conservation to the development of musical thought. (Marilyn Pflederer Zimmerman, "Percept and Concept: Implications of Piaget," *Music Educators Journal*, LVI (February 1970): 49, quoted in Max W. Camp, *Developing Piano Performance: A Teaching Philosophy*. Chapel Hill, NC: Hinshaw Music, Inc.), 33. For further reading, see Jean Piaget, *Intelligence and Affectivity: Their Relationship During Child Development*. Translated and edited by T.A. Brown and C.E. Kaegi. Palo Alto, CA: Annual Reviews Inc., 1981.

[18] Carlile and Jordan, "It Works in Practice But Will It Work In Theory?," 18.

mapping the learning process as new information is integrated with old information. Cognitivism is usually most applicable to complex forms of learning such as reasoning, problem-solving, and information processing. An efficient method of knowledge transfer from teacher to learner is required for these forms of learning to take place. This includes simplification and standardization; breaking up the knowledge into simplified knowledge structures that can be assimilated and integrated by the student efficiently and easily.[19] Other practical applications of cognitivism include giving learners the opportunity to revisit topics to strengthen retention, promoting active listening, and presenting material in multiple forms to facilitate transfer to long term memory.[20]

Like cognitivism, constructivism developed in response to the frameworks that preceded it. While behaviorism and cognitivism are "primarily objectivistic; the world is real, external to the learner. The goal of instruction is to map the structure of the world onto the learner…constructiv[ism] is a function of how the individual creates meaning from his or her own experiences."[21] Constructivism offers a holistic look at learning, with a focus not only on the learner, but also the learner's environment(s), physical, social, and mental, as part of the learning process.[22] Constructivists believe that humans create meaning as opposed to acquiring it, again reinforcing the subjective experience over an objective reality. The emphasis is placed on facilitating the construction of meaning and understanding as all individuals perceive the world differently. "Constructivism is interested in the whole mind, and the affective domain,

[19] Ertmer and Newby, "Behaviorism, Cognitivism, Constructivism," 52.

[20] Carlile and Jordan, "It Works in Practice But Will It Work In Theory?," 19.

[21] Ertmer and Newby, "Behaviorism, Cognitivism, Constructivism," 53-54.

[22] Laurie Taetle and Robert Cutietta, "Learning Theories as Roots of Current Musical Practice and Research." In *The New Handbook of Research on Music Teaching and Learning*, edited by Richard Colwell and Carol Richardson (Oxford, UK: Oxford University Press, 2002), 284.

including the place of volition and emotion in learning."[23] This is a particularly useful framework with adult learners. Constructivist pedagogical practices include acknowledging and accommodating student diversities, explaining the relevance of the topic, and encouraging independent learning and student reflection.[24]

Developmental psychologist Lev Vygotsky discussed the theory of social constructivism in his works *Mind in Society* (1978) and *Thought and Language* (1986). Vygotsky believed that "human nature presupposes a specific social nature and a process by which children grow into the intellectual life of those around them"[25] and that "learning is a necessary and universal aspect of the process of developing culturally organized, specifically human, psychological functions."[26] To illustrate the social and collaborative nature of learning, Vygotsky created a framework called the *Zone of Proximal Development*, which is "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers."[27] According to Vygotsky, learning occurs socially first, and independently over time as the child's abilities develop.

Social constructivism is of utmost importance to the model of this study; the glue that binds the relational elements. Without the social interactions and interpersonal dynamics between student and teacher, dialogic pedagogy, cognitive apprenticeship, and collaboration

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[23] Carlile and Jordan, "It Works in Practice But Will It Work In Theory?," 20-21.

[24] Carlile and Jordan, "It Works in Practice But Will It Work In Theory?," 21.

[25] Lev Vygotsky, *Mind in Society: The Development of Higher Psychological Processes* (Cambridge, MA: Harvard University Press, 1978), 86.

[26] Vygotsky, *Mind in Society*, 90.

[27] Vygotsky, *Mind in Society*, 86.

could not occur. Without these facets of learning, the intended student learning outcomes of self-efficacy, agency, and metacognition could not be achieved and thus the student might not flourish.

2.1 Applications in Piano Pedagogy

The frameworks previously discussed are all applicable in piano pedagogy. Playing the piano is in part a behaviorist endeavor as it is rooted in physiological actions and learned responses. In this way, the piano teacher and the instrument can both act as the motivator or reinforcer. With a child or adult beginner, the teacher must give direct verbal instruction as well as demonstration and physical touch to adjust playing techniques. With much supervised repetition the student begins to adapt to the instrument, and through sufficient positive reinforcement from the teacher the student creates muscle memory and associates this with correct tone production, rhythm, phrasing, etc. As a student progresses to intermediate and advanced levels, the instrument itself can be used as a reinforcement tool. By experimenting with attack for tone production, technique, and phrasing, the student can use the aural feedback to alter and hone their approach independently, with less direct feedback needed from the teacher.

Educational researcher Elizabeth Simpson created a psychomotor taxonomy in the 1960s to describe the behaviorist processes involved in learning motor skills.[28] Simpson posited that a taxonomy for the psychomotor domain would be useful for music, art, and trainings related to agriculture, industry, and physical education. According to Simpson, "many technical jobs require a high degree of ability and skill in the psychomotor domain as well as in the cognitive

[28] Other notable researchers of the psychomotor domain were A.J. Harrow (*A Taxonomy of the Psychomotor Domain*, NY: David McKay and Co., 1972) and R.H. Dave (Robert J. Armstrong, ed., "Psychomotor Levels" in *Developing and Writing Behavioral Objectives*. Tuscan, AZ: Educational Innovators Press, 1970.)

and affective areas" and that the psychomotor domain could be of use "in research on teaching for the development of motor abilities and skills."[29]

Simpson proposed a psychomotor taxonomy with seven components, each a step in the progression to mastery. The first step is *perception*, in which the subject becomes aware of objects and relations via the sense organs (auditory, visual, tactile, taste, smell, and kinesthetic). Of importance for the context of this study are the auditory, visual, tactile, and kinesthetic senses. After perception there is sensory stimulation in which a stimulus affects one or more of the sense organs. The second step is *set*, which includes the "preparatory adjustment or readiness for a particular kind of action or experience."[30] Set includes physical, mental, and emotional preparation for the motor act. The third step is *guided response*, in which the subject is guided through the act by a teacher and may include imitation and trial and error. The fourth step is *mechanism*, in which the learned response of the motor act has become habitual, and the subject achieves a certain level of proficiency. The fifth step is the *complex overt response* in which the subject can perform a complex motor act smoothly, efficiently, and confidently. The six step is *adaptation*, in which movements can be modified by the subject for specific situations. The seventh and final step is *origination*, in which new movements can be created by the subject.

Simpson's psychomotor taxonomy can be aptly applied to piano pedagogy. The seven steps in the progression towards mastery are commonly used in lessons, both in the microcosm of the individual lesson and over time as the student becomes more advanced. *Perception* (step one) may occur before the student even begins lessons. They may hear music played on a piano or a child may see a piano and become curious as to what it is used for. The tactile and

[29] Elizabeth J. Simpson, *Classification of Educational Objectives, Psychomotor Domain* (Washington DC: Gryphon House, 1972), 3.

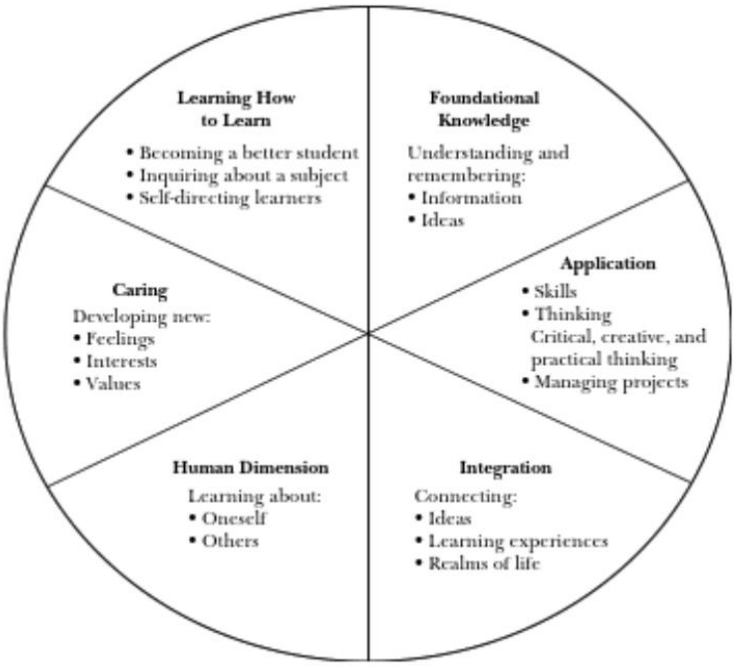
[30] Simpson, *Classification of Educational Objectives*, 27.

kinesthetic senses are introduced in the first lesson when the student becomes physically acquainted with the keys and the strength required to produce sound on the instrument. Step two, *set,* may occur often as the student learns techniques, or before performing a piece from memory as they mentally and emotionally prepare to perform. Step three, *guided response*, is particularly significant in the lesson setting. Much of a lesson may be devoted to a student watching and listening to their teacher demonstrate a technique or passage of a piece, while they mentally integrate this and then attempt to imitate the teacher. This process would naturally include trial and error as well. Step four, *mechanism*, occurs as a student becomes more advanced and comfortable at the piano. This can occur during lessons as a student plays for their teacher, or during practice sessions as they refine their technique. Steps five through seven are more relevant to advanced musicians as they hone their individual interpretation of a piece with *adaptation*, or perhaps compose original music with *origination*.

The physical and technical aspects of piano pedagogy are indispensable to learning the instrument, however cognitivism and constructivism are of equal importance in understanding learner motivation and engagement with the necessary rigor of persistent technical practice to achieve mastery. Cognitivism is particularly relevant in the problem-solving stages of working through techniques or difficult passages in a piece and the creation of knowledge structures when memorizing a piece. Language plays a particularly important role in the facilitation of problem-solving during lessons. When teacher and student work on a particular technique or passage, asking the student to articulate the difficulty in their own words helps them develop metacognition about their learning process. This use of language also aids the teacher in identifying and understanding the issue at hand, helping to streamline the appropriate pedagogical approach to working through it. The teacher then uses language and modeling to

deconstruct the technique to its more basic components or knowledge structures and the student integrates this new knowledge and tries again. This process is iterative as teacher and student refine the technique or passage. For a more advanced student, the encoding of music from short term to long term memory is of great importance. With the help of a teacher, the student can implement any and all of the following memorization techniques: chunk the music into various sections, play hands-separate and hands-together, play with certain voices missing, play in different rhythmic groupings, play from different points in the music, etc. All these techniques build mental and muscle memory which aid in the encoding of music to long term memory.

The constructivist lens applied to piano pedagogy provides the opportunity for an even richer learning environment. If the student constructs their own meaning through their experiences of learning to play, mastering a technique, and performing, they will have learned more than to play the instrument. These experiences and skills elicit other important cognitive and affective competencies as well, best described through Fink's Taxonomy of Significant Learning, a framework that blends traits of cognitivism and constructivism. L. Dee Fink is a professor, author, and consultant in higher education who in 2013 created a framework that focuses on change for the learner. The components of this model are symbiotic and interdependent rather than hierarchical. Of particular interest to this study are the *Caring*, *Human Dimension*, and *Learning How to Learn* components of the model.



[31]

Figure 1: Fink's Taxonomy of Significant Learning

The *Caring* component consists of the creation of new feelings, interests, and values which aligns well with learning to play piano.[32] While it is obvious that the interest in playing piano is often inherent when the student begins lessons, the other effects might only emerge after the student has been taking lessons for a period of time. Positive feelings often occur as the student begins to see progress in their learning and integration of technique (through behaviorist-grounded methods of repetition and reinforcement), when they have finished a piece, or have a successful performance. These feelings may include pride, self-satisfaction, happiness, and an eagerness and excitement to continue learning. As feelings ebb and flow during the learning process, new values may become important to the student as well. Diligence, determination, a

[31] L. Dee Fink, *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*. John Wiley & Sons, Inc. 2013, 35.

[32] Fink, *Creating Significant Learning Experiences*, 35.

stronger work ethic, and a new appreciation for the aesthetic and affective aspects of music may emerge.

The *Human Dimension* component of Fink's model is further granulated into learning about oneself and learning about others.[33] Through this dimension, students are able to develop *Caring* and *Learning How to Learn*. This speaks to the relational aspect of piano instruction. The relationship that develops between teacher and student in this setting is complex, as the role of the teacher often blurs lines between teacher, coach, mentor, and friend. Because a lesson is a one-on-one interaction, a rapport often develops between teacher and student more so than it would in a traditional classroom setting. There is often small talk during lessons, and it is common for teacher and student to know a bit about each other's lives, including information about family, work, and even relationships. This divulging of personal information allows for the student and teacher to feel safe with one another in this relatively intimate learning environment. The process of learning to play piano is iterative and often humbling, and so it is important for the student to feel safe "failing" and trying again in front of the teacher. It is equally important for the teacher to be aware of the student's comfort level during lessons because is unlikely to progress quickly or effectively if they are nervous or feel any sort of shame or embarrassment about their progress.

The *Learning How to Learn* component of Fink's Taxonomy includes becoming a better student, inquiring about a subject, and becoming a self-directed learner.[34] Here, there is a focus on the development of metacognition, a cognitivist trait. These facets of learning relate well to dialogic pedagogy, a key framework of this study that will be presented in detail in the next

[33] Fink, *Creating Significant Learning Experiences*, 35.

[34] Fink, *Creating Significant Learning Experiences*, 35.

chapter. Dialogic pedagogy values inquiry on the part of both teacher and student to build meaning and co-construct knowledge. Through the co-construction of knowledge during lessons both student and teacher learn; the student for the first time, and the teacher in novel ways they had not necessarily thought of before.[35] As the student progresses and becomes more independent, they build metacognition of their learning processes, another important component of dialogic pedagogy (and of cognitive apprenticeship). The teacher can encourage this metacognition by encouraging the student to construct their own learning outcomes and asking the student questions regarding their problem-solving process to unearth how they integrated the new material in their mental schema.

The constructivist emphasis on social, emotional, and relational aspects of learning are very much embedded in the processes of dialogic pedagogy and cognitive apprenticeship. These frameworks are key components of the piano pedagogy model I suggest but are less prevalent in historical models of keyboard pedagogy. The trends of historical keyboard pedagogy will be delineated and examined in Chapter Four.

2.2 Concluding Remarks

This chapter explored behaviorism, cognitivism, constructivism, and social constructivism in the context of the broader educational landscape as well as their applicability in piano pedagogy. Behaviorism and cognitivism are a part of traditional keyboard pedagogy, but constructivism and social constructivism were not explicitly highlighted as pedagogical priorities, as will be shown in the Chapter Four. In Chapter Three we will consider the efficacy of the master-apprentice model in piano instruction and discuss the frameworks of dialogic pedagogy and cognitive apprenticeship as possible approaches for this mode of teaching. These

[35] I have often found that understanding a technique or notational symbol through the eyes of my students helps me find new language to teach it with other students.

frameworks bring to the fore the social and relational aspects of teaching and learning, historically underrepresented components. I propose that when applied to the master-apprentice model, these pedagogies will enhance the experience for student and teacher alike, and foster the student learning outcomes of metacognition, self-efficacy, and agency.

Chapter 3

The Master-Apprentice Model Reexamined: A Discussion of Dialogic Pedagogy, Cognitive Apprenticeship, and Collaborative Creativity

The master-apprentice model has been and continues to be inextricably linked to keyboard instruction. However, as educational landscapes have changed; becoming more global, diverse, and inclusive, there is a need to shift our understandings of what the master-apprentice model could look like. I do not propose to dismantle this model, only to shift the power dynamic therein. This could begin with the terminology itself. Instead of "master-apprentice", could it be "expert-emerging learner"? With this shift in language begets a shift in the balance of power and a built-in expectation of co-creation and student agency. Indeed, the emerging learner should not take a "back seat" to their learning; rather they should be encouraged to actively construct their knowledge (and be metacognitive of this construction) from the beginning. This is discussed by Dr. Mitchell Rabinowitz, professor of psychology at Fordham University. "Knowledge about the how, where and why of strategy is important if students are to take control of their cognitive processing."[36] This chapter will begin with an examination of the efficacy of the master-apprentice model and its implications in the current educational landscape. A discussion of relevant pedagogical frameworks, including dialogic pedagogy and cognitive apprenticeship, and the student learning outcomes of collaborative creativity and self-efficacy will follow.

3.1 The Efficacy of the Master-Apprentice Model

The master-apprentice model is a universal mode of teaching and learning found in cultures across the world. From indigenous civilizations to metropolitan cities, this model is used

[36] Mitchell Rabinowitz, "On Teaching Cognitive Strategies: The Influence of Accessibility of Conceptual Knowledge," *Contemporary Educational Psychology* 13, (1988): 234.

for the transfer of knowledge and skills between expert and novice. There are countless examples, but to name a few, this model is seen in the crafting of pottery in Japan, railroad workers in the United States, textile weaving in Nigeria, and shamans of Aztec peoples in Mesoamerica.[37] This mode of instruction is effective in many settings, as it is often the most direct way for a novice to gain hands-on experience in a craft with immediate critique from a master. The apprentice observes the trade and absorbs information, both through cognitive and motor pathways, while the master scaffolds the learning process and gradually gives the apprentice more and more complex tasks to do. Developmental psychologist Howard Gardner, famed for his theory on multiple intelligences, provides an in-depth discussion of the master-apprentice model in his book *The Unschooled Mind*.[38] Gardner discusses historical and cultural contexts for this model:

> The kinds of environments called apprenticeships have for millennia fused the available forms of knowing in a rich and contextualized way. In a preliterate society, it is necessary only to work with sensorimotor and symbolic knowledge. In a literate society, it has become essential to create learning situations in which these earlier forms of knowing come to be utilized in conjunction with the formal ways of knowing that grow out of, and are tied to, specific disciplines.[39]

Gardner points out the malleability of this model, its applicability in diverse settings, and its natural prevalence in varied cultural and educational contexts. It is notable that this model is used at all levels of traditional academic education, indicating that there are certain types of learning

[37] Michael W. Coy, ed., *Apprenticeship: From Theory to Method and Back Again* (New York: State University of New York Press, 1989).

[38] For further reading on Gardner's theory on multiple intelligences, see Howard Gardner, *The Unschooled Mind: How Children Think and How Schools Should Teach* (New York: Harper Collins Publishers, 1991).

[39] Howard Gardner, *The Unschooled Mind: How Children Think and How Schools Should Teach* (New York: Harper Collins Publishers, 1991), 181.

that are best supported by close interpersonal communication, which effectively supports the learning process.

Gardner argues that the master-apprentice model guides learners in the "why" of their studies. Rather than blindly imitating without explanation from the teacher, apprentices learn first-hand the purpose for and applications of their emerging knowledge in a new discipline. "Novices have the opportunity to witness on a daily basis the *reasons* for various skills, procedures, concepts, and symbolic and notational systems. They observe competent adults moving readily and naturally from one external or internal way of representing knowledge to another."[40] This is particularly relevant in piano pedagogy as the content knowledge is multi-dimensional; spanning cognitive, motor, and affective domains. For example, a master who elucidates the intricacies of the music notation system is of utmost importance for a beginning piano student. Without this guidance, the student might feel lost, frustrated, and thus could potentially lose motivation to continue learning.

It is hard to imagine another teaching and learning paradigm as efficacious as the master-apprentice model in piano instruction. Indeed, the complexities of this medium would be difficult to translate and apply to a wide student audience, like a lecture setting. There is an inherent need for the student and teacher to communicate with one another and through the instrument in a symbiotic way, such that proximity in a one-on-one setting is certainly the most appropriate. Gardner argues the effectiveness of apprenticeships:

> Such forms of instruction are heavily punctuated with sensorimotor experiences and with the contextualized use of first-order symbolization, such as natural language and simple drawings and gestures. To the extent that they feature more formal notations or concepts, these are introduced to the learning directly in the

[40] Gardner, *The Unschooled Mind*, 203.

> context in which they are wanted, and the learner sees for himself the ways in which they may be applied.[41]

While this model has many clear advantages in the context of piano instruction, it may also have some deficiencies that make it a more complicated equation than it appears. For example, this mode of knowledge transfer may not be appropriate for all types of piano students in today's educational landscape. In previous centuries, when the learning of music was viewed as a social currency and one of very few vehicles for entertainment, the master-apprentice model was quite effective.[42] The master and apprentice likely shared cultural contexts and a shared love of music as High Art that buoyed their relationship and propelled the student's learning forward. Piano students would devote many hours daily to perfecting their playing upon their teacher's instruction. For example, students of Liszt were instructed to perform repeated-note exercises for several hours daily, as well as playing scales in octaves twenty to forty times in succession, all to better their technique.[43] In the nineteenth century, dedication to mastery such as this was a common priority for teacher and student alike.

Contrastingly, in the modern world the adult learner may pursue piano for a variety of reasons. Personal edification, a distraction from their day job, a casual interest in pop music, the list goes on. These students may not be as motivated toward mastery as students of previous centuries. Musicologist Malcom J. Tait discusses this in his book chapter titled "Teaching Strategies and Styles" in the *Handbook of Research in Music Teaching and Learning*:

> The general model for teaching music has often been derived from the conservatory master teacher where the focus is on the musical score and the teacher analyzes the performance, identifies problems, and suggests remedies. In some situations the learning process is one of strict imitation of the master teacher, but in others

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[41] Gardner, *The Unschooled Mind*, 125.

[42] Arthur Loesser, *Men, Women and Pianos: A Social History* (New York: Simon and Schuster, 1954), 49.

[43] Marienne Uszler, *The Well-Tempered Keyboard Teacher*, 319.

> there is room for flexibility so that dialogue can develop and students are encouraged to share their opinions. However, the general model remains essentially teacher centered, with minimal opportunities for students to become aware of their own roles in the music-learning process. Knowledge and skill are usually teacher based and teacher developed. This model appears to be reasonably successful with musically motivated students and where large amounts of practice time are dedicated to achieving or refining desired responses. But given the apparent need for instant gratification in so many sectors of contemporary society, this model is not suited to the vast majority.[44]

Tait points out the stark societal differences that have impacted the educational landscape of today. If the master-apprentice model continues as it has for centuries, unaltered, piano teachers may be doing a disservice to their students. The next section of this chapter focuses on newer learning theories and frameworks that may be remedial when supplemented to this mode of teaching. Dialogic pedagogy and cognitive apprenticeship are strategies that provide additional forms of support for the learner when applied to the master-apprentice model.

3.2 Dialogic Pedagogy: A Brief History

Dialogic pedagogy, a social constructivist model of teaching and learning, was studied and coined by professor and educational researcher Dr. Robin Alexander in 2001.[45] During a four-year study, Alexander studied primary, secondary, and university classrooms, teacher training institutions, national ministries, and local government offices in England, France, India, Russia, and the United States. He interviewed teachers, parents, children, students, politicians, and community leaders; collecting policy documents, lesson plans, and examples of students'

[44] Malcolm J. Tait, "Teaching Strategies and Styles," in *Handbook of Research in Music Teaching and Learning*, edited by Malcolm J. Tait, (New York: Schirmer Books, 1992), 532.

[45] Other scholars researched the correlations between thought, language, dialogue, and learning before Alexander. A few examples include Douglas Barnes' *Language, the Learner, and the School* (1969), Ward Lock and J. Tough's *Talking and Learning: A Guide to Fostering Communication in Nursery and Infant Schools* (1977), and Mikhail Bakhtin's *The Dialogic Imagination* (1981).

work.[46] After studying the data collected, including 130 hours of videotape, Alexander concluded that "a culture is mediated by its language; and it is through language, especially spoken language, that teachers teach and children learn."[47] According to Alexander, "Talk is much more than an aid to effective teaching. Children…need to talk, and to experience a rich diet of spoken language, in order to think and to learn. Reading, writing and number may be the acknowledged curriculum 'basics', but talk is arguably the true foundation of learning."[48]

The core tenets of dialogic pedagogy outlined by Alexander are as follows:

- **Collective**: teachers and [students][49] address learning tasks together, whether as a group or as a class, rather than in isolation;
- **Reciprocal**: teachers and students listen to each other, share ideas and consider alternative viewpoints;
- **Supportive**: students articulate their ideas freely, without fear of embarrassment over 'wrong' answers; and they help each other to reach common understandings;
- **Cumulative**: teachers and students build on their own and each other's ideas and chain them into coherent lines of thinking and enquiry;
- **Purposeful**: teachers plan and facilitate dialogic teaching with particular educational goals in view.[50]

According to Alexander, dialogic pedagogy is indicated by teacher-pupil interactions in which:

- "Questions are structured so as to provoke thoughtful answers, and --no less important-- Answers provoke further questions and are seen as the building blocks of dialogue rather than its terminal point;
- There is appropriate balance between the social and the cognitive purposes of talk, or between encouraging participation and extending understanding;

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[46] Robin Alexander, *Towards Dialogic Teaching: Rethinking Classroom Talk*, 4th ed. (UK: Dialogos Ltd., 2008), 1.

[47] Alexander, *Towards Dialogic Teaching*, 1. Alexander's work is supported by the field of linguistic relativity, also known as the Sapir-Whorf hypothesis. This hypothesis states that language shapes thought and hence our subjective experiences and interactions. For further reading, see Caleb Everett's *Linguistic Relativity: Evidence Across Languages and Cognitive Domains*, vol. 25, eds. Gitte Kristiansen and Francisco J. Ruiz de Mendoza Ibáñez, (Berlin: Walter de Gruyter GmbH, 2013).

[48] Alexander, *Towards Dialogic Teaching*, 9.

[49] Alexander uses the term "children", but I will use the term "students" as I am applying dialogic pedagogy to both child and adult learners.

[50] Alexander, *Towards Dialogic Teaching*, 28.

- Students have the confidence to make mistakes, and understand that mistakes are viewed as something to learn from rather than be ashamed of;
- Questioning prompts and challenges thinking and reasoning;
- Questions balance open-endedness with guidance and structure in order to reduce the possibility for error;
- Feedback on student responses replaces the simple positive, negative, or non-committal judgment, or mere repetition of the respondent's answer, by informative diagnostic feedback on which pupils can build.[51]

Dialogic pedagogy is indicated by student-talk through which students:

- Narrate
- Explain
- Instruct
- Ask different kinds of questions
- Receive act and build upon answers
- Analyze and solve problems
- Speculate and imagine
- Explore and evaluate ideas
- Discuss
- Argue, reason, and justify
- Negotiate.[52]

The roots of dialogic pedagogy lie in the work of Piaget and Lev Vygotsky. Piaget suggested that children learn by experiencing and interacting with the world around them and discussed this in his theory of cognitive development.[53] Vygotsky posited that children develop cognitively by engaging in spoken language with adults and children around them.[54] Alexander fleshed out this concept by stating that both student engagement and teacher intervention are

[51] Alexander, *Towards Dialogic Teaching*, 42-4.

[52] Alexander, *Towards Dialogic Teaching*, 44.

[53] For further reading on Piaget, see Jean Piaget and Bärbel Inhelder, *The Psychology of the Child* (New York: Basic Books, 1969).

[54] Vygotsky, *Mind in Society*, 11.

important, and that neither party should be passive. According to Alexander, "the principal means by which pupils actively engage and teachers constructively intervene is through talk."[55]

Dialogic processes were also studied by Mikhail Bakhtin (1895-1975), a Russian literary critic and philosopher who studied the philosophy of language, literary theory, and ethics. In 1975, Bakhtin published a book titled *The Dialogic Imagination: Four Essays* in which he discussed the nature of dialogism. According to Bakhtin: "To make an utterance means to appropriate the words of others and populate them with one's own intention."[56] According to Peter Teo, scholar and professor at the National Institute of Education in Singapore:

> Bakhtin argues that human consciousness is by nature dialogic and it is through interactional activities that this consciousness will become internalized. By demonstrating how the voices of other people get interwoven into what we say, write and think, he theorizes that thinking and knowing occur in and through dialogic speech which acts as in interface between a speaker and a real or imagined audience…. Bakhtin has provided an epistemological stance and perspective that highlights meaning (and learning) as necessarily arising from the interactive act of drawing from and rearticulating the thoughts and languages of others. It effectively decenters learning from the cognitive processing that takes place in an individual learner to the social interaction in which learners participate.[57]

Alina Reznitskaya, professor of Educational Psychology at Montclair State University further discusses Bakhtin's thoughts on dialogic processes applied to pedagogy. "The Bakhtinian perspective of dialogic classroom talk is therefore one that is characterized by the teacher and students working together to co-construct meaning by critically questioning and filtering ideas

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[55] Alexander, *Towards Dialogic Teaching*, 12.

[56] Mikhail Bakhtin, *The Dialogic Imagination: Four Essays*, ed. Michael Holquist, trans. Carl Emerson and Michael Holquist (Austin: University of Texas Press, 1981), 294.

[57] Peter Teo, "Teaching for the 21st Century: A Case for Dialogic Pedagogy," *Learning, Culture, and Social Interaction* 21 (2019):172.

through their own knowledge, perspectives, and lived experiences. Put simply, the educative power of dialogic teaching lies in teaching students not what to think but how to think."[58] Bakhtinian ideas of the dialogic process and applications of this process as discussed by Alexander aim to elicit meaningful learning through critical thinking, questioning, and the co-construction of knowledge by student(s) and teacher.

3.3 Dialogic Pedagogy Applied to Music Instruction

In the past fifteen years, research has accelerated in the domain of private music instruction. Topics of interest include student-teacher interactions, modes of instruction and their efficacy, and the use of dialogic pedagogy.[59] Of particular interest to this study are the ways in which interpersonal dynamics and communication styles between teacher and student affect the learning environment and outcomes. Recognition and support of the relational component of learning can help enhance the traditional master-apprentice model in developing self-efficacy and motivation in the learner.

Margaret S. Barrett, director of the Creative Collaboratorium at the University of Queensland, is focused on "the investigation of the role of music and the arts in human cognition and social and cultural development."[60] In 2007, Barrett and Joyce Eastlund Gromko, prolific scholar and professor of music education at Bowling Green State University, conducted a case

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[58] Alina Reznitskaya, J.L. Kuo, A.M. Clark, B. Miller, M. Jadallah, and R.C. Anderson, "Collaborative Reasoning: A Dialogic Approach to Group Discussions," *Cambridge Journal of Education* 39, no. 1 (2009): 35, quoted in Peter Teo, 172. The concept of teaching students "how to think" will be further explored with the piano pedagogy of Tobias Matthay in Chapter Four.

[59] For further reading on current music education research, see Richard Colwell and Carol Richardson, eds., *The New Handbook of Research on Music Teaching and Learning: A Project of the Music Educators National Conference* (Oxford, UK: Oxford University Press, 2002).

[60] University of Queensland (website), "Professor Margaret Barrett," February 9, 2022, https://music.uq.edu.au/profile/723/margaret-barrett.

study of one-on-one interactions between a composer-teacher and graduate student-composer over the course of one semester. The student-composer was working on a major three-movement work. Barrett and Gromko's research aims were to better understand the roles that problem-finding and solving and dialogue serve in eliciting collaborative creativity. The lessons and interviews were videotaped, transcriptions were taken, and individual interviews were given with the composer-teacher and student-composer at the end of the semester. Analyses of the data were "framed within a social constructivist perspective and drew on notions of the zone of proximal development, a problem-finding attitude and creative collaboration."[61]

Barrett and Gromko based their research on psychologists Mihaly Czikszentmihalyi and Jacob Getzels' 1988 investigation of creativity and 'problem finding' in art. According to Czikszentmihalyi and Getzels, "the best way to enhance one's creativity is through an apprenticeship with someone who asks productive questions, because formulating the problem may be a more important accomplishment than achieving the solution once the productive problem has been formulated."[62] Dialogic pedagogy echoes this model, in which inquiry on the part of the teacher and/or student leads to the co-construction of knowledge. In the meta-narrative of teaching and learning, formulating the problem and talking through it may be just as useful as solving it. This is certainly true of the traditional master-apprentice model in keyboard pedagogy, yet without dialogue to foster metacognition and self-efficacy in the student, the problem-finding and solving may feel unidirectional and discouraging. By inviting the student to

[61] Margaret S. Barrett and Joyce Eastlund Gromko, "Provoking the Muse: A Case Study of Teaching and Learning in Music Composition," *Psychology of Music* 35, no. 2 (2007): 213.

[62] Mihaly Czikszentmihalyi and Jacob Getzels, "Creativity and Problem Finding in Art" in *The Foundations of Aesthetics, Art, and Art Education*, ed F. Farley and R. Neperud (New York: Praeger, 1988), 114, quoted in Barrett and Gromko, 214.

collaborate during the process of problem-finding and solving, they are engaging actively in their learning, thus increasing motivation and agency.

Barrett and Gromko were also informed by Vygotsky's Zone of Proximal Development. According to Vygotsky, the "development of a student's highest mental functions was a product of the 'systematic cooperation' that occurred between student and teacher when two different forms of reasoning, the spontaneous and the scientific, met within the student's zone of proximal development."[63] The zone of proximal development is of utmost importance in a one-on-one creative instruction setting. The teacher must be agile and sensitive to the triangulation of the student's abilities, self-efficacy, and agency; striking the balance between encouraging and motivating the student to be diligent in their work while acknowledging progress and limiting factors.

Barrett and Gromko found that as the teacher questioned the student to "provoke his thinking and prompt him to articulate his intentions and understanding," the problem-finding and problem-solving became progressively more collaborative.[64] This collaboration was based in dialogue initiated at first by the composer-teacher, but over time the student-composer took on a more directorial role in guiding the lessons toward problem-finding and solving.[65] According to Barrett and Gromko, "As the [compositional] work evolved the finding and solving of conceptual problems became an increasingly collaborative enterprise. This was evident in the student-composer's increased involvement in dialogue…. his developing capacity for analysis and problem finding… and his increased role in directing the teaching and learning process

[63] Lev S. Vygotsky, *Thought and Language*, trans. and newly revised by Alex Kozulin (Cambridge, MA: MIT Press, 1986), 186, quoted in Barrett and Gromko, 215.

[64] Barrett and Gromko, "Provoking the Muse," 227.

[65] Barrett and Gromko, "Provoking the Muse," 224.

through strategies such as mapping and problem-identification prior to the session."[66] This points to dialogic pedagogy fostering collaborative creativity between teacher and student and agency in the student.[67] Here, the master-apprentice model still has many of its traditional components, a master (the more knowledgeable other) an apprentice (a burgeoning composer), and an art to be honed. However, the focus of this study was how the relationality between these two individuals contributed to the apprentice's metacognition and agency as a composer.

In 2020, Drs. Henrique Meissner and Renee Timmers, researchers in music psychology at the University of Sheffield, conducted a study on young musicians' learning of expressive performance and the importance of dialogic teaching and modeling. Their research questions centered around how to incorporate dialogic teaching in the learning of expressiveness, and what other instructional modes should be used in tandem, including modeling, playing along with students, gestures, singing phrases, and accompanying. They were also interested in the teachers' and students' points of views on the teaching and learning process of dialogic pedagogy.[68] The study involved five instrumental music teachers (a trumpetist teaching brass, a clarinetist/saxophonist, a pianist, a violinist/violist, and a recorder teacher) and eleven students, (two from each teacher, except for the piano teacher who had three students). The research period took place over two four-to-five-week teaching cycles with performances before the first teaching cycle, between the first and second cycles, and after the second cycle. Data was collected in the form of videotaped lessons, videotaped teacher interviews, student and teacher questionnaires, student and teacher music diaries, and videotaped performances.

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[66] Barrett and Gromko, "Provoking the Muse," 224.

[67] Collaborative creativity will be discussed in detail later in this chapter.

[68] Henrique Meissner and Renee Timmers, "Young Musicians' Learning of Expressive Performance: The Importance of Dialogic Teaching and Modeling," *Frontiers in Education* 5, no. 11 (2020): 3.

All the teachers reported that their pedagogies included various methods and that "everything is intertwined" in instrumental teaching, making it "difficult to differentiate which method is useful for a particular aspect of performance, as several methods can be used within a dialogic teaching approach for working on various teaching aims."[69] On the effectiveness of dialogic pedagogy in the teaching of expression, four of the five teachers believed that asking students questions about musical character coupled with modeling were the most essential methods for teaching expressiveness. The teachers also noted that it is "important for pupils to reflect on the meaning of their music for them personally" because it can help develop their sense of agency as it "provides them with an opportunity to think of their own musical ideas."[70] According to the piano teacher, her students were "more involved in what they were doing, more aware and active, and more alive" because of her dialogic teaching approach.[71]

Some teachers reported that the dialogic approach made the lessons more interactive, and that the students "were more engaged and felt more responsible for their learning when they were asked for their views."[72] Meissner and Timmers concluded that questions and dialogue can stimulate pupils thinking and develop their understanding of the music and their expressiveness. Additionally, they posited that "dialogic teaching combined with modeling can affect agency and expressiveness…. and it seems likely that enhanced accuracy and expressiveness in turn would affect the dialogue and modeling."[73] This is particularly poignant because the implication is that dialogic pedagogy can have a direct effect on expressiveness. Dialogic pedagogy in music

[69] Meissner and Timmers, "Young Musicians' Learning of Expressive Performance," 10.

[70] Meissner and Timmers, "Young Musicians' Learning of Expressive Performance," 10.

[71] Meissner and Timmers, "Young Musicians' Learning of Expressive Performance," 11.

[72] Meissner and Timmers, "Young Musicians' Learning of Expressive Performance," 16.

[73] Meissner and Timmers, "Young Musicians' Learning of Expressive Performance," 17.

instruction encourages the student to make the connections between motor, cognitive, and affective domains, while fostering Fink's Significant Learning.

The findings of Meissner and Timmers are in line with my own hypothesis, grounded in the research of Robin Alexander, Fink, and Bakhtin. When implemented in a traditionally master-apprentice setting, dialogic pedagogy supports agency and self-efficacy in the instrumental student. Furthermore, as the piano teacher in Meissner and Timmers' study noted, the students were more interactive and engaged with the use of dialogic pedagogy. This points to elements of collaboration and potential collaborative creativity, which will be discussed further later in this chapter.

Leah Coutts, music education researcher and professor at the Queensland Conservatorium at Griffith University, conducted a nine-month study on six of her adult piano students to study the use of transformative pedagogy and the role of the teacher in empowering students to take ownership of their learning. Coutts sought to understand the impact that transformative pedagogy could have both on her students as well as herself as the teacher.[74] To this end she kept a reflection journal to "implement, adapt, and reflect on the use of transformative pedagogical strategies" in her piano studio.[75] Coutts applied several methodologies in her study, including a transformative pedagogical approach, a 'culture of inquiry', promotion of metacognitive thinking "through the use of meaningful dialogue and questioning of students", and "encouraging experiential learning and reflective practice."[76] Data

[74] Leah Coutts, "Empowering Students to Take Ownership of Their Learning: Lessons from One Piano Teacher's Experiences with Transformative Pedagogy," *International Journal of Music Education* 37, no. 3 (2019): 495. Transformative pedagogy "focuses on students coming to understand learning processes and developing their reflective capabilities... its focus is on supporting student autonomy and placing prime importance on meaning-making through reflection."

[75] Coutts, "Empowering Students to Take Ownership of Their Learning," 496.

[76] Coutts, "Empowering Students to Take Ownership of Their Learning," 496.

were collected through videotaped lessons, student practice journals, a teacher journal, and student interviews.

Coutts discusses the experiential nature of learning,[77] but stresses the importance of reflection on the experience to cultivate self-direction and self-efficacy that is particularly important for adult learners. In this study, reflection took the form of student and teacher journaling, as well as verbal reflections during lessons in which Coutts asked her students to reflect on their practicing in between lessons. Coutts discovered that while she had assumed her pedagogical approach had been student-centered (as was her intent), it was in fact teacher-led, which made her students feel more anxious to "perform" during lessons. Unsurprisingly, this caused stress and anxiety in her students. As Coutts reflected on this, she changed her approach over time to be "student-led". The new lesson structure would begin with the student's reflection on their practice over the week, a discussion, followed by Coutts asking the student to play something relevant to their discussion. Feedback would follow the playing episode, with questions and thoughts freely exchanged between Coutts and the student. This was interspersed with modeling by Coutts that the student could mimic and reflect upon.[78] This process was iterative throughout the lesson. Coutts noted that in this approach the "explicit intention comes from the student before playing commences. It allows students to express difficulties and ask questions prior to playing, removing the perception that they need to 'perform and be judged."[79]

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[77] David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development* (New Jersey: Prentice-Hall, 1984). This refers to Kolb's Experiential Learning Cycle (1984), a framework developed by psychologist David Kolb in which a student goes through an iterative process of (1) a *concrete experience*, (2) *reflective observation* of said experience, (3) *abstract conceptualization* in which the learner draws conclusions and/or modifies perspectives, and (4) *active experimentation* in which the learner applies new actions based on what they have learned.

[78] Coutts, "Empowering Students to Take Ownership of Their Learning," 498-9.

[79] Coutts, "Empowering Students to Take Ownership of Their Learning," 499.

Coutts employed four dialogic pedagogy strategies to elicit metacognition and agency in her students, including:

- Guided discovery: Asking questions to draw students' awareness to specific stimulus to facilitate discovery and learn new concepts and skills.
- Guided feedback: Asking questions so that feedback can come from the students, rather than be given by the teacher.
- Guided problem-solving: Modeling and asking questions around the problem-solving process
- Encouraging reflective observations by asking critical questions before and after playing, directing the students' focus to relevant musical concepts and actions.[80]

She found that over time her students asked more questions and showed more engagement during discussions. Coutts concluded that lessons that were "non-judgmental and exploratory, full of discussions and effective questioning facilitated students to take ownership of their learning." This approach also helped promote a collaborative and reciprocal environment.[81]

There is an overlap between Coutts' study and my own. She employed strategies of dialogic pedagogy and transformative pedagogy to cultivate self-efficacy and metacognition in her students. I will take this idea further by positing that dialogic pedagogy is a vehicle *for* transformative pedagogy. By creating a 'culture of inquiry' through the use of dialogue, questions, guided discovery, and meaning-making, students become metacognitive of their learning process and the learning is richer and more robust as a result. This in turn fosters agency, self-efficacy, and motivation to continue learning. Coutts sought to encourage metacognition, reflection, and agency in her students through a teaching and learning

[80] Coutts, "Empowering Students to Take Ownership of Their Learning," 501.

[81] Coutts, "Empowering Students to Take Ownership of Their Learning," 503.

environment bolstered with reciprocity, collaboration, and a "culture of inquiry".[82] My study will further investigate this with the inclusion of cognitive apprenticeship methodologies.

3.4 Cognitive Apprenticeship

In 1989, educational researchers Dr. Allan Collins, John Seely Brown, and Susan E. Newman discussed another model of apprenticeship in their book chapter titled "Cognitive Apprenticeship: Teaching the Craft of Reading, Writing, and Mathematics." Cognitive apprenticeship, as defined by Collins et al., is "the focus of learning through guided experience on cognitive and metacognitive, rather than physical, skills and processes…. Applying apprenticeship methods to largely cognitive skills requires the externalization of processes that are usually carried out internally."[83] In this model, the teacher makes explicit the cognitive processes involved in learning skills specific to a knowledge domain rather than the traditional enactment, narration, and coaching of physical skills common in traditional apprenticeship. These cognitive processes could include *heuristics* (effective techniques or approaches, often thought of as "tricks of the trade"), *control strategies* (the generation and evaluation of alternative courses of action for solution-finding), and *strategic knowledge* (tacit knowledge used by experts to solve problems and carry out tasks at various levels).[84]

Collins et al. discuss several studies of the implementation of cognitive apprenticeship in their chapter, each with a set of pedagogical tools relevant to the honing of cognitive and metacognitive skills within a given domain. In one study concerning reading comprehension,

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[82] The term "culture of inquiry" was first used by L.G. Snyder and M.J. Snyder in their article titled "Teaching Critical Thinking and Problem Solving Skills," *Delta Pi Epsilon Journal* 50, no. 2 (2008): 90-9.

[83] Allan Collins, John Seely Brown, and Susan E. Newman, "Cognitive Apprenticeship: Teaching the Crafts of Reading, Writing, and Mathematics," In *Knowing, Learning, and Instruction: Essays in Honor of Robert Glaser*, ed. Lauren B. Resnick (Hillsdale, NJ: L. Erlbaum Associates, 1989), 457.

[84] Collins et al., "Cognitive Apprenticeship," 477.

researchers Annemarie Sullivan Palinscar and Ann L. Brown discuss a "producer-critic" method in which teacher and student take turns with the role of "teacher", where they formulate questions, summarize and clarify material, and predict outcomes of later chapters. With enough repetition and scaffolding by the teacher, this role-play is eventually internalized by the student, whereby they develop the metacognitive skills to read as an expert does.[85]

Collins et al. reference another study by Alan H. Schoenfeld who researched problem-solving in mathematics. Schoenfeld employs a variety of pedagogical strategies, including heuristics and *abstracted replay*, the "recapitulation of some process designed to focus students' attention on the critical decisions or actions…. [which] involves focusing on the strategic as well as the tactical levels of problem solving; this aids students in developing a hierarchical model of the problem-solving process as the basis for self-monitoring and [self]-correction, and in seeing how to organize local (tactical) processes to accomplish high-level (strategic) goals."[86] When teachers verbalize and model problem-solving skills, students learn much more than how to solve a prototypical problem on their own. Critically, they learn to be metacognitive of their problem-solving process. As such, their learning is enriched and the cognitive processes become applicable to more than just one knowledge domain. Metacognition is a transferrable cognitive skill; an aptitude like any other, that can (and should) be taught and honed thoughtfully in learning environments. Educators should not merely teach rote skills and abstract "textbook" knowledge, but rather the *how* of solving problems through dialogic processes that elicit metacognition.

[85] Collins et al., "Cognitive Apprenticeship," 458, 464.

[86] Collins et al., "Cognitive Apprenticeship," 475-6.

3.5 Methodology in Cognitive Apprenticeship and Applications in Piano Pedagogy

Collins et al. constructed a framework for cognitive apprenticeship shown in Figure 2 below. This framework is divided into four domains: content, methods, sequence, and sociology. We will now focus on methods and sociology. Six teaching strategies are suggested to help make customarily implicit learning processes explicit:

> Modeling, coaching, and scaffolding are the core of cognitive apprenticeship, designed to help students acquire a set of cognitive and metacognitive skills through processes of observation and of guided and supported practice. The next two (articulation and reflection) are methods designed to help students both focus their observations of expert problem solving and gain conscious access to (and control of) their own problem-solving strategies. The final method (exploration) is aimed at encouraging learner autonomy, not only in carrying out expert problem- solving processes, but also in defining or formulating the problems to be solved.[87]

[87] Collins et al., "Cognitive Apprenticeship," 481.

TABLE 14.5
Characteristics of Ideal Learning Environments

Content
Domain knowledge
Heuristic strategies
Control strategies
Learning strategies
Methods
Modelling
Coaching
Scaffolding and fading
Articulation
Reflection
Exploration
Sequence
Increasing complexity
Increasing diversity
Global before local skills
Sociology
Situated learning
Culture of expert practice
Intrinsic motivation
Exploiting cooperation
Exploiting competition

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Figure 2: Characteristics of Ideal Learning Environments for Cognitive Apprenticeship

Modeling is defined by Collins et al. as "the expert carrying out a task so that students can observe and build a conceptual model of the processes that are required to accomplish the task."[89] To foster in-depth learning of the instrument, a piano teacher should model not only the motor process of playing, but the cognitive processes of visual-spatial integration and mind-body connection. *Coaching*, according to Collins et al. is a highly interactive process that includes specific feedback from the expert as the student attempts to accomplish the task. For example, while a student iteratively works on a particular passage or technique, the piano teacher should

[88] Collins et al., "Cognitive Apprenticeship," 476.

[89] Collins, et al., 481.

coach not only the physical aspects of the task, i.e. the attack, articulation, or rhythmic integrity, but also help focus the student's attention on their thought process as they execute the task. *Scaffolding* is defined as "the support, in the form of reminders and help, that the apprentice requires to approximate the execution of the entire composite of skills. Once the learner has a grasp on the target skill, the master reduces his participation, providing only limited hints, refinements, and feedback to the learner, who practices by successively approximating execution of the whole skill."[90] This eventually leads to *fading*, or the gradual removal of support from the expert until the student is self-sufficient in the task.

Articulation, defined by Collins et al. as "any method of getting students to articulate their knowledge, reasoning, or problem-solving processes"[91] is perhaps the most relevant method to dialogic pedagogy. Here, the teacher prompts the student through questioning and dialogue to recognize, understand, and verbalize their processes of learning and comprehension. This is metacognition in action and could be applied at all levels of piano pedagogy. For example, in a lesson with a beginner student, the teacher could prompt the student to identify all of the C's on the keyboard from lowest to highest, and then ask them do the same with D's and E's, etc., asking the student to explain how they figured out where each note is in relation to C. For an intermediate or advanced student, the teacher could ask the student their thoughts on the affective aspects of the piece they are working on. The student might articulate the mood and emotional content of the piece, and the teacher could ask which notations from the score inform their understanding, and/or how they plan to express this emotional content through dynamics, tone, articulation, etc.

[90] Collins et al., "Cognitive Apprenticeship," 456.

[91] Collins et al., "Cognitive Apprenticeship," 482.

Reflection, a student's comparison of their own problem-solving process with that of an expert and eventually with their own cognitive model of expertise,[92] follows articulation and is further along in the learning journey towards the integration of metacognition. As the student works toward building their mental model of expertise, they become more independent from the teacher and therefore need less scaffolding to complete the task. In a piano lesson, the teacher could explain their own process of working on a technique or difficult passage, and then prompt the student to compare this description to their own process. With enough repetition of this dialogue model, the student begins to incorporate these problem-solving steps into their own heuristics, and thus becomes more independent and efficacious in practice sessions.

Exploration, pushing a student into independent problem-solving, is the "natural culmination of the fading of support."[93] Collins et al. suggest setting goals for students as a means of scaffolding, and then prompting students to set their own goals and find tasks that interest them within the domain. In a piano lesson setting, this might involve having a student pick their own repertoire, with the teacher finding the right piece within this repertoire for the student's level. Exploration could also take the form of a student composing their own piece and the teacher helping them transcribe it into sheet music.[94] Components of the cognitive apprenticeship framework can be linked to Simpson's Psychomotor domain previously discussed in Chapter Two. At the later stages of psychomotor integration of a skill such as piano, including *adaptation* and *origination*, the student is becoming more independent, building mental schemas

[92] Collins et al., "Cognitive Apprenticeship," 482-3.

[93] Collins et al., "Cognitive Apprenticeship," 483.

[94] Composition as exploration will be examined further in Chapter Six in the discussion of my own study. For further reading on the application of cognitive apprenticeship in music education, see "The Use of Cognitive Apprenticeship in the Learning and Teaching of Improvisation: Teacher and Student Perspectives," by Leon R. de Bruin, *Research Studies in Music Education* 41, no. 3 (October 2019): 261-279.

that allow them to make autonomous informed decisions about the artistry and aesthetics of their playing and perhaps composing new music in the process.

3.6 Sociology in Cognitive Apprenticeship

The relational dynamics involved in cognitive apprenticeship are not to be underestimated. This model is reliant upon communication between teacher and student to be effective. Situated learning and social constructivism, two components of the sociology of cognitive apprenticeship, will be highlighted and discussed. The importance of situated learning, (learning in an environment in which the knowledge is applied) in traditional and cognitive apprenticeships is demonstrated in the ways in which knowledge is applied in the environment that is best suited to the practice, abstracted, and then reapplied in novel learning environments.[95] Collins et al. state: "…Cognitive apprenticeship should extend situated learning to diverse settings so that students learn how to apply their skills in varied contexts. Moreover, the abstract principles underlying the application of knowledge and skills in different settings should be articulated as fully as possible by the teacher, whenever they arise in different contexts."[96]

As Collins et al. note, the articulation of *why* one should practice a skill or work in a knowledge domain in a certain way is just as important as showing the *how*. Indeed, making the reasons for certain practices and techniques clear is necessary for fully integrated situated learning as opposed to rote memorization, a paradigm that is all too common in piano instruction. Without a thorough understanding of the *why*, a student will be unable to fully achieve independence or any level of mastery at the piano. To foster independence by

[95] For further reading on situated learning in music, see Hildegard C. Froehlich and Gareth Dylan Smith, "Music Learning and Teaching as Socially Situated Acts," in *Sociology for Music Teachers*, 2nd ed. (New York: Routledge, 2017).

[96] Collins et al., "Cognitive Apprenticeship," 459.

exemplifying the *why*, a piano teacher could model a new technique, (such as a leap in one hand from a low to high register on the keyboard), with description of the physiological and cognitive components that are required, including hand-eye coordination and when to begin thinking about the leap versus when to physically enact it. This is a form of abstracted replay. In turn, the student observes, mimics, and applies the cognitive and motor techniques as described by the teacher (reflection), abstracts knowledge and creates a heuristic around it, and then uses it on their own in a solo practice setting. This enables student autonomy, situated learning, and promotes lifelong learning through Fink's *Learning How to Learn* domain.

Cognitive apprenticeship is nested within a social constructivism paradigm, defined by the interactions between teacher and student during the progression of learning. Without the interpersonal communication during the symbiosis of teaching and learning, the student could not learn metacognitive strategies and find autonomy in their education. As stated by Vygotsky in his seminal work *Mind in Society*: "The process of internalization consists of a series of transformations…an interpersonal process is transformed into an intrapersonal one. Every function in the child's cultural development appears twice: first on the social level, and later, on the individual level; first, between people (*interpsychological*), and then inside the child (*intrapsychological*)."[97] While this has not always been clearly addressed in piano pedagogy literature, it is a critical component of the teaching and learning environment.

[97] Vygotsky, *Mind in Society*, 57. It is worth noting that Vygotsky refers to child development in his works, but I am applying this principle to both child and adult learners.

3.7 Collaborative Creativity

Collaboration is an inherent part of many musical paradigms. Orchestras, chamber groups, and jazz ensembles are, by definition, collaborative. The process and product of these group dynamics is the playing or performance of music; an emergent and collective phenomenon that follows the Gestalt principle of the whole being greater than the sum of its parts.[98] Many scholars have studied the collaborative dynamics possible in music pedagogy.[99] Musicologist and music therapist Dr. David Luce defines the parameters and possibilities of collaboration within the sphere of music pedagogy:

> The teacher or conductor must be willing to share the authority of knowledge. This does not mean abdicating responsibility. It may mean engaging in a shared discussion of the music to develop playing style, identify areas for further discussion or practice, and explore possibilities in the re-creation or composition of music. Students would thus become engaged in the exploration of the knowledge and processes involved in the evolution of a music that enlivens and motivates them to participate in music, rather than to be told about music, how to appreciate it, or how to play it.[100]

As Luce describes it, a collaborative environment encourages students to become engaged in the "re-creation" of music. This re-creation is fostered by the co-creative mindset of the teacher and adopted by the student(s). As discussed, when students are given agency over their learning, self-efficacy naturally follows, and the process becomes cyclical.

Collaborative creativity, or the synergistic creativity that occurs in a collaborative setting, is an emergent and generative phenomenon. Educational researcher Dr. R. Keith Sawyer has

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[98] R. Keith Sawyer, "Group Creativity: Musical Performance and Collaboration," *Psychology of Music* 34, no. 2 (2006): 148.

[99] For further reading, see Helena Gaunt and Heidi Westerlund (eds), *Collaborative Learning in Higher Music Education* (London: Routledge, 2016) and David Luce, "Collaborative Learning in Music Education: A Review of Literature," *Applications of Research in Music Education* 19, no. 2 (Spring 2001): 20-25.

[100] David Luce, "Collaborative Learning in Music Education: A Review of Literature," *Applications of Research in Music Education* 19, no. 2 (Spring 2001): 23.

devoted much of his career to studying the interaction between collaboration, creativity, improvisation, and emergence. As a jazz pianist, Sawyer is interested in how musical collaboration and group creativity work.[101] According to Sawyer, "the creativity of a group cannot be associated with any one person. All members contribute and their interactional dynamics result in the performance."[102] Sawyer also makes the link between teaching and improvisation, suggesting that teaching is a form of improvisation, requiring the teacher to be agile in their "responsive creativity" when working with a group of students.[103] I propose that this co-creative mindset empowers students to be agents of their own learning. Sawyer aptly places this teaching model in a social constructivist paradigm, as the teacher and students co-construct knowledge, making meaning through social interaction.[104]

Sawyer also points out the importance of dialogue in this collaborative process. By structuring and encouraging dialogue with students, the students "creatively construct" their own knowledge while the teacher scaffolds the co-constructive process.[105] Classroom discourse as improvisation has also been explored by educational researcher Dr. Frederick Erickson. In his chapter titled "Classroom Discourse as Improvisation: Relationships between Academic Task Structure and Social Participation Structure in Lessons" (1982), Erickson posited that "collaborative dialogues are midway between ritual and the extreme improvisationality of

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[101] Sawyer, "Group Creativity," 148.

[102] Sawyer, "Group Creativity," 148.

[103] R. Keith Sawyer, "Creative Teaching: Collaborative Discussion as Disciplined Improvisation," *Educational Researcher* 33, no. 2 (March 2004): 12.

[104] Sawyer, "Creative Teaching: Collaborative Discussion as Disciplined Improvisation," 14. This was also discussed by J. Baker-Senett and E. Matusov in their chapter "School 'performance': Improvisational Processes in Development and Education," in *Creativity in Performance*, R.K. Sawyer (ed), (Norwood, NJ: Ablex, 1997), 197-212.

[105] Sawyer, "Creative Teaching," 14.

everyday small talk…" and that lessons are indeed 'structured conversations' in which "dialogue is largely improvisational, but within overall task and participation structures."[106]

Collaborative creativity in private piano instruction was researched and discussed by Sini Wirtanen and Karen Littleton in their chapter titled "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students: The Significance of the Student-Teacher Relationship" (2004). Wirtanen and Littleton conducted interviews with ten piano students between the ages of 18-27 from the Sibelius Academy. In the interviews, these students discussed how their identity formation as solo pianists was constructed and negotiated with their teachers. Wirtanen and Littleton posit that "the process of negotiating a solo pianist's identity is a complex event mediated by communication that is socially, culturally, and historically situated."[107] The social interactions between the student and teacher prompts the negotiation of the student's own creative voice and the cultural and historical traditions of the interpretation of musical canon.[108] Two of the themes that were discovered in the interviews will be discussed here, (1) collective and collaboratively constructed interpretations, and (2) the struggle between personally meaningful creative interpretations and accepted interpretations.

The first theme, which focuses on collective and collaboratively constructed interpretations, surfaced in an interview with one student, Elina. This student described the co-creative process with her teacher as follows: "We tend to analyze things together and then we

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[106] Frederick Erickson, "Classroom Discourse as Improvisation: Relationships between Academic Task Structure and Social Participation Structure in Lessons," In *Communicating in the Classroom*, ed. L.C. Wilkinson (153-181), (New York: Academic Press, 1982), Quoted in Sawyer, "Creative Teaching," 16.

[107] Sini Wirtanen and Karen Littleton, "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students: The Significance of the Student-Teacher Relationship," in *Collaborative Creativity: Contemporary Perspectives* (London: Free Association Books, 2004), 27.

[108] Wirtanen and Littleton, "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students," 31-2.

think and we discuss things and this way it becomes part of my own understanding, why I do this like that and why I want…. They are partly my ideas and partly hers and that way is constructive learning and that way I become more confident."[109] As Wirtanen and Littleton point out, the interpretive process emerges as "an interweaving of tradition (as represented in and mediated through the guidance of the teacher) and the student's own creative interpretations. Interpretation is thus characterized as involving subtle negotiation, and the joint construction and agreement of shared meaning and understanding."[110]

The second theme, which focuses on the struggle between a student's own creative interpretations against accepted interpretations, emerged in an interview with a different student, Tuomas. This student discussed a more traditional authoritarian paradigm of pedagogy. He felt stifled by his teacher's insistence on overruling his creative voice, illustrated in the following quotes: "There is a teacher who tells you how to do it. Play more loudly here and more quietly there. And one of the biggest things that disturbs me is… the precision when preparing the final interpretation…. That a high tone can be heard, everything can be heard, but not even one bit of discussion of why this is so."[111] In the analysis of this quote, Wirtanen and Littleton discuss the tacit nature of interpretation.[112] A tradition passed on through centuries, often orally from master to pupil, and occasionally into didactic artifacts such as treatises. However, the *why* of the interpretation is often left unspoken. It is understood by the musical community that it is the

[109] Wirtanen and Littleton, "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students," 31.

[110] Wirtanen and Littleton, "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students," 31.

[111] Wirtanen and Littleton, "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students," 33.

[112] Wirtanen and Littleton, "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students," 32.

"right way" because it is the way it has always been done, or because the artifact of the musical score instructs it to be so, but this is not necessarily sufficient to imbue a student with the agency and self-efficacy to elicit artistry.

These two students discuss two distinct paradigms of piano pedagogy, Elina's co-creative pedagogical experience elicited self-efficacy. Tuomas discusses the more traditional model of pedagogy, which is based in transmission, not just from master to pupil, but also from historically and culturally informed practices. Tuomas felt frustrated and disheartened by this and had difficulty reconciling his creative voice with the voice of his teacher and the traditions his teacher promoted. This indicates a lack of collaborative creativity and no room for student agency.

Collaborative creativity is a significant component of the piano pedagogy model I suggest. It is cultivated by giving students space to exercise agency in their learning. In choosing their repertoire, making interpretive choices in their playing, and creating a shared vocabulary to describe both technical and aesthetic components of performance, students take ownership of their learning process and we collaborative to achieve their musical goals. Through a social-constructivist paradigm, the use of dialogue and a co-creative mindset, a piano teacher can foster collaborative creativity in lessons with students. As discussed by Sawyer, Erickson, and Wirtanen and Littleton, this encourages student self-efficacy, agency, and motivation. I will add that these outcomes support the other learning outcomes of mastery and artistry.

3.8 Self-Efficacy

Self-efficacy, first discussed by psychologist Dr. Albert Bandura in the 1990s, is defined as the "beliefs in one's capabilities to organize and execute the courses of action to produce

given attainments."[113] According to Bandura, personal efficacy is inextricably linked to agency, or acts that are done intentionally.[114] As we experience successes and failures, our sense of self-efficacy may wax and wane. Bandura suggests that to build a sense of resilience in the face of failure, some setbacks "serve a beneficial purpose in teaching that success usually requires sustained effort. Difficulties provide opportunities to learn how to turn failure into success by honing one's capabilities to exercise better control over events."[115] As such, a teacher should communicate to the student that failure is an expected and welcome part of the learning process. This coaching instills confidence within the student and stimulates resilience and perseverance.

Educational psychologist Dr. Dale H. Schunk has discussed several pedagogical methods to promote self-efficacy in students. Verbal modeling of cognition is particularly relevant to this study. Verbal modeling of cognition makes tacit processes explicit and according to Schunk, this builds self-efficacy and promotes cognitive skill development.[116] Bandura states, "the verbalized thinking skills that guide actions are generally more informative than the modeled actions themselves."[117] As a student observes not only the task but the thought processes behind the task, they feel a sense of control over their ability to perform it. This is also highlighted by the research of Elias et al. in their discussion of cognitive apprenticeship.

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[113] Albert Bandura, *Self-Efficacy: The Exercise of Control* (New York: W.H. Freeman and Company, 1997), 3.

[114] Bandura, *Self-Efficacy*, 3.

[115] Bandura, *Self-Efficacy*, 80.

[116] Dale H. Schunk, "Modeling and attributional effects on children's achievement: A Self-Efficacy Analysis," *Journal of Educational Psychology* 73, (1981): 93.

[117] Bandura, *Self-Efficacy*, 93.

In addition to verbal modeling of cognition, the use of verbal feedback from teacher to student is crucial during the learning process to promote feelings of self-efficacy. According to Bandura, "social persuasion serves as a further means of strengthening people's beliefs that they possess the capabilities to achieve what they seek. It is easier to sustain a sense of efficacy, especially when struggling with difficulties, if significant others express faith in one's capabilities than if they convey doubts."[118] Importantly, there is little evidence from extant pedagogical sources that this was a pedagogical priority in the master-apprentice model of historical keyboard pedagogy.[119] As a remedial measure, this is central to my suggested model of piano pedagogy. The goal of this model is to expand the concept of learning the piano to include the education of the whole person in a relational context.

In the microcosm of a single lesson as well as the macrocosm of learning the instrument, evaluative feedback from the teacher is a critical support structure that builds student confidence, agency, and self-efficacy. A new technique can initially feel overwhelming and above one's abilities. Indeed, traversing from cognitive to motor learning can be frustrating because cognitive understanding often precedes motor mastery. By providing evaluative feedback during this iterative process, the student receives a boost of confidence and a guiding hand from the teacher at a crucial turning point in knowledge acquisition.

Goal orientation, both proximal and long-term, is another significant factor in the development of self-efficacy. A teacher should structure lesson plans such that smaller, more immediately attainable goals serve the long-term complex understanding of the knowledge domain. According to Bandura, "proximal goals generate self-satisfaction from personal

[118] Bandura, *Self-Efficacy*, 101.

[119] This will be presented in detail in the survey of historical sources in Chapter Four.

accomplishments that operates as its own reward during the pursuit of higher-level goals. When the reward of personal accomplishment is linked to indicants of progress, individuals contribute continuing self-motivation quite apart from the incentive of the loftier goal."[120] Learning an instrument is a long-form pursuit, and as one approaches mastery the dedication of time and energy increases. Therefore, it is important for the teacher to incentivize the student with proximal goals, particularly at the beginning of their learning journey, to encourage motivation, confidence, and self-efficacy. If structured intentionally by the teacher, the student's journey toward mastery also leads to intrinsic interest and motivation in the knowledge domain.[121]

Students should be active participants in their learning to increase intrinsic motivation. To accomplish this in a piano lesson setting, teacher and student can construct long-term goals such as a "goal piece" to learn or a recital to perform in. Co-planning can also occur in each lesson, in which the student discusses proximal goals or problem areas of a piece to work on. This planning fosters metacognition of the learning process, wherein the process itself is meaningful, not just the product of the finished piece. Self-efficacy should be an intentionally designed and implemented learning outcome. Through processes such as verbal modeling of cognition, metacognitive goal setting in both short- and long-term time frames, and verbal evaluative feedback, teachers can foster self-efficacy in their piano students. These communicative methods are all nested within social constructivism. The synergy between interpersonal communication, cognition, affective states, and self-efficacy is clearly delineated through the frameworks discussed.

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[120] Bandura, *Self-Efficacy*, 136.

[121] Bandura, *Self-Efficacy*, 216. This will be further discussed in Chapters Five and Six, which comprise the methodology of my study and implementation of my model. In this model, goal orientation was expressed through the cognitive apprenticeship process of *exploration*, defined by Collins et al. as the forming and testing of one's own ideas for how to proceed.

3.9 Traditional Keyboard Pedagogy and a Suggested Model of Keyboard Pedagogy

Historically, keyboard pedagogy often implemented a blended behaviorist and cognitivist approach through a master-apprentice model.[122] A focus on perfected technique through repetition was combined with reinforcement from the master, which would elicit demonstrable technical proficiency and aesthetic expression. The master would also demonstrate the model of effective performance skills and help the student integrate this knowledge structure into their mental schema. This proficiency and knowledge was to serve a medium steeped in tradition, but nonetheless followed a teaching and learning model that did not generally take the whole student or social nature of learning into account. Constructivism and social constructivism were not yet studied or understood as educational priorities, and with a few exceptions, were not discussed by master pianists or pedagogues as efficacious teaching methods.[123] Below is my interpretation of the traditional keyboard pedagogy model.

[122] Specifically, extant pedagogical sources dated between 1753-1967 are relevant to these frameworks. These will be discussed in detail in the following chapter.

[123] I do not claim that social constructivist ideals were absent in all historical keyboard pedagogy, but that there is little record of it in historical artifacts. The following chapter will include a detailed survey of many pedagogical treatises, books, and manuals to support this claim. This survey informed both of the pedagogical models discussed in this chapter.

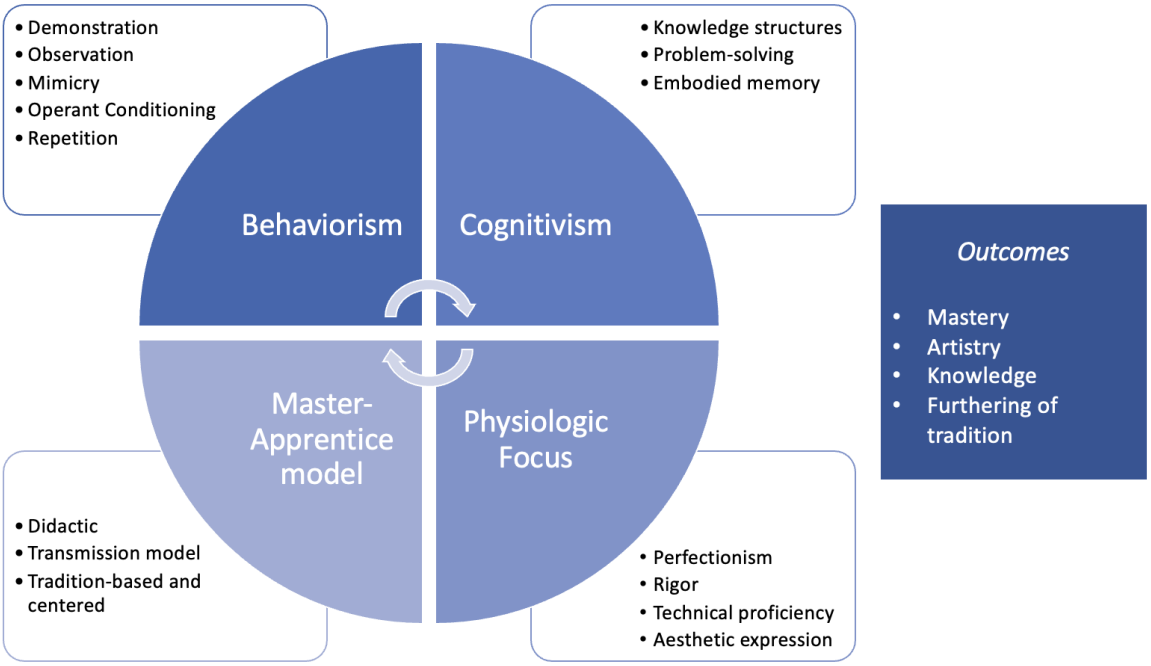

Figure 3: Traditional Keyboard Pedagogy

As shown, this model incorporates behaviorist strategies including repetition with operant conditioning (positive and negative reinforcement by the teacher), and cognitivist strategies including the creation of knowledge structures for replicable and demonstrable physiological results. Here, the master is to be observed and obeyed by the student, who is subservient to both the master and High Art in this model. Here, the student's voice, self-efficacy and agency, metacognition, and co-creation are not pedagogical focal points or goals. Rather, the learning outcomes are technical mastery, artistry, and the furthering of tradition. These outcomes are not diminished in the model that I suggest, but rather coexist with social constructivist outcomes. Furthermore, I posit that the social constructivist outcomes help to nurture technical mastery and artistry.

The model of piano pedagogy that I propose includes three interdependent methodologies: cognitive apprenticeship, dialogic pedagogy, (within the social constructivist framework), and precision training methodologies.[124] These methods are applied symbiotically to promote student agency, self-efficacy, metacognition, collaborative creativity, *and* mastery, artistry, and knowledge. This model is illustrated in Figure 4 below.

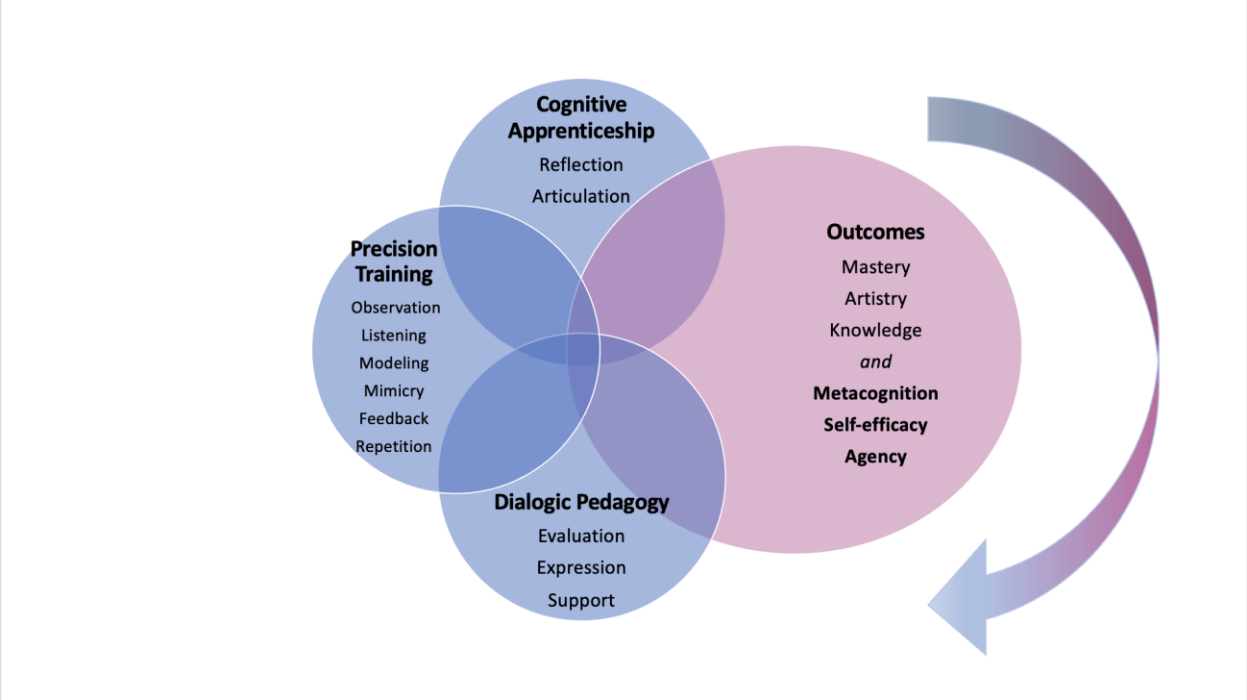

Figure 4: A Suggested Model for Piano Pedagogy

As shown, piano pedagogy and outcomes are nested in four Venn diagram style circles: precision training methodologies, dialogic pedagogy methodologies, cognitive apprenticeship

[124] I have renamed the behaviorist and cognitivist transmission model components "precision training" to elucidate a key distinction. The nature of piano pedagogy requires exactitude and disciplined practice to acquire mastery, but these facets of pedagogy can be extracted from the traditional keyboard pedagogy model and enhanced by a social constructivist model. In my model, this process does not occur through transmission. The student's feelings of comfort and agency and their metacognition are of utmost importance during the learning process. In fact, these facets of learning are both part of the process and outcome. This will be discussed further in Chapters Six and Seven.

methodologies, and student learning outcomes. I argue that precision training methods (including observation, listening, modeling, mimicry, feedback, and repetition) are necessary for piano pedagogy, but *not sufficient* for achieving social constructivist outcomes. I suggest adding two additional layers of pedagogy, thereby strengthening the traditional approach. These methods, based in social constructivism, include dialogic pedagogy and cognitive apprenticeship.

Dialogic pedagogy, which includes critical inquiry, question-finding, fostering metacognition through dialogue, and diagnostic formative feedback (by teacher and student) is used to make cognition explicit through cognitive apprenticeship. Cognitive apprenticeship is utilized as students practice metacognition of their learning through processes of reflection, articulation, and exploration. Additionally, there is a focus on the relational aspect of learning, placing the learner's experience at the center. Empathy is modeled by the teacher, and questions posed to the student to promote self-awareness and self-evaluation of their learning process are crucial. When implemented in a combinatory approach, these pedagogies elicit traditional skills associated with piano mastery: technical abilities, aesthetic propensities, knowledge of music theory and history, and a general independence of musical identity, but crucially, also promote metacognition, agency, and self-efficacy. I posit that these additional outcomes will serve the learner in many other learning and life experiences.

The next chapter will present the master-apprentice model in keyboard instruction through a socio-cultural lens. A historical literature review of pedagogical keyboard sources spanning three centuries will be interspersed with discussions of contemporaneous trends of inquiry, socio-cultural underpinnings, and the development and dissemination of the keyboard . In this literature review I will analyze the language used by the author/pedagogue for markers of the pedagogical frameworks discussed in Chapters Two and Three.

Chapter 4

Socio-Cultural Contexts of the Master-Apprentice Model and a Survey of Historical Keyboard Pedagogy Sources

4.1 The Master-Apprentice Model and the Cultivation of the Amateur

The traditional master-apprentice model of teaching is extremely enmeshed within the culture of private music instruction, so much so that it is nearly impossible to find discussion of this paradigm from historically significant figures in pedagogy. Only in the last approximately thirty years have social scientists and educational researchers begun to comment on and unravel this disciplinary archetype. According to Marienne Uszler, "The music lesson, particularly the piano lesson, is one of the most enduring forms of tutorial teaching. The relationship between teacher and student carries on the master-apprentice tradition. The master is the model who demonstrates, directs, comments, and inspires. The apprentice is the disciple who watches, listens, imitates, and seeks approval. Although the authoritarian position assumed by the master is open to question and criticism, notably by those who advocate learner-oriented teaching and proponents of adult education, the presence of a master model is a powerful, universal motivating force."[125]

The structure of the traditional master-apprentice model is based on an implicit power dynamic. The master is an expert that actively distills and disseminates content and cultural knowledge to an apprentice who receives it. The master imbued with power begot by talent and expertise, the pupil without. One extant example of awareness of the master-apprentice model in keyboard instruction comes from Ignaz Moscheles (1794-1870), a piano virtuoso and composer who became teacher, mentor, and friend to Felix Mendelssohn beginning in 1824. The two

[125] Marienne Uszler, "Research on the teaching of keyboard music," In *Handbook of Research on Music Teaching and Learning*, Edited by Richard Colwell (New York: Schirmer Books, 1992), 584.

maintained a close relationship until Mendelssohn's death in 1847. Upon meeting Mendelssohn, Moscheles remarked in his diary, "I am quite aware that I am sitting next to a master, not a pupil."[126] This quote highlights the binary nature in which the master-apprentice model is constructed and viewed. One is either a master or a pupil, there is no blending of the two. These roles are at once complementary but in complete opposition to one another and are clearly demarcated by social guidelines. In the western art music tradition, the master-apprentice model was well-established and not questioned. Perhaps in part because the pair of individuals in this relationship shared important cultural contexts; namely race, religious affiliation, and socio-economic class (to a certain extent). With these shared cultural contexts came a natural ease of social interaction; roles were prescribed and abided by. If nothing else, music was the language and context shared between the two individuals in this relationship.

The Hapsburg Empire provides a glimpse into the cultural imperative for the arts that dominated Europe during the eighteenth and nineteenth centuries. Hamburg, Berlin, and Leipzig, at the cross-sections of trade and commercial growth, became cultural epicenters. According to pianist and musicologist Arthur Loesser, "Merchants and their families could aspire to a more abundant humanity…. A sharpened appetite for mental goods also came with the growing self-importance of these people: a demand for books, the theater, music, and education."[127] Therein lies the seed for the cultivation of the amateur musician: musicianship became a symbol for a certain level of wealth. Being able to shoulder the expenses of a musical instrument and a teacher was a clear indication of socio-economic status. Loesser continues: "A moderately well-to-do, comfortable, somewhat educated German burgher family needed music through which to pour

[126] Felix Moscheles, ed. and trans., *Letters of Felix Mendelssohn to Ignaz and Charlotte Moscheles* (Boston: Ticknor and Company, 1888), 1.

[127] Arthur Loesser, *Men, Women and Pianos: A Social History* (New York: Simon and Schuster, 1954), 49.

the overflow of its affections; it wanted to participate in music actively at home, even more than listen to it in passive admiration in church or elsewhere."[128] Playing the keyboard was a social currency. The learning and playing of music provided entertainment, personal edification, and, for middle- and upper-class households, a status symbol. This was true in Paris as well, as musical ability was seen as a gateway into high society. In a book titled *Paris Sojourn*, published in 1727, a German visitor wrote about practicing music while in Paris, stating "that gives the entrée to high society, and one may then attend the best concerts, available every day, with complete freedom and thus spend many hours that would otherwise be disagreeable."[129]

As the cultural climate in Europe was rife with amateur keyboardists displaying their modest yet expendable income, it comes as no surprise that there was a concurrent uptick in the publishing of "do-it-yourself" keyboard manuals, simple songbooks, and collections of exercises. Just as the master-apprentice model was (and continues to be) a normative part of the teaching paradigm of keyboard instruction, the implied power dynamic was embedded within the didactic literature as well. Most didactic sources follow a master-apprentice model, with the author/pedagogue speaking to the reader/apprentice in an authoritarian tone, with very little discussion of interpersonal dynamics that might occur in a lesson setting.

It will serve this study to include an analysis of some of the prominent keyboard and piano pedagogical sources of the eighteenth, nineteenth, and twentieth centuries, allowing us to discern and analyze pedagogies that were commonly used, as well as sources that might have been pedagogically unusual for their time. The following discussion comprises roughly fifteen pedagogical keyboard sources. While there are many more sources of this nature, these sources

[128] Loesser, *Men, Women and Pianos,* 53.

[129] Loesser, *Men, Women and Pianos,* 309.

have been chosen because they showed markers for the pedagogical frameworks relevant to this study. It should be noted that treatises and manuals of a purely technique-based instruction that *do not* include discussions of pedagogy or interactions between teacher and student have been omitted from this analysis. However, a selection of these have been included in the chart in Appendix D, which lists keyboard and piano sources from the eighteenth to twentieth centuries annotated with the applicable pedagogical frameworks discussed in Chapters Two and Three. Additionally, a comprehensive list of didactic piano literature spanning from 1720-1970 is included as a reference in Appendix C.[130]

In addition to seeking pedagogical trends, this analysis will also illuminate potential gaps in pedagogical keyboard and piano literature that will be used to inform this study. What will follow are descriptions of these works with examples of material covered, as well as excerpts from these works to illustrate the *language used* to inform the reader. Each source will be analyzed using the pedagogical frameworks discussed in Chapters Two and Three, namely the transmission model, the master-apprentice model, behaviorism, cognitivism, constructivism, social constructivism, dialogic pedagogy, and cognitive apprenticeship. [131] Additionally, I will

[130] 1720 was chosen as the beginning temporal boundary because it was when the piano was invented by Bartolomeo Cristofori, codifying it as a separate keyboard instrument. Some of the early sources from the eighteenth century do not explicitly state that they are intended for piano. However, by the turn of the nineteenth century pedagogy specifically for the piano is clearly demarcated. 1970 was chosen as the terminal temporal boundary because there were very few sources that suggest the use of pedagogies other than physiologic or technique-based methods until the inclusion of social constructivist frameworks and studies, beginning in the early 2000s. Again, there are dozens of books of etudes and short exercises that will be excluded from this list because they serve a purely motor learning purpose and do not include any pedagogical prose. As such, they are not relevant for the purposes of this study.

[131] The transmission model is a teacher-centered teaching approach in which the teacher is the "dispenser of knowledge, the arbitrator of truth, and the final evaluator of learning. A teacher's job from this perspective is to supply students with a designated body of knowledge in a predetermined order." Quote from Dr. Andrew P. Johnson, "Three Views of Teaching: Transmission, Transaction, and Transformation", from *Making Connection in Elementary and Middle School Social Studies*, 2nd ed. (Sage Publishing, 2010.) This model has been used for centuries in all levels of education. It is common in lecture settings, and leaves little room for student-teacher interaction, let alone dialogue.

look for evidence of learning outcomes including collaborative creativity, student metacognition, student agency, and student self-efficacy. A table with the pedagogical literature reviewed, cross-referenced with the types of pedagogies employed and outcomes discussed in each source can be found in Appendix D.[132]

4.2 Keyboard Pedagogy of the Eighteenth Century

As is the case with most cultural phenomena, the intellectual and philosophical rigor of the Age of Enlightenment trickled down into contemporaneous artefacts, including pedagogical keyboard literature. The proclivity for deductive reasoning and knowledge gained by evidence of the senses affected the way that keyboard teachers taught. According to Loesser, people during this time "imagined the world as an inconceivably complex machine, every smallest part of which ran by an inexorable, inscrutable law…. For if men troubled to find out what all these 'natural' laws were, in detail, what could they not hope to accomplish to better their condition, their circumstances in life."[133] There is a natural progression from this sort of logic-driven reasoning to a didactic model of teaching.[134] Keyboard treatises of the eighteenth century

[132] The following discussion comprises roughly fifteen pedagogical keyboard sources. While there are many more sources of this nature, I have chosen to discuss these based on the work of Marienne Uszler, Stewart Gordon, and Scott McBride Smith in *The Well-Tempered Keyboard Teacher*, 2nd ed. (Belmont, CA: Schirmer Books, 2000.) This book offers a comprehensive overview of all the didactic keyboard treatises and manuals from the eighteenth through twentieth centuries. For the introductory research of this study, a list of sources was compiled that showed markers for pedagogical frameworks relevant to this study. It should be noted that treatises and manuals of a purely technique-based instruction that do not include discussion of pedagogy or interactions between teacher and student have been omitted from this study. However, a selection of these have been included in the chart in Appendix D.

[133] Loesser, *Men, Women and Pianos*, 50.

[134] Didactic teaching is "teacher-centered and based on the sum of theoretical knowledge and practical experience. In comparison, pedagogy is learner-centered since the teaching must be adapted to respond to the complexity of student needs." (Reflective Teaching Journal, February 1, 2022, https://reflectiveteachingjournal.com/difference-between-didactics-and-pedagogy/.)

generally follow this model. For the most part, these sources follow a top-down approach to teaching, are technique-focused and written for the amateur.

While Johann Sebastian Bach never wrote a pedagogical treatise, several of his students wrote of his teaching in letters during Bach's lifetime. Johann Philipp Kirnberger, discusses Bach's teaching style in 1782: "His method is the best, for he proceeds steadily, step by step, from the easiest to the most difficult, and as a result even the step to the fugue has only the difficulty of passing from one step to the next. On this ground I hold the method of Johann Sebastian Bach to be the best and only one. It is to be regretted that this great man never wrote anything theoretical about music, and that his teachings have reached posterity only through his pupils."[135] It would be easy for one as enmeshed in his discipline as J.S. Bach to lack the pedagogical agility to empathize with the amateur, yet it is clear from Kirnberger's description that Bach took care to scaffold his students toward mastery. We will see that this method was not common to all the Bachs.

Perhaps the most influential keyboard treatise of the eighteenth century was C.P.E. Bach's *Versuch über die wahre Art das Clavier zu spielen* (Essay on the True Art of Playing Keyboard Instruments), published in two parts in 1753 and 1762. Bach comments directly on the public's response to his *Essay* and the state of keyboard pedagogy in an open letter published in the *Hamburger unpartheiischer Correspondent* No. 7 in 1773:

> Those who assert that my Essay is too long, say nothing and at the same time reveal their gross ignorance. I divide all keyboard performers into two groups. In the first are those for whom music is a goal, and in the second, all amateurs who seek thorough instruction. My essay is intended for the first group; no paragraph is superfluous…. For the second group, the amateurs, there is indeed no instruction book, if this could once be impressed upon their teachers. Instead, one should proceed as I used to, unwillingly

[135] Hans T. David and Arthur Mendel, eds, *The New Bach Reader: A Life of Johann Sebastian Bach in Letters and Documents*, Revised by Christoph Wolff (New York: W.W. Norton & Company, 1998), 320.

> but out of necessity. Before each period, I wrote out the lesson that I intended to give and concerned myself only with the most essential principles…. Throughout, the student was not allowed to commit a single error like those that are accepted as postulates in many books…. Hence, for purposes of thorough instruction the abridging of a keyboard handbook, even when it is done without errors, clearly does more harm than good.[136]

Here, CPE Bach has set the tone for his *Essay*, stating that it is not for the amateur, but for an aspiring musician. This is a noteworthy distinction, as many (if not most) keyboard pedagogues make it a point to state that an amateur could aspire to be a "true" musician. In this quote Bach shows a reticence to teach music to aspiring amateurs. There is an implicit gatekeeping of High Art that Bach seemingly does not want to make accessible for the layman. Additionally, Bach flatly states that the student is not allowed to commit a single error. This implies a behaviorist approach with operant conditioning that is lacking in collaboration and student voice.

The first part of the *Essay* includes a discussion on posture, technique, performance and affect, fingering, and embellishments. Bach takes great care to describe the appropriate execution of embellishments, and what one must do to play in good taste.[137] This discussion is unparalleled in breadth and depth by other contemporaneous treatises. Perhaps the best illustration of Bach's stress on the correct performance of embellishments is the twenty-eight-point list in which he describes in detailed prose his philosophy on the use of embellishments, as well as the correct way to execute each type of embellishment in accordance with good taste. Following is an excerpt from this list:

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[136] C.P.E. Bach, *Versuch über die wahre Art das Clavier zu spielen*, Berlin: George Ludewig Winter, 1753. Translated and edited by William J. Mitchell as *Essay on the True Art of Playing Keyboard Instruments* (New York: W.W. Norton & Co., Inc. 1949), 8-9.

[137] Christoph Wolff and Ulrich Leisinger, "Bach, Carl Philipp Emanuel," *Grove Music Online* (website), ed. Deane Root, accessed 24 March 2021, https://www.oxfordmusiconline.com.ccl.idm.oclc.org/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-6002278185?rskey=ZavnjO&result=1#omo-9781561592630-e-6002278185-div1-5788.

> 1. No one disputes the need for embellishments. This is evident from the great numbers of them everywhere to be found. They are, in fact, indispensable. Consider their many uses: They connect and enliven tones and impart stress and accent; they make music pleasing and awaken our close attention. Expression is heightened by them; let a piece be sad, joyful, or otherwise, and they will lend a fitting assistance. Embellishments provide opportunities for fine performance as well as much of its subject matter. They improve mediocre compositions. Without them the best melody is empty and ineffective, the clearest content clouded.[138]

Later in the treatise there is a section dedicated to qualities of good performance:

> A musician cannot move others unless he too is moved. He must of necessity feel all of the affects he hopes to arouse in his audience, for the revealing of his won humor will stimulate a like humor in the listener…. he must make certain that he assumes the emotion which the composer intended in writing it….Good performance can, in fact, improve and gain praise for even an average composition.[139]

From these excerpts we see that the concepts of taste, affect, performance, and the correct execution of embellishments were of utmost importance to Bach. As the expert he explains why he takes particular care in discussing of the execution of embellishments, as they are, in his words "everywhere to be found" and "indispensable." This is a fitting pedagogical practice, as he unpacks the "why" of his teaching, a hallmark of the master-apprentice model.

Bach's attention to the exactitudes of taste, affect, and embellishments are paralleled in the fastidious deduction of truth that buoyed the Enlightenment. From a pedagogical perspective we can surmise that Bach viewed these concepts as absolutes. Bach's tone illustrates a transmission model of pedagogy that is common in the master-apprentice model. This makes sense in didactic materials, as an expert writing to a novice audience. It can be argued that there is a necessity to write with authority in precision-based subjects such as music performance.

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[138] Bach, *Versuch über die wahre Art das Clavier zu spielen*, 79.

[139] Bach, *Versuch über die wahre Art das Clavier zu spielen*, 152-3.

There are specific and correct ways to execute the technical demands of playing the instrument. These practices are directed by the teacher and followed by the student, often with repetition and continuous coaching and feedback by the teacher. This traditional paradigm is exemplified in Bach's language and will be proven to be a ubiquitous theme in didactic literature for the next two centuries.[140]

Daniel Gottlob Türk (1756-1813) was a composer, organist, and professor of music at Halle University in Germany beginning in 1779. *Klavierschule oder Answeisung zum Klavierspielen* (School of Clavier or Instruction in Clavier Playing) was published in 1789 and again in 1802. Türk begins the treatise with a thorough introduction of music fundamentals, including reading notes on the staves, rhythmic durations, accidentals, key signatures, scales, and the like. Later, he discusses sitting position, a quiet hand position, and the use of strict legato. There is a lengthy discussion on the correct execution of embellishments, similar to that of C.P.E Bach's. There is also a forward-thinking discussion of rhythmic flexibility.[141] Of particular interest to this study are Türk's discussions of teacher/student interactions in the introduction. In the preface to this book, he writes:

> This work, as will be seen, is intended for three classes of readers. The main text contains that which everyone, including the student, must know. The indented notes are very likely for the most part for the teacher. In the additional remarks in the footnotes…are found various observations which may give the researcher in music material for further thought about this or that subject.[142]

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[140] As discussed in Chapter Three, I do not contest the necessity of precision training in keyboard pedagogy, only that these methods can be strengthened with social constructivist methods.

[141] Marienne Uszler, Stewart Gordon, and Scott McBride Smith, *The Well-Tempered Keyboard Teacher*, 2nd ed. (Belmont, CA: Schirmer Books, 2000), 279.

[142] Daniel Gottlob Türk, *Klavierschule oder anwei, mit kritische anmerkungen sung zum Klavierspielen fur Lehrer und Lernende*. Leipzig: Schwickert, 1989, Translated by Raymond H. Haggh as *School of Clavier Playing: Instructions in Playing the Clavier for Teachers and Students* (Nebraska: University of Nebraska Press: Lincoln & London, 1982), 6.

This illustrates Türk's pedagogical awareness and proves his intention to offer a well-rounded didactic manual; intended for the layman, the student, the teacher, and the "music researcher".

In the introduction of the treatise Türk discusses the qualities of a good teacher:

> The teacher, even if he is not a player of the first order himself—for to teach well and to play superbly are two very different things—must have at least a well-developed sense of musical taste and the ability to perform well, aside from the necessary knowledge. To a very large degree he has to have the gifts of clarity, understanding for the weaknesses of others, and patience. He must know how to keep the respect of his pupils; he must not be dull or sullen with them, for with most pupils calm dignity will avail more than angry reproaches and the like. Although he must not miss the smallest mistakes, he should not unnecessarily delay the progress of his pupil. In general, because of their different capabilities, he must not teach all pupils according to the same plan. Some understand everything quickly; with such pupils he must go at a faster pace so that they will keep in constant practice. Others require more time and reminders before they understand; to those he must give shorter assignments, etc.[143]

This discussion illuminates several of the traits important to pedagogy, namely patience, reflexivity, and agility with students. As Türk states, a good teacher will not "teach all pupils according to the same plan." Rather, the teacher must be aware of each student's strengths and weaknesses and be ready to adapt their methodology appropriately. Later in the introduction, Türk discusses the student learning process:

> It is particularly advantageous if one engages in a brief critical examination of the composition at hand with him and explains why, for example he should use this finger or that finger at this point…When everything has been explained to him, one may let the student explain it himself as a test of his understanding; one will very quickly ascertain whether or not he has understood it and at what point his understanding is failing him.[144]

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[143] Türk, *Klavierschule oder anwei, mit kritische anmerkungen sung zum Klavierspielen fur Lehrer und Lernende,* 18.

[144] Türk, *Klavierschule oder anwei, mit kritische anmerkungen sung zum Klavierspielen fur Lehrer und Lernende,* 21.

This quote is rich in pedagogical content, including traits of cognitivism and dialogic pedagogy. From a cognitive perspective we can see the idea of chunking material into smaller building blocks so that the student can integrate the material into their mental schema. We could apply Fink's Taxonomy to this, particularly the *Learning How to Learn* element. From a dialogic point of view, the student explains the content in their own words to display their understanding, as well as showing agency in leading the discussion, a trait of dialogic pedagogy.

4.3 Trends of Inquiry and Piano Development During the Nineteenth Century

Trends of inquiry were greatly influenced by the Industrial Revolution (approximately 1760-1840). According to Professor of Keyboard Studies Stewart Gordon, "The overriding research emphasis… has been in various areas of scientific investigation. Thus, in the wake of the Industrial Revolution and the Age of Reason, pedagogues have focused on 'scientific' approaches. Sometimes that science was based on anatomy, other times on the mechanics and acoustics of physics, psychology, or neurophysiology."[145] It is no coincidence then that many of the pedagogical materials from this period were scientifically and technically oriented as well.

The development of the piano was well underway by the beginning of the nineteenth century. The English and French builders and the Viennese builders each developed instruments with distinct mechanisms and timbres.[146] English builder John Broadwood, particularly bolstered

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[145] Stewart Gordon, "Influences on Pedagogy," in *The Well-Tempered Keyboard Teacher*, 2nd ed. (Belmont, CA: Schirmer Books, 2000), 269.

[146] Around the turn of the nineteenth century, the pianos of the English and French builders, including Broadwood, Erard, and Pleyel, were direct descendants of the Cristofori piano. These pianos had faster action and larger hammers than their Viennese counterparts. They were louder but had a less effective damping mechanism than Viennese pianos, which resulted in a lack of clarity and brightness. The pianos of Viennese builders, including Walter, Stein, and Streicher, had a clavichord-like delicacy which required a light touch. The continued evolution in the construction of keyboard and pianos would affect the trends in performance in pedagogy of the nineteenth century.

by the factory-centered interests of the age, churned out approximately 400 pianos per year between 1782-1892, compared with roughly twenty instruments per year built by German builder Andreas Stein of the previous generation.[147] During the Restoration in France (1814-1830), the bourgeoisie took their place in ruling the wonts of society, which included the continued learning and playing of music. "Well-to-do people felt increasingly impelled to imitate those richer than themselves, to aspire and pretend to gentility by laying upon themselves its purchasable trappings. More and more people wanted to afford pianos and to have their daughters try or make believe to play them."[148]

4.4 Pedagogical Sources of the Nineteenth Century

Johann Nepomuk Hummel (1778-1837) was a prominent composer, pianist, and pedagogue of the nineteenth century. In 1828, *A Complete Theoretical and Practical Course of Instructions on the Art of Playing the Piano Forte Commencing with the Simplest Elementary Principles and Including Every Requisite to the Most Finished Style of Performance* was published. Thousands of copies were sold across Germany, England, and France between 1828-1829.[149] There are over 2000 short exercises with comprehensive fingering patterns in this treatise, as well as discussions on posture, hand position, scales, rhythmic durations, embellishments, improvisation, and tuning.

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[147] Loesser, *Men, Women and Pianos*, 234.

[148] Loesser, *Men, Women and Pianos*, 345.

Christoph Wolff and Ulrich Leisinger, "Bach, Carl Philipp Emanuel," *Grove Music Online* (website), ed. Deane Root, accessed 24 March 2021,

[149] Joel Sachs, revised by Mark Kroll, "Hummel, Johann Nepomuk," *Grove Music Online* (website), Mark Kroll, rev. ed., Deane Root ed., accessed 26 March 2021, https://www-oxfordmusiconline-com.ccl.idm.oclc.org/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000013548?rskey=pwyxpd&result=1.

While the body of this treatise is intended for the amateur musician, Hummel does address the teacher directly in the introduction. On the qualities of a good teacher, Hummel writes: "That his method of instruction is good and intelligible, that he conducts himself towards children with patience and kindness, and employs severity only where it becomes necessary," and later: "That the master should feel the most zealous interest in all that relates to his pupil's progress in the art," and "If he wishes to see his pupil make a rapid progress, he must demonstrate the warmest interest in his so doing; must treat him with indulgence, and not urge him too quickly forward, but nevertheless be strict in his instructions."[150] These remarks demonstrate Hummel's values in teaching: namely patience, kindness, and an enthusiasm for the teaching and learning process. In the first section of the treatise Hummel discusses teaching a beginner student the notes on the piano. He suggests two methodologies, based on the temperament of the student:

> How laborious and difficult a task it is, to familiarize children with the keyboard and the notes, without exhausting their patience, and diminishing their desire of learning, every teacher must have experienced; the methods usually employed are not always satisfactory, as they often become difficult and tedious to children, even those most anxious to learn. From my own experience in teaching, I am led to recommend the following two methods…as the best and most certain for this purpose.
> 1. In the first place, let the pupil be taught that music consists of seven primary and independent notes, which, naming them in an ascending succession, are called C, D, E, F, G, A, B; and which including the C, returning again directly after B, forms what is termed an octave.
> 2. Then show him on the pianoforte, the seven notes from C, to C, in the middle of the instrument; directing his attention to the C being situated directly below the group of two black keys, and to the F lying below the three black keys, and let him point out these two motes throughout the whole keyboard: then teach him the names of the keys lying between F and the C, next above it; and

[150] Johann Nepomuk Hummel, *A Complete Theoretical and Practical Course of Instructions on the Art of Playing the Pianoforte: Commencing with the Simplest Elementary Principles and Including Every Information Requisite to the Most Finished Style of Performance* (London: T. Boosey & Co., 1828), iii-v.

> similarly; let him discover these and point them out through all the octaves.
> 3. Now combine a knowledge of the notes with that of the keys, and this according to one of the two following methods, as may be best adapted to the temperament of the pupil. If the child be lively and not much disposed to reflection, choose the first method, (a.) which of the two is more mechanical and striking to the eye, -- but if he be of a solid and somewhat thinking turn, I should rather employ the second method, (b) founded more upon his own comparison and judgement respecting the succession of notes by degrees: -- this I should also recommend in teaching grown persons.[151]

The language used in this discussion exemplifies Hummel's sensitivity to adapting his teaching style depending on the student's disposition. His approach is learner-centered, allowing room for student agency as he suggests letting the student "discover [the notes] and point them out" when learning the layout of the keyboard. Constructivism complements the transmission model delivery, as the teacher explains the layout of the keyboard and the student works with this new information to construct their own meaning and understanding of the keyboard. Additionally, traits of dialogic pedagogy and social constructivism are present when the teacher and student participate in a dialogue about the notes on the keyboard and the student leads the discussion to demonstrate understanding. The rest of the treatise follows the traditional transmission model of instruction, similar in tone to that of C.P.E. Bach's *Essay*.

Frédéric François Chopin (1810-1849), composer and virtuoso pianist, was also a celebrated and sought-after pedagogue who taught approximately 100-150 students in Paris

[151] Hummel, *A Complete Theoretical and Practical Course of Instructions on the Art of Playing the Pianoforte*, 5-6.

between 1832-1849.[152] Chopin did not teach with the intention of preparing his students for performance in concert halls, rather it was a more intimate affair akin to the way Chopin himself preferred to perform, in salon settings.[153] Chopin did not publish a pedagogical treatise or manual, but there is an extant short "Sketch for a Method," manuscript which Chopin began but never finished. In this manuscript, Chopin addressed the teaching of fine arts: "As art is infinite within the limits of its means, so its teaching should be governed by the same limits in order to give it boundless potential."[154] This is an important indication of how Chopin viewed pedagogy; that it was an art akin to performance itself, and should be "boundless" in its creativity and implementation to serve the art.

Below are a few select quotes from Chopin's students that will be used to reconstruct his pedagogy, found in the text *Chopin: Pianist and Teacher as Seen by His Pupils*, by Jean-Jacques Eigeldinger:

> 'Chopin daily devoted his entire energies to teaching for several hours and with genuine delight…. Was not the severity, not so easy to satisfy, the feverish vehemence with which he sought to raise his pupils to his own standpoint, the ceaseless repetition of a passage till it was understood, a guarantee that he had the progress of the pupil at heart? A holy artistic zeal burnt in him then, every word from his lips was stimulating and inspiring.' - Karol Mikuli (student of Chopin, also a pianist, pedagogue, and composer who passed on the legacy of Chopin's pedagogy)[155]
>
> 'Chopin was a born teacher; expression and conception, position of the hand, touch, pedaling, nothing escaped the sharpness of his hearing and his vision; he gave every detail the keenest attention. Entirely absorbed in his task, during the lesson he would be solely

[152] Jean-Jacques Eigeldinger, *Chopin: Pianist and Teacher as Seen by His Pupils*, trans. Naomi Shohet, Krysia Osostowicz, and Roy Howat, Edited by Roy Howat (Cambridge, UK: Cambridge University Press, 1986), 9.

[153] Eigeldinger, *Chopin: Pianist and Teacher as Seen by His Pupils*, 5.

[154] Eigeldinger, *Chopin: Pianist and Teacher as Seen by His Pupils*, 196.

[155] Eigeldinger, *Chopin: Pianist and Teacher as Seen by His Pupils*, 11.

> a teacher, and nothing but a teacher.' - Maria von Harder (pianist, student of Chopin in 1847)[156]

These excerpts point to a transmission model in which the master uses prescriptive language to engage and improve the student's technique and performance. There are also elements of behaviorism with the "ceaseless repetition of a passage till it was understood." As discussed in the context of C.P.E. Bach's *Essay*, this is an appropriate and common methodology in precision training, particularly when the teacher is concerned with technique. Below is another student account of Chopin's teaching:

> 'Yesterday at Chopin's I tried to play his Nocturnes. I know, I still felt clearly within myself the way in which he had played them. But partly because of uncertainty with the notes, and partly through a certain inhibition which comes out in our bearing and our performance when we are anxious or unhappy, I found myself unable to express the music as I heard it in my head; I did not have the strength to realize it in sound. It is wonderful then to see how tactfully Chopin puts one at one's ease; how intuitively he identifies, I might say, with the thoughts of the person to whom he is speaking or listening; with what delicate nuances of behavior he adapts his own being to that of another. To encourage me, he tells me among other things, 'It seems to me that you don't dare to express yourself as you feel. Be bolder, let yourself go more…. Have full confidence in yourself…. Forget you're being listened to, and always listen to yourself….'' - Emilie Gretsch (student of Chopin between 1842-1844) [157]

This excerpt points to another side of Chopin, a more agile and sensitive teacher who approached his students with a nurturing tone. As this student was concerned with artistic interpretation, Chopin responded by fostering the student's agency to make their own musical choices. Through the language that Emilie Gretsch quoted Chopin using students of Chopin no doubt felt more confident in their abilities and musical choices and were able to progress as a result. This points

[156] Eigeldinger, *Chopin: Pianist and Teacher as Seen by His Pupils*, 11.

[157] Eigeldinger, *Chopin: Pianist and Teacher as Seen by His Pupils*, 12.

to Chopin using a dialogic approach to encourage the student through spoken narrative, and as a result the student could create their own artistic meaning and flourish.

Robert Schumann (1810-1856) is well-known as a Romantic composer and music critic but is less commonly thought of as a pedagogue. However, in his writings for the *Neue Zeitschrift für Musik* (NZfM) from 1834-1843, Schumann educated his readers through critiques of compositions by his contemporaries.[158] Fancifully, Schumann adopted the voices of three fictional characters in his reviews; Florestan, Eusebius, and Master Raro, who engaged in debates about these musical works and compositional trends.[159] Below is an excerpt from the first issue of NZfM, published in 1834. Here, Florestan gives his views on Johann Nepomuk Hummel's Op. 125 set of 24 Etudes:

> Methods and schools make for rapid progress, to be sure, but such progress is one-sided and trivial. O pedants, what sinners you are! With your Logier-natures you pull the bud forcibly out of its covering. Like falconers you clip the feathers of your students lest they fly too high. You ought to be guides who show the way—without always coming along yourselves! ...Who could deny that most of these etudes show an exemplary plan and execution, that each has a distinctive, pure character, and that they were produced with that masterly ease which results from years of application? But that which is necessary to enchant the youth and to make him

[158] Schumann established the music journal titled the *Neue Zeitschrift für Musik* with pianist Julius Knorr and painter and composer J.P. Lyser in 1833. The journal was to be published twice weekly by Christian Hartmann, a book dealer. Hartmann subsequently tried to control the journal and so Schumann negotiated a new contract in which he was the sole owner and editor. His editorship began in January 1835. The journal was to include theoretical articles, belletristic pieces, reviews of compositions, and reports from foreign correspondents. (John Daverio, "Schumann, Robert," *Grove Music Online* (website), Deane Root ed., accessed January 12th, 2022, http://www.oxfordmusiconline.com.ccl.idm.oclc.org/subscriber/article/grove/music/40704pg5#S40704.5.)

[159] Schumann created the characters Florestan, Eusebius, and Master Raro to illustrate his varied points of view on musical matters. Florestan represented the extroverted and bold side of his personality while Eusebius represented the introverted and sentimental side. Master Raro provided mediation between the two. These characters also make appearances in some of his piano works, namely *Carnaval* Op. 2, *Phantasie* in C Major, Op. 17, *Fantasiestücke*, Op. 12, and *Davidsbündlertänze*, Op. 6.

> forget all the difficulties of the work because of its beauties is utterly lacking—imaginative originality….[160]

In this excerpt Schumann (as Florestan) reacts to the state of piano composition and pedagogy in 1830s Germany. He felt that aesthetics and poetry had been replaced by technique for technique's sake and that this type of music lacked artistic substance. He chastises the composers of these etudes for "clipping the feathers" of their students because the pieces lacked "beauty" and therefore couldn't "enchant the youth." We can surmise that Schumann is pointing to a lack of aesthetic value in these etudes, and that therefore the composer disregarded the pedagogical purpose of fostering artistry. In a musical culture that valued virtuosity, Schumann wrote about what he believed should be prioritized in music that had been lost. This priority is reflected in both his compositions as well as his other writings, including a short work titled *Advice for Young Musicians*, first published in 1839 as part of his *Album for the Young* Op. 68.

Album for the Young is a set of forty-three short pieces intended for young musicians. Each piece is akin to an etude that explores a different musical idiom or technique, but unlike other contemporaneous etudes, each is rather imaginative and not based in a mechanistic or virtuoso school of thought. They have descriptive titles such as *The Wild Horseman* (no. 8) and *Little Morning Wanderer* (no. 17). Taken at face value these pieces are pedagogical in nature, but Schumann took an additional step in his pedagogy in the form of aphorism. Interspersed in this set of pieces are aphorisms on music, art, and philosophy that were described by Schumann as "imaginings, presentiments and future states for younger people."[161] Schumann's aphorisms

[160] Robert Schumann, *Neue Zeitschrift für Musik* 1, 1834, 73-75, Translated by Leon Plantinga in *Schumann as Critic* (New Haven, CT: Yale University Press, 1967), 66.

[161] Lia Laor, *Paradigm War: Lessons Learned from 19th Century Piano Pedagogy* (Cambridge Scholars Publishing, 2017), 116.

reveal a sort of doctrine of philosophy on the value of music as High Art as well as advice on what one should study to be a true musician. Below are a few examples of these aphorisms:

1. 'Do not think velocity, or passage-playing, your highest aim. Try to produce such an impression with a piece of music as was intended by the composer; anything further is caricature.'[162]

2. 'Look deeply into life, and study it as diligently as the other arts and sciences.'[163]

3. 'Let your closest friends be those who are better informed than yourself.'[164]

4. 'The object of art is not to produce riches. Become a great artist, and all other desirable accessories will fall to your lot.'[165]

While it is not a formal piano treatise, these aphorisms certainly serve a pedagogical purpose, albeit with a more broadly philosophical tone than other didactic sources. Schumann speaks directly to the young student and encourages curiosity, autonomy, and lifelong learning. We can also apply a constructivist lens to these aphorisms, particularly Fink's *Learning How to Learn*, *Learning About Oneself and Others*, and *Caring* dimensions. Schumann encourages students to bring their identities and interests into the learning process, as well as to collaborate with others, "friends more informed than yourself." Schumann was a unique figure in pedagogy. He took on the role of children's' educator through his compositions and aphorisms and educated adults through his music criticism in the NZfM. His contributions to pedagogy were unique, artistic, and boundary-crossing, much akin to his music.

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[162] Robert Schumann *Musikalische Huas- und Lebensregeln*. Leipzig: Neue Zeitschrift für Musik, 1850. Translated by Henry Hugo Pierson as *Advice to Young Musicians: Musical Rules for Home and in Life*,.
Introduction by Barbara Allman (. Translated by Henry Hugo Pierson. Paso Robles, CA: Raro Press, 2010), 17.

[163] Schumann, *Musikalische Huas- und Lebensregeln*. Leipzig, 37.

[164] Schumann, *Musikalische Huas- und Lebensregeln*. Leipzig, Ibid., 22.

[165] Schumann, *Musikalische Huas- und Lebensregeln*. Leipzig, Ibid., 38.

Another source of interest regarding historical trends of piano pedagogy is a collection of letters written by Amy Fay in the late nineteenth century. These letters were compiled into a book titled *Music Study in Germany*, published in 1897. Fay was an accomplished pianist who studied with Franz Liszt (1811-1886), Ludwig Deppe (1828-1890), and Theodor Kullak (1818-1882) in Germany in the 1870s. In her letters, Fay recounts in detail each pianist's pedagogical style. Below are excerpts from these letters:

> On Liszt in 1873: 'That is the way Liszt teaches you. He presents an *idea* to you, and it takes fast hold of your mind and sticks there.'[166]
>
> On Kullak vs. Liszt in 1873: 'Kullak is *so* pedantic! He never overlooks a technical imperfection, and he ties you down to the technique so that you never can give rein to your imagination…. That is just the difference between him and Liszt. Liszt's grand principle is, to leave you your freedom, and when you play to him, you feel like a Pegasus caracoling about in the air. When you play to Kullak, you feel as if your wings were suddenly clipped, and as if you were put into harness to draw an express wagon!'[167]
>
> On Deppe in 1874: 'My lesson usually lasts three hours! Nothing Deppe hates like being hurried over a lesson. He likes to have plenty of time to express all his ideas and tell you a good many anecdotes in between!'[168]
>
> On Deppe in 1874: 'My lessons with Deppe are a genuine musical excitement to me, always. In every one is something so new and unexpected—something that I never dreamed of before—that I am lost in astonishment and admiration. Every piece has an *aim*…. Deppe has an organized *plan* in everything he does…. He takes a piece, and while he plays it with the most wonderful *fineness* of conception, he cold-bloodedly dissects the mechanical elements of it, separates them, and tells you how to use your hand so as to grasp them one after the other. In short, he makes the technique

[166] Amy Fay, *Music Study in Germany*, (Chicago: A.C. McClurg & Co., 1897), 223.

[167] Fay, *Music Study in Germany*, 272.

[168] Fay, *Music Study in Germany*, Ibid., 304. Ludwig Deppe is also renowned for initiating a new trend in piano pedagogy which focused on the coordination of the arm, wrist, and hand. His methodology is often referred to as the beginning of the modern era of piano pedagogy. (Max W. Camp, *Developing Piano Performance: A Teaching Philosophy*. (Chapel Hill, NC: Hinshaw Music Inc., 1992), 15.)

> and the conception identical…. Deppe also hears me play, I think, in the true way… that is, he never interrupts me in a piece, but lets me go through it from beginning to end, and *then* he picks out the places he has noted, and corrects or suggests. These suggestions are always something which are not simply for that piece alone, but which add to your whole artistic experience—a *principle,* so to speak.'[169]

From her description, Fay found Liszt to be an inspiring teacher. He left room for his students' creative interpretation, thereby granting them agency and allowing them to construct their own knowledge and meaning. This methodology can be placed in the constructivist framework. Kullak on the other hand was 'pedantic', leaving no room for his students' voice, creative or otherwise, which Fay found uninspiring. This methodology would be placed in the transmission model of pedagogy.

From her effusive remarks about Deppe, Fay found his pedagogy inspiring and fruitful. There are elements of cognitive apprenticeship present when Deppe "dissects the mechanical elements" and "shows you how to use your hand so as to grasp them." Utilizing the lexicon of cognitive apprenticeship, Deppe used scaffolding, modeling, and coaching to instruct his students in technique. This process fostered feelings of self-efficacy in Fay, as she could "grasp" the techniques "one after the other." Furthermore, Deppe also fostered agency and self-efficacy in Fay by not interrupting her while she played, leaving room for her artistic voice and creating a safe space for her to express it. There are also elements of dialogic pedagogy in his methodology, as he enjoyed sharing "anecdotes" with his students, which Fay seemed to enjoy.

Another noteworthy pedagogue of the nineteenth and early twentieth century was Theodor Leschetizky (1830-1915). Although he did not publish a didactic manual, there are many accounts written by his students that are of interest. Multiple accounts of Leschetizky's

[169] Fay, *Music Study in Germany,* Fay, 318-9.

teaching note his lack of a fixed methodology.[170] He took a "genuine interest in [his students'] personal lives. He was a man of unflagging energy and emotional gusto, and it was typical of his personality that much of the advice given was in the form of metaphor and anecdote, yet always specific to the case in point."[171] These accounts point to elements of dialogic pedagogy and social constructivism, namely interpersonal relationships developing between teacher and student and the use of dialogic pedagogy in the form of metaphor to teach.

Ethel Newcomb was a student of Leschetizky's from 1895-1903 and worked as his assistant from 1904-1908. Her book, *Leschetizky as I Knew Him* provides a first-hand account of Leschetizky as a teacher. Below are a few excerpts of her experiences as well as dialogue between her and Leschetizky during their lessons:

> I began to see that a great deal of one's happiness with him depended upon how one acquitted oneself in the class. He was then as much the critic as the master; and he was delighted in one succeeded, miserable and displeased if one failed…. There was often enthusiastic reference made to the very good playing, or a kindly criticism of the playing less good…. 'It is good practice to criticize if we do it with intelligence and without prejudice.'[172]

> 'You will go home, and think and think, and come no nearer to it. This is a question of touch and tempo, and if you will only listen better! Why, some people learn a language by listening, and never see a book. The grammar will not teach you how to play this part. Stop thinking now, for a moment, and listen.' Leschetizky plays this part again….[173]

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[170] Uszler, *The Well-Tempered Keyboard Teacher*, 293.

[171] James Methuen-Campbell, "Leschetizky, Theodor," *Grove Music Online* (website), Deane Root ed., accessed March 21, 2021, https://www-oxfordmusiconline-com.ccl.idm.oclc.org/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000016474?rskey=9b0dZD&result=11.

[172] Ethel Newcomb, *Leschetizky as I Knew Him* (New York: D. Appleton, 1921), 27.

[173] Newcomb, *Leschetizky as I Knew Him*, 42.

These excerpts point to a pedantic and animated style of teaching. Leschetizky was not shy about being the "critic" and showing "displeasure" if a student failed. From Newcomb's descriptions, the feedback was constructive, but this may have only been true for the student with a particularly robust temperament and determination to improve and succeed. The second excerpt will be interpreted as the master-apprentice model because Leschetizky instructs the student to listen to and absorb the master's playing demonstrations, rather than conversing with the student. This is appropriate to piano pedagogy, as quite a bit of the teaching revolves around the student listening to and imitating the teacher's playing.

The previous excerpts presented Leschetizky as the traditional master, but these next excerpts reveal a different side:

1. 'If one wishes to remember some special point it is better merely to put a cross over that place in the music as a reminder. Always ask yourself questions, and try to find out for yourself what is the best way.' – Leschetizky [174]

2. 'A lesson with Leschetizky was highly instructive in many ways. Often there was very little playing in the lesson. Sometimes he would hear a piece through in silence, and then quietly remark at the end, 'Well, do you like it that way?''[175]

These excerpts point to a more collaborative and constructivist approach with elements of dialogic pedagogy. Leschetizky would ask his students their opinions on their own playing, encouraging critical thinking and reasoning and scaffolding the student's listening and interpretative skills. The first excerpt illustrates a constructivist paradigm in which the student makes their own meaning through critical thinking of their subjective experience of playing

[174] Newcomb, *Leschetizky as I Knew Him,* 14.

[175] Newcomb, *Leschetizky as I Knew Him,* 26.

piano. There is also evidence of student agency, in which Leschetizky encourages the student to make their own interpretive choices through dialogic pedagogy.

4.5 Piano Pedagogy of the Twentieth Century

According to piano pedagogue Max W. Camp, the ways of the European masters still had a firm grip on pedagogical ideology in the early 1900's. Camp states: "At the beginning of the twentieth century, numerous teachers claimed that piano performance could be developed only by using 'secrets' from the old European masters. In practice these secretes amounted to little more than the nineteenth-century 'direct imitation' approach. With this approach, students learned interpretations of works by imitating their teachers, who learned them form their teachers in a kind of apostolic succession."[176] This methodology does not allow for individual artistic choices in the learner by way of interpretation. Camp continues: "But as a means of developing musicianship, this venerable method is limited because the underlying principles of musical understanding are neglected. Instead of promoting transfer of learning, the imitative approach actually retards or precludes it…. The imitative approach does not allow for student involvement in any interpretive decision making, nor does it promote musical independence."[177] The master-apprentice model always begins with direct observation and imitation of the master before an apprentice can develop their own expression of the craft, but if the master leaves no room for novel interpretations of musical works, there is a stifling of potential new artistic values.

Perhaps in reaction to this practice as well as the nascent fields of psychology and pedagogy, piano teachers sought out new methodologies around the turn of the twentieth

[176] Camp, *Developing Piano Performance*, 1-2.

[177] Camp, *Developing Piano Performance*, 1-2.

century. A new awareness of the nuanced differences between child and adult learners began to permeate pedagogical literature. Music educators spoke of this in periodicals, quoted below:

> We do not desire to make of a child a little man, a mannikin, but rather a complete, well-developed child.[178]

> First of all, never compel a child to take lessons that has never expressed a wish to learn to play. Second, do not impose on the infantile brain-that tender brain, just beginning to develop by slow degrees—more than it can easily bear.... Thirdly, do not chide the pupil for inattention or laziness, but, as everything is the consequence of some cause, try rather to find out that cause, and try to remove it or prevent its appearance.[179]

A focus on the role of cognition in learning continued to grow in piano pedagogy. According to Camp: "Many early twentieth-century pedagogical writers expressed increasing support for an instructional approach that would foster the development of musical intelligence and an interrelationship among the aural, rhythmic, and technical aspects of piano playing. As blind acceptance of nineteenth-century teaching approaches began to lessen, new ideas came into existence including that of the vital role the mind and ear play in the physical realization of music." Our survey continues with twentieth-century pedagogues who promoted a more holistic approach to teaching.

Tobias Matthay (1858-1945) was a notable pianist, composer, and pedagogue of the late nineteenth and twentieth centuries. He served as professor of pianoforte at the Royal Academy of Music in London from 1876-1925 and co-founded the Society for British Composers in 1905.

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[178] Will Earhart, "Science or Art?" *The Etude* 17, no. 9 (September 1899): 287, quoted in Sheryl Maureen Peterson Mueller, "Concepts of Nineteenth-Century Piano Pedagogy in the United States", PhD diss, University of Colorado, 1996, 188.

[179] E. Von Adelung, "First Lessons to Children," *The Etude* 8, no. 11 (November 1890): 173, quoted in Mueller, 187.

An active pedagogical writer, Matthay published several books during his lifetime, including The Act of Touch (1903) and Musical Interpretation (1912), as well as several articles in the journal The Musical Times including "The Appreciation Class" (1932), "Music in Education" (1932), and "The Musical Profession? A Question for Parents" (1938). Matthay's pedagogical style was noted by his contemporaries, including Harriette Brower, pianist and author of Piano Mastery: Talks with Master Pianists and Teachers (1915). On Matthay's teaching style, Brower states "In his intercourse with his students he is ever kind, sympathetic and encouraging. They, on their part, treat him with profound respect." Below are several excerpts from Matthay's book Musical Interpretation that illustrate his unique pedagogical voice:

> One of the first things we have to combat in a pupil is the wish to be saved all trouble and effort, and to have the 'learning' done by the teacher. Indeed, the ordinary pupil invariably starts with the notion, that all he has to do is to be passive and 'receptive…' This attitude must be at once kindly but firmly combated, and the pupil must be made to see, that it is for him to try to learn, for him to try to apprehend and to assimilate those things to which the teacher is anxious to call his attention.

Here, Matthay rejects the transmission model. He advocates for a teaching approach that engages the student in active learning and critical thinking, working with the knowledge imparted by the teacher to construct deep learning:

> A passage must therefore never be played through, not even once through, except for the express purpose of really knowing that passage better; for the purpose of knowing it better not only physically, but also mentally…All this implies a constant process of analysis – of minute analysis as to what should be done and what is being done musically – and also, what should be done and is being done technically…This again presupposes a high degree of concentration of mind on the part of the pupil, and that precisely is the requirement – full concentration of mind is needed. Now, it is the teacher's very first duty (and constant duty) to prompt the pupil in this direction.

According to Matthay, the teacher's "first and constant duty" is to provide support for student comprehension to occur, which I will place in the frames of cognitivism, cognitive apprenticeship, and dialogic pedagogy. He encourages the teacher to "prompt" the pupil in this

direction, potentially through creating a culture of inquiry, analysis, problem-finding, and reflection and articulation, all facets of these frameworks. Matthay stresses the importance of student agency, cognitivism, and Fink's constructivist concepts again and again throughout his book. Matthay believes that without the student's active participation in their learning, the student will inevitably become an "automatic strumming machine" or "crammer," monikers that Matthay uses to describe one who plays without cognizance or intentionality:

> The bad teacher simply tries to make the pupil do *things* – 'things,' points, effects which the teacher feels are necessary; whereas the good teacher tries to make the pupil see and *think things*, so that, seeing their purpose, he can apply them by his own choice….The only way to establish any abiding improvement in your pupil, and also the only way to obtain, immediately, a vivid performance, is patiently and ceaselessly to insist on the pupil himself always using his own ears (upon the actual sounds, and upon the sounds that *should* be), his own judgement, his own reason and his own feeling.[180]

This excerpt reinforces the idea of the student's own perception and thought, but with additional layers of agency and constructivism. By insisting that the student use "his own judgement, his own reason and his own feeling" Matthay encourages agency and self-efficacy. He scaffolds a cognitivist paradigm of critical thinking and a constructivist environment in which the student makes their own meaning. This excerpt can also be interpreted using Fink's *Caring*, *Human Dimension*, and *Learning How to Learn* components. The *Caring* component is illustrated through the student developing new feelings and values about their own playing. The *Human Dimension* component is present as the student reflects on their playing and learns about themselves in the process. Presumably, the student *Learns How to Learn* throughout the tenure of their lessons and beyond, as they become self-directed learners.

[180] Matthay, *Musical Interpretation*, 19.

Dialogic pedagogy and cognitive apprenticeship are prominent undercurrents of Matthay's pedagogy. Conversation, questioning, and cognitive modeling would need to be a substantial part of the lesson structure to scaffold problem-solving, agency and self-efficacy, critical thinking, and constructivist paradigms in the way that Matthay describes them. An emphasis would be placed on the student's opinions regarding interpretation and artistic choices; prompted through questions and dialogue, first led by the teacher and over time by the student as well.

Pianist Harriette Brower wrote several books in the early twentieth century, including *The Art of the Pianist* (1911), *Piano Mastery: Talks with Master Pianists and Teachers* (1915), *Self-Help in Piano Study* (1920), and *Story-Lives of Master Musicians: The World's Great Men of Music* (1922). Brower took on a few roles in her writings; a musicologist when she interviewed pianists for *Piano Mastery*, pedagogue for *Art of the Pianist*, and composer for *Self-Help in Piano Study*. Below is an excerpt from *The Art of the Pianist*:

> The exact course that should be adopted with the pupil at the first lesson depends upon the needs of the pupil and his age. A little child taking his first lesson, and the adult beginner, will receive instruction of different quality and quantity, but the same true principles will underly in both cases. The main object of the lesson is to make the pupil think, and should include something to bring out the rhythmical sense, something for the gaining of physical control, for the acquisition of technical skill, and something to encourage a love for music.[181]

In this excerpt Brower shows sensitivity to developmental stages in learning. She goes on to discuss the way to conduct a first lesson; giving suggestions of finger exercises away from the keyboard, how to find the notes on the keyboard, understanding the treble staff, and ear training,

[181] Harriette Brower, *The Art of the Pianist: Technic and Poetry in Piano Playing for Teacher and Student* (New York: Carl Fischer, 1911), 29-30.

all of which are common in didactic keyboard manuals. Later in the book Brower addresses the teacher directly with suggestions of the seven types of knowledge a "young teacher" must have to be an effective piano pedagogue, including:

1. Be able to play piano
2. Sense of rhythm and perfect or relative pitch
3. Conversant in musical notation
4. Knowledge of music theory
5. Knowledge of piano literature
6. Knowledge of musical form
7. Knowledge of music history and lives of composers [182]

Heinrich Neuhaus (1888-1964) was an acclaimed pianist and pedagogue during the first half of the twentieth century. He helped create the Moscow Central Music School for Gifted Children in 1932 and wrote a book titled *The Art of Piano Playing*, first published in Russia in 1958 and translated to English in 1973. Neuhaus writes in an autobiographical manner, musing on his career as a teacher-performer with anecdotes of interactions with students as well as his pedagogical insights and best practices. These excerpts demonstrate Neuhaus's pedagogical priorities of student agency, self-efficacy dialogic pedagogy, and constructivism:

> I consider that one of the main tasks of a teacher is to ensure as quickly and as thoroughly as possible that he is no longer necessary to the pupil; to eliminate himself, to leave the stage in time, in other words to inculcate in the pupil that independent thinking, that method of work, that knowledge of self and ability to reach his goal which we term maturity, the threshold beyond which begins mastery.[183]

> In such conversations about music with talented and intellectually mature pupils the teacher ceases to be a teacher in the narrow sense of the word and becomes a senior colleague endowed with greater experience and knowledge, talking to his younger brothers-in-art of their favorite subject. It is precisely this aspect of teaching that is most attractive, most engrossing and satisfying. Not only

[182] Brower, *The Art of the Pianist*, 35-37.

[183] Heinrich Neuhaus, *The Art of Piano Playing*, trans. by K.A. Leibovitch (New York: Praeger Publishers, 1973), 172.

> because here professional teaching is a pure form of communication, of bringing people together on the basis of their common devotion to art and the ability to create something in the field of art….Anyone can see how far removed such teaching is from the original, mainly dictatorial type based on obedience, on command and its execution, on discipline, the best example of which is the relationship between the army commander and the private…..With pupils devoid of artistry and initiative I naturally resorted to the original, imperative method…With highly gifted pupils I was usually much more liberal.[184]

These excerpts point to Neuhaus's tendency toward cultivating independence of thought and artistic intention in his students. Student independence indicates feelings of agency and self-efficacy. He encourages them to reach "maturity", at which point the traditional power dynamic between teacher and student has shifted and they are more akin to colleagues. I would argue that this dynamic is related to dialogic pedagogy and social constructivism, in which teacher and student co-construct knowledge and meaning through playing and dialogue. In the second excerpt, Neuhaus discusses "a dictatorial type [of teaching] based on obedience, on command and execution, on discipline" which would best be categorized the transmission model with behaviorist elements. Neuhaus admits that he sometimes used this approach with less advanced students, and this is further reinforced in the next excerpt:

> While I had to cope frequently with very difficult pupils, I would sometimes lose patience; I would shout, throw the score on the floor, and, in general, lose my temper. I knew that it was quite wrong and reproached myself, but I found it very difficult to keep myself in check. For instance, I once had a pupil who was gifted musically and technically but was so completely devoid of any inner fire, so indolent and indifferent to things that I bore with her as long as I could and then would have a real row, rebuking her, screaming etc. After this she would show much more interest in and love of music for a couple of weeks, the lessons would be calm and pleasant util her vitality would once again sink to normal, i.e. to a state of utter and disgraceful indifference; then there would be the usual row and so on at intervals of a month or six weeks. I despised myself for these rows, but what could I do when they

[184] Neuhaus, *The Art of Piano Playing*, 177-8.

> were quite obviously good for her and I had no other means at my disposal to get anything worthwhile out of her?... I soon managed to detect in my teaching a 'scale of irritability'. It then transpired that the ones who most annoyed and irritated me were not the least gifted pupils…but pupils like the girl I mentioned earlier, who were endowed with quite good gifts but did not bother to use them; in other words, that I was irritated by flippancy, indifference, and weakness of will and temperament.[185]
>
> As I study some beautiful musical composition with my pupils, I mentally draw up a work graph in accordance with their abilities; in one case the pupil needs merely stretch out his hand, in the other—he would have to walk a hundred miles. But this does not alter my attitude to the music…I merely change my teaching method. Teachers who are too preoccupied with the 'usefulness'…adapt the composer to the pupil instead of raising the pupil to the composer. But the truth is somewhere in between: the interaction between composer and pupil through the influence of a good teacher striving to help the pupil penetrate as far as possible the composer's intention, makes for the best possible solution to the problem.[186]

This last excerpt is a remarkable example of the teacher (Neuhaus) using a composer as a third party in instruction. This is a pedagogical nuance particular to historically informed performance arts such as music, dance, and theater. Many earlier treatises, including C.P.E. Bach's *Essay* and Türk's *School of Clavier* discuss playing in more objective didactic terms. There is an implicit "correct" way to play as ordered by the author and expert. Neuhaus goes out of his way to discuss interpretation and the composer's intention as teaching tools, which I believe to be a more complex and holistic view of the pedagogy of piano artistry.[187] This also

[185] Neuhaus, *The Art of Piano Playing*, 195.

[186] Neuhaus, *The Art of Piano Playing*, 198.

[187] The concept of the composer and composition as part of the teaching and learning paradigm are also discussed by Richard Kennell in his chapter titled "Systematic Research in Studio Instruction in Music" in *The New Handbook of Research on Music Teaching and Learning* (New York: Oxford University press, 2002), 253. Kennell posits that music "is a four-way conversation between the student, the musical artefact, the instrumental artefact, and the teacher."

points to collaboration and collaborative creativity between teacher and pupil as they unearth and explore the composer's intentions.

Piano pedagogue Max W. Camp has already been referenced in this chapter with his views on the historical trends of piano pedagogy. However, Camp has a robust teaching philosophy that he discusses in his two books, *Developing Piano Performance: A Teaching Philosophy* (1981) and *Teaching Piano: The Synthesis of Mind, Ear and Body* (1992). Camp is particularly interested in developmental psychology and the way that it informs teaching and learning music. According to Camp, pedagogues James L. Mursell and Jerome S. Bruner bridged the gap between developmental psychology and music pedagogy, applying learning theories such as Piaget's framework of intellectual development and the Gestalt principal to piano pedagogy methods.[188] Camp's own philosophy is informed by the Gestalt principal, focusing on how to holistically teach the musical elements and increase complexity as the student progresses. Camp states:

> Since making music involves an understanding of melody, harmony, rhythm, tempo, meter, dynamics, tonal quality and quantity, phrasing, balance, clarity and style, it is obvious that any approach to learning music must be all encompassing in nature. All of the understandings have to work in a synthesis for the mind and body to direct the process like a conductor. This relates directly to how developmental learning theorists believe that individuals learn. They contend that humans transfer whole learning structures form one situation to another in a synthesis rather than in separate parts. That is why learning music and playing the piano should be approached from a holistic approach right from the first lessons and fostered throughout all levels of advancement…. Holistic thinking is derived from principles of Gestalt psychology. Gestalt psychologists believe that the whole differs from the sum of its parts.[189]

[188] Max W. Camp, *Teaching Piano: Synthesis of Mind, Ear and Body* (Van Nuys, CA: Alfred Music Publishing, 1992), 30.

[189] Camp, *Teaching Piano,* 10.

> …Piano artistry requires the development of an interrelationship of aural control, rhythmic control, and technical control. The interrelationship of these controls functions as a synthesis of all mental and physical processes required to produce estimable piano playing. The synthesis includes the understanding of a composition's musical elements and interrelationships, as well as their physical realization in performance. If so many authorities have explained throughout the twentieth century what is needed to develop performance artistry and musical independence, why has it only been achieved by relatively few students? I strongly believe it is because teachers have ignored psychological theories of learning and the basic cognition process. Tenets of developmental psychology indicate that learning is not an act of acquiring the accumulation of separate skills, but a continuum in which concepts or whole learning situations become more clearly clarified with further learning experiences.[190]

Camp's pedagogical philosophy follows the trend of the last quarter of the twentieth century in which learning theories were codified and applied to all types of learning environments. While Camp does focus thoroughly on developmental psychology, he does not address constructivism, student agency, self-efficacy, or dialogic pedagogy in any real detail. Here are two excerpts in which these ideas are briefly addressed:

> In being a diagnostician, the teacher has to discover the root of those errors whether it be concentration, rhythmic, aural or perceptual problem…. What is causing the repetition of the error must be found…. Attempting to detect why a student is perceiving a score incorrectly is like 'getting inside the student's thinking.'[191]

> In the past, performance has been construed to mean primarily concert performances, thus alienating a large segment of society. David Barnett thinks, since musical talent is widespread, performance should mean playing the piano in amateur as well as professional situations. Musical talent should be developed and utilized to create a large body of players who would be able to read and interpret music as people read books. Consequently, playing

[190] Camp, *Developing Piano Performance,* 45-6.

[191] Camp, *Teaching Piano*, 29.

> the piano or any musical instrument would serve as a means for self-actualization or personal expression.[192]

In these excerpts Camp hints at frameworks discussed previously, namely music as a means for 'self-actualization' which will be interpreted student agency and self-efficacy towards artistic expression.

4.6 Trends Discovered

From this historical literature review several trends in pedagogical methodology can be discerned. The sources researched spanned nearly three centuries; during which music aesthetics, playing techniques, and the keyboard instrument itself evolved greatly. However, through the survey of these sources it is evident that while some pedagogical methodologies changed and new trends emerged, others remained permanent fixtures. Of the thirty-three sources studied the most ubiquitous pedagogical trends were transmission-based models, the master-apprentice model, and technique-based methodologies. As seen in Figure 5 below, the transmission model was present in eighteen of the thirty-three sources studied (55%). The master-apprentice model was present in thirteen sources (39%). Physiologic and technique-based methods were present in twenty-five sources (76%). As playing piano is an embodied practice that requires precision training by an expert, these findings are not surprising. Taken at face-value, taking piano lessons is a didactic endeavor with implicit power dynamics of master and apprentice. An expert instructs a novice in the execution of physical gestures, working towards refinement and mastery. In this setting, the feelings or interests of the student were not prioritized. As such, it makes sense that many (if not most) pedagogical sources would follow this tradition.

Behaviorism was present in three sources (9%), cognitivism was present in six sources (18%), and constructivism was present in nine sources (27%). Social constructivism was present

[192] Camp, *Developing Piano Performance*, 29.

in only three sources (9%), and dialogic pedagogy was present in seven sources (21%). Cognitive apprenticeship was present in two sources (6%). Collaboration was present in three sources and collaborative creativity was present in four sources (9% and 12% respectively). Student agency was present in eleven sources (33%), student self-efficacy was present in five sources (15%), and student metacognition was present in two sources (6%). Figure 5 below shows a visual representation of this percentage breakdown.[193]

The distribution of methodologies did not appear to follow any temporal or historical trend lines. The transmission model, master-apprentice model, and technique-based methods were present in the earliest source studied (CPE Bach's *Essay*) from 1720 and were steadfast through the latest source of Max Camp's *Teaching Piano: Synthesis of Mind, Ear and Body* from 1992. There were cases of dialogic pedagogy sprinkled throughout the data set, as early as 1789 to as late as 1958.[194] Cognitive apprenticeship was present in sources from 1897 (Deppe) and 1912 (Matthay).

Though two sources studied incorporated developmental psychology and learning theories (Max Camp), and others incorporated constructivism and student agency (Hummel, Matthay, Leschetizky, and Neuhaus), there was little discussion of elements that would point to the use of cognitive apprenticeship, dialogic pedagogy, or outcomes of student metacognition, self-efficacy, or collaborative creativity.[195] This historical literature analysis indicates that these frameworks were not pedagogical focal points in keyboard and piano teaching sources. In the

[193] A table with the pedagogical sources cross-referenced with pedagogical methods described can be found in Appendix D.

[194] The research on the efficacy of social constructivist methods in music pedagogy has become more robust in the last twenty years, but this is usually found in sources dedicated to pedagogy, education, and music research such as academic journals, rather than pedagogical manuals and how-to guides.

[195] This is not surprising given that these learning theories are new even in the fields of social science and education.

last thirty years, cognitive apprenticeship and dialogic pedagogy have been studied in the fields of social science and education. Combining traditional precision training methods with these social constructivist frameworks offers a more student-focused approach to piano pedagogy with the whole learner in mind. I have incorporated these methods into my piano pedagogy with promising results, discussed in detail in the following chapters.

Pedagogical Framework	**Percentage**
Transmission model	55%
Master-apprentice model	39%
Physiologic/Technique-based	76%
Behaviorism	9%
Cognitivism	18%
Constructivism	27%
Social constructivism	9%
Collaboration	9%
Collaborative creativity	12%
Dialogic Pedagogy	21%
Cognitive Apprenticeship	6%
Student agency	33%
Student self-efficacy	15%
Student metacognition	6%

Figure 5: Percentage Breakdowns of Pedagogical Frameworks Used in Historic Sources

Chapter 5

Study Methodology and Design

5.1 Study Methodology

This study was a qualitative self-study of piano instruction. Qualitative research is an interpretive paradigm that includes multiple data collection strategies, including oral history, case study, grounded theory, action research, ethnography, autoethnography, self-study, among others. These methods all share "an inquiry process of understanding a social or human problem based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting."[196] Qualitative research is designed to study social human interactions in a non-intrusive way. As piano instruction occurs in a setting based in relationality and communication, this methodology was a natural choice.

A self-study is defined by educational researchers Mary Lynn Hamilton, Stefinee Pinnegar, et al. as a methodology for studying professional practice settings.[197] This is expanded and described by educational researcher Vicki LaBoskey in her chapter titled "The Methodology of Self-Study and its Theoretical Underpinnings" as being "self-initiated and focused, improvement-aimed, interactive, and including multiple, mainly qualitative methods."[198] A qualitative self-study enabled the gathering of rich data through lesson recordings and interviews that traced student experiences. Furthermore, it closely monitored and resembled the context and processes of dialogic pedagogy that naturally occurred during lessons.

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[196] J. W. Creswell, *Research Design: Qualitative and Quantitative Approaches* (Thousand Oaks, CA: SAGE Publications, 1994), 1-2.

[197] Mary Lynn Hamilton et al., *Reconceptualizing Teaching Practice: Self-Study in Teacher Education* (London, Falmer Press, 1998).

[198] Vicki LaBoskey, "The Methodology of Self-Study and Its Theoretical Underpinnings," in *International Handbook of Self-Study of Teaching and Teacher Education Practices*, eds. J. John Loughran, Mary Lynn Hamilton, Vicki Kubler LaBoskey, and Tom Russell (Springer Dordrecht, 2004), 817-69.

5.2 Research Question

To what extent do social constructivist methods enhance affective and relational contexts in private piano lessons toward the fostering of student metacognition, agency, and self-efficacy beyond technical mastery?

5.3 Methods of Data Collection

This study began with approval from the IRB to conduct research on human subjects for academic purposes. The students were asked if they wanted to participate in a voluntary study of what occurs during our piano lessons. Once they agreed to participate, they were given consent forms, and in the case of the two minors, assent forms and parental consent forms.[199]

5.4 Types of Data Collected

The study gathered data in the following ways:

1. **Recordings of eight lessons for each student**. The lessons were taught remotely over Zoom (because of the COVID-19 pandemic) and were audio and video recorded. It was intended that the recorded lessons used for the study were as close to normal lessons as possible in order to analyze dialogic pedagogy, collaborative creativity, student self-efficacy, agency, and metacognition in a "typical" lesson environment. If there was a confound in the data collected because of external factors such as student discomfort or issues with recording technology, the affected lessons (or portions of lessons) were discarded. Upon listening to the recordings, two recordings were discarded, a portion of one for Student 1, in which the audio and video were not synced about ten minutes into the lesson, and one for Student 3 in which the audio did not record at all. A total of two recordings were discarded, leaving a final set of thirty recordings for analysis. The recorded lessons and interviews were sent to a

[199] All the documentation from the IRB approval process can be found in Appendices A and B.

transcription service. In preparing the transcripts for analysis, I ensured that any identifying information was redacted in excerpts used for discussion. The original recordings and transcripts were stored in an encoded hard drive and will be destroyed two years following the end of the study.

2. **A questionnaire was given to each student after the eight lessons were completed**. The questionnaire had a total of ten questions that included a mixture of ordinal and short answer formats. The questionnaires were filled out independently by the students without my oversight to allow the students an opportunity to articulate their experiences of our teaching and learning environment in their own words without me present. This was important because it was the only data collected that did not include interaction with me directly. The questionnaires were written and so were not sent for transcription. I analyzed the questionnaires using my model as a framework. I looked for student responses to methodologies employed, i.e., precision training, dialogic pedagogy, cognitive apprenticeship, as well as references to the learning outcomes of collaborative creativity, metacognition, student self-efficacy, and agency.
3. **An interview with each student after the eight lessons and questionnaire were completed**. The interview protocol included the same set of initial questions for each student, with follow-up probing to clarify responses. The questions dealt with student experiences of the pedagogical methodologies employed, i.e., precision training, cognitive apprenticeship, and dialogic pedagogy. Specifically, I wanted to know if the students felt these methods enriched their learning, and if so, how. Combined with the questionnaire, the interviews provided a subjective student point of view on the effectiveness of these teaching methodologies. The interviews lasted roughly ten minutes for Students 1 and 2, and fifteen

minutes for Students 3 and 4. These interviews were recorded and transcribed. Below is the list of interview questions:

a. During our lessons, what helps you feel excited about learning to play piano?

b. During our lessons, what helps you feel more confident in playing a piece?

c. What are some things we do during our lessons that help you to practice effectively on your own?

d. What about when you and I stop to discuss how to solve a problem. How does that make you feel? In what ways is this useful to you?

e. Do you feel that you can bring up questions and ideas in the lesson? Do you think that's important in helping you learn to play piano or in helping you become more confident about learning piano?

f. To what extent do the conversations we have in our lessons encourage or discourage you?

g. How do our conversations during lessons affect your confidence as a pianist?

h. How do our conversations during lessons affect your feelings of agency as a pianist? In other words, being able to play on your own?

i. In our lessons, we create a shared vocabulary – words and images we use to talk about playing piano. How does this affect your learning?

Question 1 deals with student feelings of self-efficacy as well as the affective domain in learning. Questions 2 and 3 pertains to student self-efficacy in lessons. Question 4 refers to cognitive apprenticeship and dialogic pedagogy methodologies employed in lessons. Question 5 deals with student agency in cognitive apprenticeship and dialogic pedagogy. Questions 6 and 7 ask about the effect of dialogic pedagogy on student feelings of self-efficacy. Question 8 refers to the effect of dialogic pedagogy on student agency. Question 9 deals with the reciprocal aspect of dialogic pedagogy and its effect on student learning.

5.5 Participants and Lesson Format

The four students who participated in this study are of varying ages, sexes, and musical proficiencies. The youngest student (who will be referred to as Student 1) is a nine-year-old girl who has been studying with me for five years. She is at a late beginner level. The second youngest student (Student 2) is a fifteen-year-old girl who has been studying with me for nine years. She is at a late intermediate level. The next student (Student 3) is a thirty-one-year-old man who has been studying with me for a year. He is at an early intermediate level. The final student (Student 4) is a forty-eight-year-old man who has been studying with me for two and a half years. He is at a late intermediate level. Students 1, 2, and 4 take weekly lessons, while Student 3 takes a lesson every two weeks. The lesson length for Student 1 is forty-five minutes, and Students 2, 3, and 4 have hour long lessons. A table summarizing these traits is shown below.

Student	**Age**	**Sex**	**Length of study**	**Level**	**Lesson length and frequency**
Student 1	9	female	5 years	Late beginner	45 minutes weekly
Student 2	15	female	9 years	Late intermediate	1 hour weekly
Student 3	31	male	1 year	Early Intermediate	1 hour biweekly
Student 4	48	male	2 years, 6 months	Late intermediate	1 hour weekly

Figure 6: Student traits and lesson summaries

The typical lesson structure is similar for all four students. We begin each lesson with a short discussion in which I ask the student to reflect on their practicing in their own words; particularly, what they focused on, and any progress made or difficulties they encountered during their practice sessions. I respond to their reflections, acknowledging that I will pay attention to these focal points during their playthrough. What follows is usually a warm-up consisting of scales or other finger exercises. If necessary, we discuss technique and/or visual cues that the student implements through subsequent runs of the scale or exercise. Once the student is sufficiently warmed up, we move to their respective piece(s). Sometimes they will do a play-through of the entire piece (or as much of the piece as they have learned), while other times we will start with a particular section or "trouble spot" as we call it, to target something specific and do some problem-solving. If this is the case, they will often play through the subsection of the piece while I observe and make mental notes of what to work on, i.e., fingerings, hand-eye coordination, rhythmic integrity, or musical nuances such as pedaling or dynamics.[200]

Once they have finished playing, we discuss their playthrough. I always start with positive feedback and reinforcement, followed by specific things that need to be addressed and worked on. The student often responds with insights regarding how those sections went during their practice sessions. I ask them which of the items we've discussed they would like to start with, and we go from there. This process of problem-finding and solving is iterative throughout the lesson. During these sections of lessons, I often model and narrate ways of playing for the student. They then imitate in turn, and I offer suggestions to help them refine their playing to the

[200] I leave the decision of an initial full play-through or targeted trouble spot up to the student, and so they guide the trajectory of our lesson.

desired goal. During these modeling sessions we converse about their understanding of the technique or concept in between model/imitation sessions.[201]

Once we have finished working on specific sections, we move to "new notes," or sections of the piece that have not yet been learned. I will often ask the student to do a bit of slow sight reading for each hand separately, during which we trouble-shoot fingerings. The lesson ends with a discussion of their goals for the week in their own words. An occasional additional element for these students is music theory, which includes the study of scales, chords, and roman numeral analysis. This does not happen every lesson, but is a common theme for Students 1, 2, and 3.[202]

5.6 Data Analysis

The recorded lessons and interviews constituted two portions of data that were formatted into transcripts and analyzed using markers for precision training instruction, cognitive apprenticeship, dialogic pedagogy and the outcomes of collaborative creativity, student metacognition, self-efficacy, and agency.[203] The lesson and interview transcripts were analyzed and coded through a process of thematic qualitative analysis. Thematic analysis, as described by organizational theorist Richard E. Boyatzis, is: "a process for encoding qualitative information. The encoding requires an explicit 'code.' This may be a list of themes; a complex model with themes, indicators, and qualifications that are causally related; or something in between these

[201] These sessions follow the model of cognitive apprenticeship discussed by Collins et al., including modeling and coaching by me, and reflection, articulation, initiation, and exploration by the student.

[202] Student 3 has an interest in composition in addition to learning to play piano. We spend about twenty minutes of most lessons nurturing his creative tendencies with a background in music theory. For the structure of these sub-lessons, he plays me his compositions and I give him feedback and additional lessons in music theory to scaffold new elements that could be added to his compositions. This process will be discussed further in Chapter Six.

[203] An example of a coded lesson transcript can be found in Appendix F.

two forms. A theme is a pattern found in the information that at minimum describes and organizes the possible observations and at maximum interprets aspects of the phenomenon."[204]

A total of thirty-five codes were gathered from the transcribed lessons and interviews, and questionnaires: three for traditional precision-training methods, twelve for cognitive apprenticeship methods, ten for dialogic pedagogy methods, and ten for student learning outcomes. All lesson and interview transcripts were entered into separate spreadsheets by placing each speaker's dialogue into separate rows and utilizing columns for each code. Each spreadsheet was then analyzed by indicating the code or codes that occurred within that portion of dialogue. It was common to have multiple codes for each excerpt. Next, this coded data was aggregated to enumerate the number of co-occurrences between codes. Lessons and interviews were titled descriptively to denote student and lesson number, i.e., "Student 1, Lesson 1" or "Student 1 Interview". The questionnaires were titled descriptively according to Student number, i.e., "Student 2 Questionnaire".

The codes for analysis were designed using the research question and pedagogical processes of precision training, cognitive apprenticeship, and dialogic pedagogy, and outcomes including student metacognition, student self-efficacy, and student agency. Metacognition emerged thematically in both dialogic and cognitive apprenticeship processes. The codes and descriptions are as follows:

[204] Richard E. Boyatzis, *Transforming Qualitative Information: Thematic Analysis and Code Development* (Thousand Oaks, CA: Sage Publishing, 1998), 4.

Cognitive Apprenticeship – (Collins et al.)[205]

- Modeling – demonstrating the thinking/playing process
- Coaching – assisting and supporting the work (includes scaffolding)
- Reflection – self-analysis and assessment (metacognition supported by teacher or expressed by student)
- Articulation – verbalizing the results of reflection (metacognition supported by teacher or expressed by student)
- Exploration – formation and testing of one's own ideas for how to proceed. This can be physical or cognitive exploration.

Sequential Model of Cognitive Apprenticeship – (Brandt et al.)[206]

1. Modeling – teacher models activity that student wants to perform satisfactorily
2. Approximating – providing coaching to the learner
3. Fading – decrease coaching and scaffolding
4. Self-directed learning (SDL) – teacher provides assistance only when requested
5. Generalizing – discuss the generalizability of what has been learned

[205] Collins et al., "Cognitive Apprenticeship," 476.

[206] Barbara LeGrand Brandt, James A. Farmer, and Annette Buckmaster, "Cognitive Apprenticeship Approach to Helping Adults Learn," *New Directions for Adult & Continuing Education* 59, (Fall 1993): 71.

Exploration and Co-construction – (Dialogic pedagogy methods as described by Alexander)[207]

- S-Initiate – student begins an exploration or makes a suggestion
- T-Initiate – teacher begins an exploration or makes a suggestion
- S-Support **–** student responds to teacher's initiation or opening move
- T-Support – teacher responds to student's initiation or opening move
- S-Probe **–** student asks a question to draw out more ideas from teacher, to analyze their own thinking, to clarify and expand what teacher means.
- T-Probe – teacher asks a question to draw out ideas from student, to clarify and expand what student means or is thinking.
- T-Express – teacher expresses emotions, i.e., affective responses to the process
- S-Express – student expresses emotions, i.e., affective responses to the process
- S-Eval – student evaluates the process, their playing and learning.
- T-Eval – teacher evaluates the process, student's playing and learning

Instruction – (precision training methods)

- T-Direct **–** teacher gives direction, describes specific things to do
- T-Model – teacher demonstrates how to do something
- S-Follow – student does what teacher directs or suggests. Student follows what is modeled.

Social-Emotional

- T-Social, S-Social – teacher/student talk socially about things unrelated to piano lessons, such as events, family, friends, hobbies etc. This suggests a safe space and broad relationality beyond the roles of teacher and student.

[207] Alexander, *Towards Dialogic Teaching*, 38.

5.7 Secondary Analysis

The process of secondary analysis included refining the coded transcripts into themes that indicated markers of dialogic pedagogy, cognitive apprenticeship, and student learning outcomes of agency, self-efficacy, and metacognition, and then looking for co-occurrences between codes. The overarching themes and relevant codes are as follows:

- **Collective:** teachers and students address tasks together
- **Reciprocal**: teachers and students listen to each other, share ideas, consider alternate viewpoints. Exhibited in:
    - Answers provoke further questions, seen as building blocks rather than terminal points. (*T-probe, S-probe*)
    - Visual or intuitive metaphors for aesthetic aspects of piece or techniques (*collaborative creativity*)
    - Analysis of a piece or technique that engages critical thinking by student (*T-probe, S-probe, SDL*)
    - Student and teacher problem-solving and thinking aloud (*modeling, coaching, reflection and articulation*)
- **Cumulative**: teachers and students build on their own and each other's ideas and chain them together into coherent lines of inquiry. Exhibited by:
    - Exploratory talk – to explore ideas and probe others' thinking (*T-probe, S-probe*)
    - Expressive talk – to articulate feelings and personal responses (*T-express, S-express*)
    - Evaluative talk – to deliver opinions and make judgements (*T-eval, S-eval, T-support reflection and articulation, S-reflection and articulation*)

- **Supportive:** students articulate ideas freely and without fear
    - Teacher supports student agency or self-efficacy (*T-support self-efficacy, T-support agency*)
    - Student expresses agency or self-efficacy (*S-agency, S-self-efficacy*)
    - Appropriate balance between social and cognitive purposes of talk, encouraging participation and extending understanding (*T-social, S-social*)
    - Student has confidence to make mistakes (*S-self-efficacy*)
    - Student-led lessons, for example:
        - Student discusses what they would like to focus on (*S-initiate, S-exploration, S-agency*)
        - Student expresses frustrations of difficulties and asks for guidance (*S-eval, S-probe*)
        - Student initiates the exploration of a new technique or attempts to play something without prompting from teacher (*SDL*)
- **Purposeful:** teacher plans and facilitates with particular goals in view (*T-initiate, T-direct*)
    - Diagnostic Feedback on which pupils can build (*T-eval, coaching*)
    - Questions structured to provoke thoughtful answers
        - Eliciting metacognition around process (*T-support reflection and articulation, T-probe*)[208]

[208] Alexander, *Towards Dialogic Teaching*, 38-46.

And **student learning outcomes**, including:

Metacognition of learning process by student

- Descriptions of cognitive processes (*S-reflection and articulation*)
- Self-assessments of learning (*S-eval, S-express*)
- Verbalizations of problem-solving heuristics (*S-reflection and articulation*)

Agency and self-efficacy supported by the teacher

- Teacher evaluates and offers positive reinforcement of student's abilities and/or progress (*T-support self-efficacy*)
- Teacher encourages student to make decisions about their learning process (*T-support agency*)

Agency and self-efficacy expressed by the student

- Student expresses feelings of confidence and/or pride in their abilities and/or progress (*S-self-efficacy, S-eval, S-express*)
- Student makes decisions about their learning process, this can be choices in practicing, or creative/aesthetic choices in composition or musical interpretation. (*S-agency, S-exploration, S-initiate, SDL*)
- Student-led lessons (*S-agency, S-initiate*)

The completed questionnaires were coded using my suggested pedagogical model as a framework. I looked for inferences to the pedagogies employed, including precision-training methods, dialogic pedagogy, and cognitive apprenticeship, as well as the learning outcomes of metacognition, self-efficacy, and agency. The questionnaires were coded differently than the lessons and interviews because the analysis was comprised of the students' evaluations and descriptions of pedagogies, rather than analyzing evidence of these pedagogies and outcomes in

the conversations that occurred during our interactions. For example, codes that described dialogic or cognitive apprenticeship processes *in action* such as S-probe, S-reflection and articulation, or S-initiate were not relevant. The codes used for the questionnaire included the following:

- Precision training methods
- Dialogic pedagogy
- Cognitive apprenticeship
- Outcome – metacognition
- Outcome – self-efficacy
- Outcome – agency

Together, the coded transcripts of the lessons and interviews and the questionnaires provided data for thematic analysis. These themes were analyzed to determine if there were co-occurrences between cognitive apprenticeship, dialogic pedagogy, and the outcomes of collaborative creativity, metacognition, self-efficacy, and agency in the student. The findings of this analysis will be discussed in detail in the following chapter.

Chapter 6

Study Findings and Discussion

The analysis of the lesson and interview transcripts consisted of three rounds of thematic qualitative analysis, code refinement, and a curation of themes that emerged through the study of co-occurrences in the codes described in the previous chapter. There were thirty-five codes in total: three for traditional precision-training methods, twelve for cognitive apprenticeship methods, ten for dialogic pedagogy methods, and ten for student learning outcomes. Of these thirty-five codes, six have emerged as themes that demonstrate the symbiosis between precision training, cognitive apprenticeship, dialogic pedagogy, and student learning outcomes of metacognition, self-efficacy, and agency. These themes include reflection and articulation, evaluation, expression, metacognition, student self-efficacy, and student agency. Each of these themes has two possible pathways: teacher supported/prompted and student-expressed. Below is a table with a summary of these themes and pathways. The next section will provide a summary of each theme, one to two examples of each in a lesson transcript, and a short analysis.

	Theme – Teacher supported or prompted	**Theme – Student expressed**	**Pedagogical Framework**	**Outcome (if applicable)**
Theme 1	Reflection and Articulation	Reflection and Articulation	Cognitive Apprenticeship	Metacognition
Theme 2	Evaluation	Evaluation	Dialogic Pedagogy	Metacognition, self-efficacy
Theme 3	Expression	Expression	Dialogic Pedagogy	Self-efficacy
Theme 4	Metacognition	Metacognition	Cognitive apprenticeship, dialogic pedagogy	Metacognition
Theme 5	Self-efficacy	Self-efficacy		Self-efficacy
Theme 6	Agency	Agency		Agency

Figure 7: Significant Themes

6.1 Thematic Analysis of Lesson Narratives

Theme 1 – Reflection and Articulation

Reflection and articulation, core components of cognitive apprenticeship, were an integral part of each lesson; supported by me and expressed by the students iteratively throughout out work. To support a metacognitive environment, I would frame the beginning of each lesson by asking the student for a self-report on their practicing from the previous week (*T-support reflection and articulation, S-reflection and articulation*). This provided a scaffold for the lens that we would frame our lesson through. It was common for additional methods of cognitive apprenticeship to be interwoven between traditional precision training methods such as instruction and modeling by me (*T-instruct, T-model*), followed by the student following (*S-follow*) and potentially asking clarifying questions (*S-probe*). Once the student had attempted the task, cognitive apprenticeship would emerge in the form of *modeling*, *coaching*, and the prompting of *reflection and articulation* by me. The student would respond in turn with articulations of their cognitive processes around the problem-solving or learning process (*S-reflection and articulation*). This problem-finding and problem-solving process through playing and metacognition was iterative throughout the lesson, with instances punctuating each learning opportunity: a new technique, a different fingering choice, learning new sections of a piece, or working through interpretive choices such as dynamics and/or articulation.

Below is an example of Student 2 (fifteen years old, late intermediate level) reflecting on her cognitive process during a warm-up exercise of an F# major arpeggio in first inversion. I asked her to play the arpeggio hands separate first, then hands together in various rhythmic groupings, including triplets and subsequently in sixteenth notes. Below is our conversation while we were working on the sixteenth-note groupings.

Student 2 – Lesson 5 excerpt

> **Rebecca:** Good. That looked good. That looked more stable the second time. Good. Okay. Let's do hands together.
>
> **Student 2:** Okay.
>
> [music]
>
> **Rebecca:** Good. Good, good. I'm trying to think about what I focus on visually when I'm doing the sixteenth notes.
>
> [music]
>
> **Rebecca:** Okay. So what I'm focusing on visually is I'm looking at each F-sharp in the right, because I'm looking at where I have to land after the cross with my thumb. So I kind of have my eyes about, I don't know, a fifth above where my fingers actually are playing because I'm planning the cross and the landing of the thumb. So try looking a teeny bit ahead of where you are.
>
> **Student 2:** Okay.
>
> [music]
>
> **Rebecca:** That seemed good. How did that feel?
>
> **Student 2:** It felt a lot more solid. I mean like sometimes I had to sort of like double check because I was doing a cross with left hand and was looking at the right, but...
>
> **Rebecca:** Right. Yeah. I think that worked. That definitely seemed more in your control. Okay. Well that one is in good shape. So I think we're ready to like go to a new one.

This excerpt illuminates several cognitive apprenticeship processes at work. First, I articulate my thinking and playing process by describing what I look for when I play the arpeggio, an example of modeling. Then, after Student 2 plays the arpeggio again with my suggestion in mind, I ask her to describe her experience, eliciting metacognition by supporting reflection and articulation.

She responds with an evaluation of her playing and how comfortable she feels. She describes feelings of self-efficacy with this exercise by stating that it felt "a lot more solid," and recognizes the cognitive and motor processes of using visual cues and the hand-eye coordination involved. This exchange points to a connection between cognitive apprenticeship methodologies, precision training methodologies, and student self-efficacy.

Another component of cognitive apprenticeship that frequently occurred in lessons was *self-directed learning*, described by LeGrand Brandt, et al. as an "internalizing phase when learners are able to approximate doing the real thing satisfactorily, sometimes only after a series of successive approximations. In this phase, they practice doing the real thing on their own, in their own ways, within specified acceptable limits. Assistance is provided by the teacher or model only at the learner's request."[209] Self-directed learning would occur frequently as the student was integrating new knowledge of a technique or gaining command of a new passage in a piece. This is also linked to agency and self-efficacy as the student was building confidence in their abilities and thus taking command of their learning. Below is an example of Student 1 (nine years old, late beginner) learning how to play a chromatic scale.

Student 1 – Lesson 3 excerpt

> **Rebecca:** Okay, so this is the word chromatic, but it has a silent H in it.
>
> **Student 1:** Okay.
>
> **Rebecca:** Okay. So in your own words, what does that scale mean? What is that type of scale?
>
> **Student 1:** It's a scale playing all the notes on the piano?

[209] Brandt et al., "Cognitive Apprenticeship Approach to Helping Adults Learn," 73.

Rebecca: Right! Exactly. Instead of doing a pattern of skipping some notes, you're doing every single thing. And there is a finger pattern that we use specifically for chromatic scales that I started to teach you last week, which makes it easy to get across the keyboard quickly when you have to play every single note.
And so when you look at those two moments in this song on page 23, it's like, you have this big scale here, and you have this big scale here. The fingerings, it looks like a lot of information. But you're basically gonna memorize how it feels in your hand.

Student 1: Yeah.

Rebecca: It's a lot of notes. And it's a lot of information 'cause you have flats, you have sharps, you have lots of finger numbers. But it's just a pattern that you're going to know with the starting and ending point of the scale. So you can be like, okay, it starts on E and ends on the low E, like...

Student 1: It's not different or anything. So once you know the start point, you'll probably you'll know everything else.

Rebecca: True. And it's just about then, using the correct finger pattern. And so we're going to spend a lot of time having you memorize what that feels like in your hand. And we'll start on lots of different notes. Because depending on where you're starting...

Student 1: But it's like you use your third finger and thumb, but you use your second finger if you play two white notes.

Rebecca: Yes, that's exactly right. Good memory. Yes. So it's like, if... Say we started a chromatic scale on F and we wanted to go up to the next F.

[music]

Rebecca: Good.

[music]

Rebecca: So you'll know you did it right if you ended up on two.

Student 1: Yeah. I did.

In this excerpt, Student 1 is articulating what a chromatic scale entails and how to play it starting at different points on the keyboard in her own words. She exhibits signs of self-efficacy when she says "it's not different or anything, once you know the start point you'll know everything else." This language implies that she feels capable of problem-solving her way through the fingerings of the scale, and able to implement this fingering pattern beginning on any key. By prompting her to describe the scale, Student 1 was able to take the lead and explain and demonstrate this new technique.

Themes 2 and 3 - Evaluation and Expression

Evaluation and expression proved to be strongly connected with the outcomes of self-efficacy, agency, and metacognition. For the purposes of this study, evaluation (*S-eval, T-eval*) is defined as either the student or teacher evaluating the playing or learning process of the student. This could be prompted by either student or teacher and could occur at any point during the lesson. Expression (*S-express, T-express*) is defined as either the student or teacher expressing emotions, or affective responses to the playing or learning process. Again, this could be prompted by student or teacher and occur at any point during the lesson. It was common for evaluation and expression to co-occur, but this was not always the case. Additionally, quite often evaluation co-occurred with student reflection and articulation and as the student discussed their progress and naturally evaluated themselves in tandem.

Evaluation and expression are part of the *cumulative* categorization of dialogic pedagogy as discussed by Robin Alexander. According to Alexander, this involves "teachers and students build[ing] on their own and each other's ideas, exhibited by expressive talk (articulating feelings

and personal responses) and evaluative talk (delivering opinions and making judgments).[210] This points to the social-emotional components of dialogic pedagogy, and the important part that affective expression plays in the learning process. There is a distinction to be made between the metacognition fostered in traditional cognitive apprenticeship which involves the understanding of the subject domain and cognitive processes therein, and the metacognition of affective states that is cultivated through dialogic pedagogy. To be aware of one's own affective responses to learning, particularly learning in a domain of embodied practice that involves affectivity such as music, is a significant element in the progression of learning.

Below is an example of Student 4 (forty-eight years old, late intermediate level) demonstrating expression and evaluation when discussing his progress on *Bethena: A Concert Waltz* by Scott Joplin.

[210] Alexander, *Towards Dialogic Teaching*, 38.

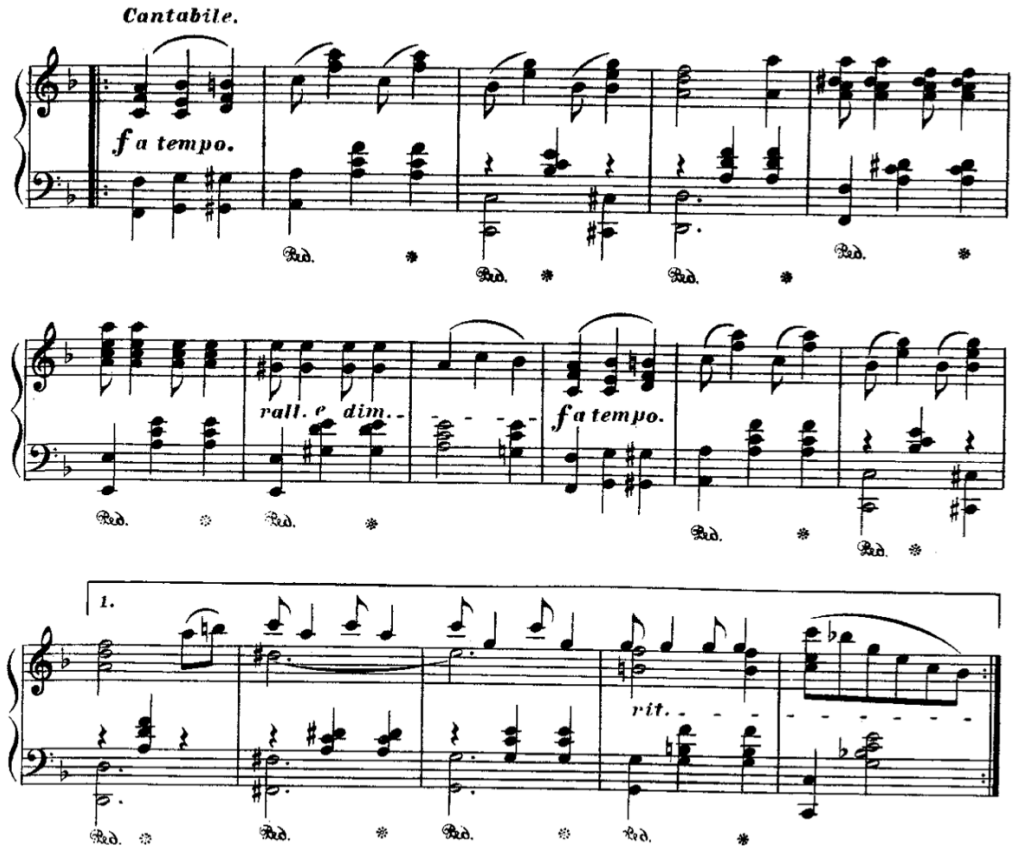


Figure 8: *Bethena: A Concert Waltz* by Scott Joplin, mm. 76-91

Student 4 – Lesson 4 Excerpt

> **Rebecca:** Page four like I said, was sounding really, really good. Can I hear page four again?
>
> **Student 4:** Sure. [chuckle] It is, I mean it is enjoyable. Let's see where we go.
>
> [music]
>
> **Rebecca:** Yes! [name redacted] really good! Yeah, that's sounding really good, and that's actually pretty much up to tempo, I don't know if you know that, but you're playing it like with a little bit of pep, so yeah, that's awesome.

[211] Scott Joplin, *Bethena: A Concert Waltz* (St. Louis, MO: T. Bahnsen Piano Mfg. Company, 1905), 4.

> **Student 4:** It's neat. Well, it kinda came together, I didn't... I think last week we had put on the metronome, but then in the end, I just... I did it by ear, but just wanted to get... Yeah, to get in the groove and something clicked with it.
>
> **Rebecca:** Something clicked for sure. It's in good shape. Let's spend a little bit of time with the third line our first ending, maybe pick a hand. I just want to hear them each on their own kind of slowly.
>
> **Student 4:** Okay. Let's do, I guess we'll do right from 87.
>
> **Rebecca:** Yeah, that's a good spot. Let's do 87.

Here, Student 4 evaluates his progress by saying that "it kinda came together" and that "something clicked with it," and expresses enjoyment in playing the piece. These evaluative and expressive statements also point to his feelings of self-efficacy regarding his improving abilities, and agency when he decided to work on the piece without the metronome. I support his self-efficacy, first by responding to his playing with positive evaluative statements ("Really good" and "you're playing with a little bit of pep"), and again after he describes his practicing process ("Something has clicked" and "it's in good shape.") I believe that these evaluative and expressive statements made by myself and the students crystallized their progress in these fleeting moments during lessons, thus creating a renewed excitement that sustained them in the longer-term learning process that includes inevitable setbacks.

To this point, evaluation could also occur when students identified things that they found difficult or that hadn't progressed as much as they had hoped. Sometimes this was coupled with expressions of frustration, discontent, or a lack of self-efficacy. In the excerpt below, Student 4 is doing a play-through of the Joplin waltz and attempting to implement new fingerings that we had worked through during the lesson.

Student 4 – Lesson 3 excerpt

Student 4: I know. I'm just... I'm kind of annoyed at how bad this is. Okay, I'm gonna do this again.

[music]

Rebecca: There it is.

Student 4: Yeah. I'm gonna go through this again.

[music]

Student 4: I'm just using this new fingering and I'm...

Rebecca: Yeah. You're just... You haven't integrated that fingering yet.

Student 4: Anyway, you got the gist...

Rebecca: Good.

Student 4: I'm not gonna torture you anymore. [laughter]

Rebecca: No, no, no, [name redacted], no, no. That's not how I hear it. Everybody feels that way after a play through and it's always, it's the teacher effect, and I'm not worried about it, and I'm listening to... I'm really listening for other stuff, I don't take anything I hear at face value the first play-through, if that makes sense. It's like I get a general gist and I hear... I'm mostly listening for old stuff actually. The new part I'm hearing, "oh yeah, okay. He's got that hands together. Yeah, it's slow and he's thinking about it but it's coming." There's no judgement and there's no critique. It's just like...

Student 4: No, I'm just frustrated.

Rebecca: I know, of course.

Student 4: 'Cause I know I can do it better, that's all.

Rebecca: Of course. Oh yeah, and you will. And I'm gonna hear it again, so it's fine.

In this exchange Student 4 is narrating while he is playing, talking through the difficulties he is experiencing, and expressing frustration. When he states, "I'm just frustrated… 'cause I know I can do it better" he is evaluating his playing, expressing frustration in his display of lack of aptitude during the play-through because he feels that it does not match up with his experienced self-efficacy in other contexts. I attempt to mitigate this through positive evaluative talk ("there's no judgement and there's no critique") and lessen the stakes of the play-through by explaining my listening process as the teacher ("It's the teacher effect and I'm not worried about it," and "I don't take anything I hear at face value"). It is notable that Student 4 reiterates his frustration after my positive comments, indicating that my evaluation may not be as impactful as his own self-evaluation.

Theme 4 - Metacognition

Students often exhibited metacognition through more global musings on their learning process, their enjoyment of what they were learning, and difficulties they came across. Below is one such example from a lesson with Student 3 (thirty-one years old, early intermediate level), in which he described his compositional process and choosing which chord inversions to use to achieve the sound he wanted.[212]

Student 3 – Lesson 1 excerpt

Rebecca: Did you do a D major progression?

Student 3: Yeah, so we did a D major scale chord progression.

[212] Student 3 was new to composition when we began lessons, so many of our composition lessons centered around simple chord progressions with different inversions. Each session we would increase the complexity by adding rhythmic interest and/or an additional chord to the progression.

Rebecca: Right.

Student 3: It included octaves in my left hand, and we did it with ending on the six chord.

Rebecca: On the six, yes, yes, yes. How did you find that?

Student 3: It was a lot of fun, I spent like way more time doing this than I thought I was going to.

Rebecca: Well it's the creative part, you get to be like...

Student 3: Yeah, so I'm trying to find sounds and I was like, "Oh, that just feels wrong." And so I don't know if this is, if I broke a rule here, but in order to get the sound that I liked, I did an inversion of the first chord.

Rebecca: Oh, that's not breaking a rule at all. No, that's good. Now you're thinking outside the box. So, inversions are totally fine. I'll give you the rundown of when it's okay and not okay. First of all, it's all okay, but the general rules of thumb. It's usually what you're not supposed to end on, it's not really what you start with. It's how you end, and like the kind of concreteness and the fullness of the ending is determined by the inversion a little bit, so but I haven't given you those rules yet, but yeah, starting with an inversion can often be a really good way to do it.

Student 3: Yeah. Okay, yes, that's what I did because that minor chord, it's like the beginning sounded way too happy.

Here, I prompt Student 3 to discuss the progress he has made with his composition (*T-support reflection and articulation*). He articulates his process and his enjoyment of making artistic choices in his composition. He exhibits feelings of agency when he describes making a choice that may have "broken a [music theory] rule" and expresses feelings of satisfaction and enjoyment with composing by stating that he "spent way more time" working on it than he anticipated he would. This example displays the importance of what I will term "global"

metacognition of the learning process. Checking in with oneself about the enjoyment of the learning process and the goals achieved along the way can add intrinsic value to the process and can incentivize the continuation of learning.[213]

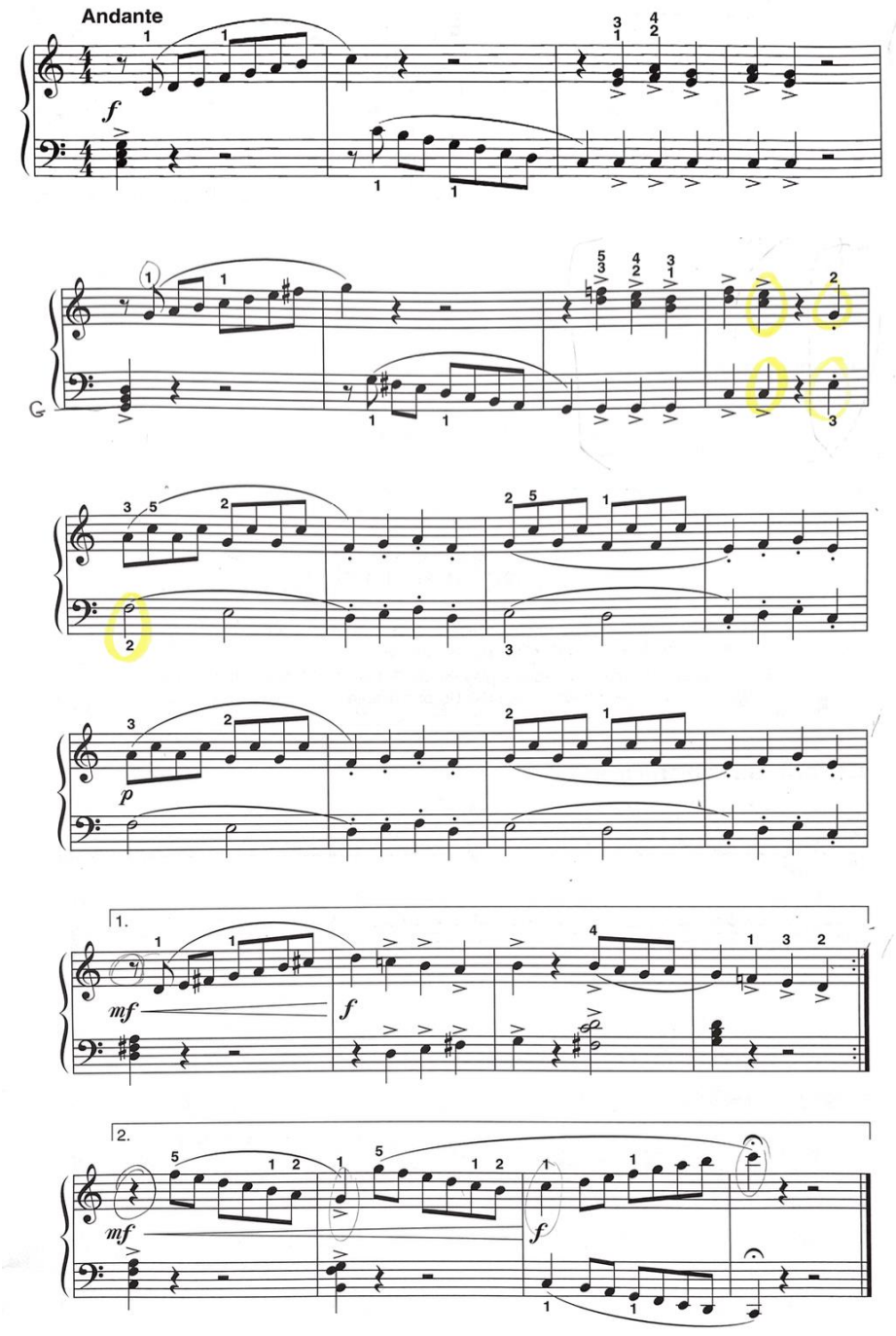
Theme 5 - Self-Efficacy

Self-efficacy proved to co-occur frequently with the cognitive apprenticeship components of reflection and articulation and dialogic pedagogy components of evaluation and expression. This points to a connection between metacognition elicited through cognitive apprenticeship and affective metacognition elicited through dialogic pedagogy, and self-efficacy. Student self-efficacy could be prompted by me after a play-through (*T-eval, T-express, T-support reflection and articulation*), while other times students would volunteer articulations of confidence in their abilities during our initial discussion regarding their practice (*S-reflection and articulation, S-self-efficacy, S-eval, S-express*). Indications of self-efficacy were often sprinkled throughout the lesson at junctures of the integration of a new technique, learning a section of a piece, or after a successful play-through.

It was also common for students to articulate a lack of self-efficacy during their lessons. However, this was not always in tandem with expressions of frustration, rather it could be a simple evaluation of where they were in the process, i.e. "I'm still having trouble with this fingering," or "I don't feel comfortable when I play these octaves." This metacognition allowed the student and I to collaborate and target these specific things to work through, thus creating a culture of problem-finding and problem-solving, rather than an overall feeling of frustration or ineptitude on the part of the student.

[213] Bandura, *Self-Efficacy: The Exercise of Control*, 136.

Below is an example of self-efficacy expressed by Student 1. In this lesson we are finishing up a piece that we have worked on for a few months. The excerpt begins with a discussion on what she will focus on right before she plays the piece for a final time, incorporating newly added final touches. She plays the piece, and a discussion follows about how she feels about her playing and what she wants to pick for her piece.



[214]

Figure 9: Prelude in 18th Century Style from Alfred's Basic Piano Library, Level 3

[214] William A. Palmer, Morton Manus, and Amanda Vick Lethco, "Prelude in 18th Century Style," in *Alfred's Basic Piano Library: Lesson Book Level 3* (Van Nuys, CA: Alfred Music Company, 1999), 16-17.

Student 1 – Lesson 3 Excerpt

Student 1: I'll play it now.

Rebecca: Okay. So wait, I want you to take a minute and try to really plan ahead for the two things that we did. Describe to me, the two big things that we just kind of polished up.

Student 1: So for the second page, in second and third lines, I have to make it more energetic and happy. And then, for the last line, for the second ending, I have to have a beat before the first chord I play, and then have a beat for that in the scale. And then for the mirror scale, I have to do it a little bit faster and what's the word? I forgot what I was gonna say.

Rebecca: No, you're doing great. That's exactly, very descriptive and that's exactly right. Yeah, the last scale, like you said, the mirror scale's a little faster and little more rhythmic. *Bum baba baba baba bum*.

Student 1: Yeah.

Rebecca: We just described it with sounds basically. Okay, you are ready to go. You've got it all in your brain. Let's do it.

[music]

Rebecca: Okay, good for you! Nice. Alright, we're complete. How do we feel?

Student 1: Good.

Rebecca: You should feel accomplished because this is a big song. It's like I said, it's...

Student 1: I feel very proud of myself.

Rebecca: You should! That's great, [name redacted]. You should feel very proud of yourself because this is a big one. Even though it doesn't look that big, because it's two full times and the endings are so long, it's a lot of stuff. So that was awesome. I'm very proud

of you. Okay, so where are we going next? You decided you wanted to go for it and go for the big one.

Student 1: A Day in Vienna.

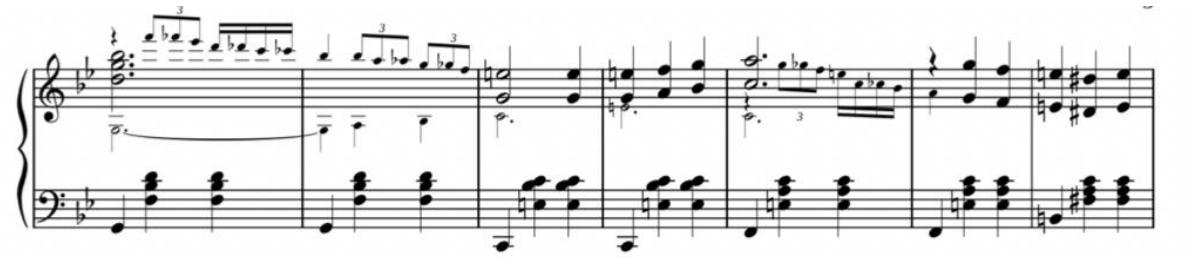
Rebecca: Yeah, you're going for another big one! This is a great song.

This excerpt demonstrates all of the themes of this study working synergistically. At the beginning, I prompt Student 1 (*T-support reflection and articulation*) to be metacognitive about planning her playing to prompt the assimilation of the new techniques and rhythms that we had incorporated into the piece. This included rhythmic integrity and vitality. She responds in turn with the things that she will focus on, giving descriptions of each in her own words (*S-reflection and articulation*). By articulating these intentions, she is codifying her learning and bringing the new knowledge into her mental schema. I respond with an evaluation of encouragement ("you are ready," and "you've got it all in your brain"). She plays the piece and again I give evaluative and expressive positive feedback and elicit hers as well ("how do we feel?") She states that she feels "very proud of herself," exhibiting self-efficacy and pride. I echo her sentiments and support her self-efficacy by reiterating that the piece we finished was substantial and that I am very proud of her. We move on to a discussion of the next piece she will work on. She had previously chosen to work on a piece called "A Day in Vienna," a piece of similar difficulty to what she had just finished.[215] This indicates two themes, agency and self-efficacy. She takes command of her learning by choosing the piece and exhibits confidence in her abilities to work on the harder of the potential choices. I remind her of this, supporting her agency and self-

[215] I always play through potential pieces and disclose the difficulty of each, letting the student choose the piece that they feel prepared for. Sometimes students choose to work on something less difficult after finishing a big piece to "take it easy" for a while. Other times they choose the hardest piece to challenge themselves. I encourage whichever choice they make, fostering their agency and trusting their instincts about the capacity they have at the time.

efficacy again. I posit that the use of dialogic pedagogy and cognitive apprenticeship in this context cultivated more thorough learning on the part of Student 1. By articulating her intentions before the final play-through, she could focus on them more carefully. I also suggest that our conversation after she played fostered self-efficacy in a way that may have been "invisible" otherwise. If we had simply moved to the next piece without taking the time to acknowledge her accomplishment, it is possible that she may not have felt confident enough to choose the harder piece for her next project.

As shown above, self-efficacy and agency often co-occurred. This will be exhibited in the next example as well. In the excerpt below, Student 2 is at a crossroads in a piece that we had been working on for several months titled "The Merry-Go Round of Life" from the film score for *Howl's Moving Castle*. There is a particular passage with ornaments that has proven much more difficult than the rest of the piece, and it has been challenging for Student 2 to make progress on it. We discuss this juncture in our work, and I offer insight as her teacher and give her options on how to proceed. In this case, her self-efficacy and agency help her make a difficult decision.



216

Figure 10: *The Merry-Go Round of Life* from Howl's Moving Castle by Joe Hisaishi, mm. 81-87

[216] Joe Hisaishi, "The Merry-Go Round of Life," from *Howl's Moving Castle* (Japan: Studio Ghibli Inc. Adm. by Sony/ATV Music Publishing LLC, 2004), 3.

Student 2 – Lesson 8 Excerpt

Rebecca: I am coming to realize about this section, that it is very, very, hard actually. It's just that ornaments, like I've told you, always take way longer than anything else in a piece because you're supposed to cram fifteen notes in a space that usually has three.

Rebecca: And so because I want us to keep pushing through material and I don't want there to be too much feeling of like "I can't kind of get past this," and it's not anything about your playing, there's just certain things that right now I don't expect you to be a virtuosic pianist yet, right? 'Cause you're fifteen. So here's what I'm going to suggest we do, I might suggest we simplify the ornaments a tiny bit for sake of the line. How do you feel about that? I don't want you to feel like I'm... I'm not trying to be critical, I just want... I'm trying to balance our goal, our expectations of moving through the material, but also feeling like there's challenge. You know what I mean? It's like I want there to be that balance. Give me your input there.

Student 2: I feel like I can definitely get it over like a period of time, and it just sort of needs practice.

Rebecca: Right.

Student 2: And a lot of reviewing and stuff, and I feel like it can get there, it's already pretty close.

Rebecca: Oh, yeah. You're definitely... It's moving. Its moving, it's just like from my experience with ornaments, getting through the first threshold of like, oh, okay I have to move this, you've gotten it. But then getting into that next threshold in tempo with where you are here, that's a bigger jump because your tempo here is much more lively, so that's why I was trying to sing in my head. I'm like, okay so according to your tempo, with the stage you're setting.

[vocalization]

Rebecca: It's a lot for anybody. So again, we always have choices, right, the choices are... There's three choices really. One is we just

keep trekking, just pushing through and knowing that over time, we will incrementally increase tempo.

Rebecca: So there's pushing, slow and steady pushing. There's slowing down earlier sections to accommodate your relatively comfortable tempo here, or there's simplification to kind of try to balance the scale of not losing the spirit of the piece, because we'd like that lively tempo, the circus-y kind of waltz, but also not wanting to drudge into the hours and hours that it's going to take. So this may not be a choice you are going to make in this moment, and none of the choices are wrong, it's just a matter of priorities and I'm totally open to any priority.

Student 2: Alright. I feel like... My first initial thought was that, "oh, let's simplify it and then work on it all together, off to the side, and then try to add it back in as it gets more and more up to tempo, 'cause it'll bookmark it and everything, but then we won't get stuck every single time we try to run through it, and then we can add it back in when it's fully up to tempo and everything, kind of like the piece we did in that other piece.

Rebecca: Right.

Student 2: But I feel like if we just give it two... Not two weeks. Maybe a week and the next time...

Rebecca: Yeah, no, there's no rush, we don't have a performance in two weeks, right, so we don't have a deadline, it's more like, this is a long-form project, like the piece, as we know, is a long-form project, it's a big one…. So let's give it some more time. I don't think we're ready to throw in the towel on the ornaments, and not that you should anyway 'cause you've worked so hard and you've done so well with them. But we will... Let's kind of let it emerge as it does like, "okay I think we're at a cap, like this is the tempo I can go" which is a good tempo and we'll see where we are.

Student 2: Okay.

Rebecca: Okay, cool. Very good.

This conversation points to the power of self-efficacy and agency during the extended progression of learning. Student 2 had been working on increasing the tempo of the ornament section for several weeks without much advancement. It would have been natural for her to feel discouraged and her incentive to continue may have waned as a result. However, when I point out the objectively difficult nature of the material ("this is very, very hard") and give her an option to simplify it ("we have choices" and "I'm open to any priority"), she chooses not to. This points to a strong sense of self-efficacy in her ability to master the material and a space of agency from which to make the decision ("I feel like it can get there, it's already pretty close"). This excerpt also exhibits elements of cognitive apprenticeship in the form of coaching by me, and reflection and articulation and evaluation by Student 2. I suggest that the application of cognitive apprenticeship and dialogic pedagogy during this conversation strengthened Student 2's self-efficacy and agency. By allowing space for her to make this decision, she chose to persevere with the harder choice, determined to master the material as written.[217]

Theme 6 - Agency

Agency, defined for the purposes of this study as a student making decisions about their playing and/or practicing, presented in three ways. Student *initiation* during the lesson, in which they took initiative and made suggestions of what they wanted to work on; and student *exploration* in which the student made choices about their practicing regimen or repertoire choices (both during lessons and in their solo practice time). These forms of agency co-occurred frequently with *T-support agency and T-probe* when I posed questions regarding the trajectory of the lesson and/or practice plans. The third presentation of agency occurred when the student made aesthetic choices regarding the interpretation of the pieces they were working on or composing.

[217] We continued to work on this section for several more weeks and she was able to bring it up to tempo.

Below is an excerpt from the interview with Student 2 in which we discuss her aesthetic voice. It is worth noting that Student 2 has synesthesia that presents as a visualization of color associated with different timbres, registers, and harmonies. Here, we discuss her experience of synesthesia and how it transfers to her aesthetic choices as a pianist.

Student 2 – Interview Excerpt

> **Rebecca:** In our lessons, we create a shared vocabulary, words and images we use to talk about playing piano, so when I say things like crawling like a caterpillar or you brought up the turquoise and lime green thing. How does this affect your learning, in any way?
>
> **Student 2:** Analogies and things help so much...
>
> **Rebecca:** Okay.
>
> **Student 2:** Because just being able to visualize that when you say crawling with the caterpillar, I immediately know what to do with my hand and everything, and when I say turquoise and lime green for the colors that should show up, it personally helps me because I just know what turquoise and lime-green sound like. Visuals and things like that definitely help for sound. Yes.

This discussion involves the *reciprocal* categorization of dialogic pedagogy, as discussed by Alexander. Reciprocal dialogic pedagogy includes sharing ideas and considering alternate viewpoints, which would include visual or intuitive metaphors to elucidate aspects of the piece.[218] Student 2 is expressing agency when she says "I just know what turquoise and lime green sound like." To her, the subjective experience of these colors supports her interpretive choices. She expresses agency in the decision, and confidence in her artistic view which translates to self-efficacy when playing. This suggests dialogic pedagogy methods fostering agency and self-efficacy in Student 2. Collaborative creativity is also evident in this exchange, as

[218] Alexander, *Towards Dialogic Teaching*, 38.

Student 2 was given space for her creative voice in identifying colors she sees in *Arabesque* No. 1 by Claude Debussy (L. 66, 1891). As she was given agency in this artistic choice, we collaborated to find a creative implementation of her synesthesia. This is related to Wirtanen and Littleton's study findings of "collectively and collaboratively constructed interpretation", discussed in Chapter Three.[219]

As discussed earlier, Student 3 has a strong interest in composition. Our lessons often included composition sessions that were structured with a combined methodology of precision training and cognitive apprenticeship, including modeling, coaching, and scaffolding. According to Collins et al., these three elements of cognitive apprenticeship represent the foundation of the pedagogy, "designed to help students acquire a set of cognitive and metacognitive skills through processes of observation and of guided and supported practice."[220] Each composition lesson would begin with a short lecture by me on a music theory concept, such as a simple chord progression, chord inversions, voice leading, or the addition of seventh chords. As Student 3 progressed, we moved to more aesthetic components of composition, including rhythmic patterns and phrasing. Typically, I would demonstrate a chord progression in one key, narrating the process as I played (*modeling*) and then I would ask him to show me the same chord progression in a different key while giving him feedback (*coaching* and *scaffolding*). He would apply what he learned in our lesson to his composition over the course of the next week. Each week we would try to add a new element of complexity to his piece. What began as a simple I-IV-V-I progression in D major evolved into this piece:

[219] Wirtanen and Littleton, "Collaboration, Conflict and the Musical Identity Work of Solo-Piano Students," 31.

[220] Collins et al., "Cognitive Apprenticeship," 481.

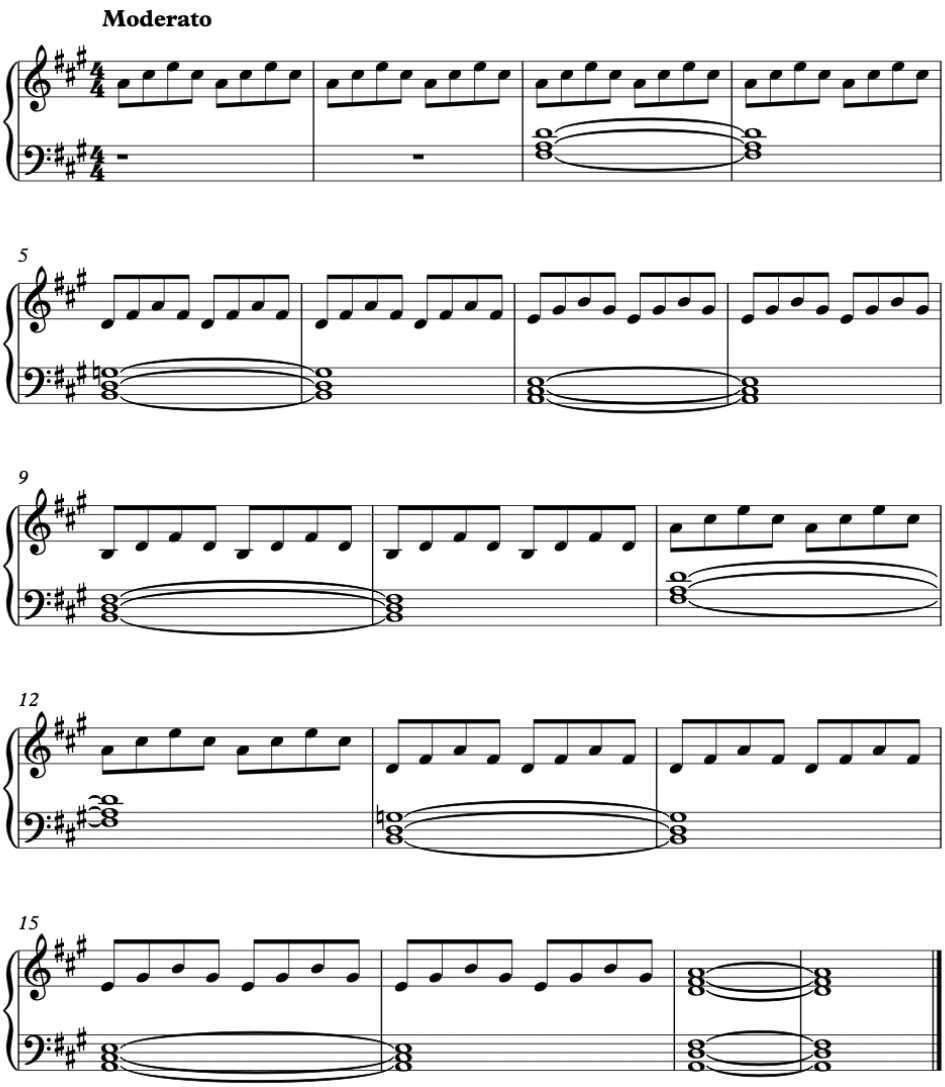


Figure 11: *Untitled* by Student 3

In the following excerpt, Student 3 and I are discussing the progress he has made on his composition. At this point, he has included rhythmic interest with a right-hand ostinato pattern and harmonic interest with added 9^{ths} to the seventh chords. He plays me the newest iteration of the piece, and we discuss it.

Student 3 – Lesson 3 Excerpt

Rebecca: Cool! Ooh! It's coming to life.

Student 3: Yeah!

Rebecca: It actually has more of a cinematic quality to it now, because a lot of times like minimalist piano or things like that in movies, start with a pattern, a rhythmic pattern, you keep the rhythm the same, but then you kind of go to different chord shapes, but the pattern is what keeps you kind of, it's like your currency. Ooh. Okay. I love it. Very exciting.

Student 3: Yeah!

Rebecca: It's very exciting.

Student 3: I showed it to my mom 'cause I was like, I made this up.

Rebecca: Yeah.

Student 3: I made this up, all on my own.

Rebecca: Oh my Gosh. I'm so excited for you. I bet. She was like, "Whoa, that sounds professional. That sounds like something you would hear like in a movie or a soundtrack."

Student 3: Oh, thank you. That's awesome!

(a few minutes later)

Student 3: Yeah, 'cause it's funny like I was playing it. I was talking to my mom about how much time I spent, where it was literal hours because it's something, I'd find, I literally was playing around with so much stuff, just like jamming, being like, "Oh, I just wanna play," 'cause I know that I can play in A-major and I'll be able to figure out what notes I need to play. And I started just messing around with random rhythms and I somehow landed on like that one, and I was like, "Oh, that sounds really pretty, I like that." And then it's like I started trying to be like, "Well, what can I do with the other chords," and then it's like, yeah, I would just... It just ballooned like crazy.

> **Rebecca:** You got into a flow state. You just went with it which is like, the most, that's the happiest place to be when you're practicing, when you're jamming, it's like, when you're just like literal hours go by and it doesn't feel like it's work, but it's like such a satisfying work that you're not like... It doesn't feel arduous. It feels satisfying.
>
> **Student 3:** Yeah, and that's what was really awesome is that when I would think I found something, I'm like, "Oh, I'll do this one for this chord, I like that pattern on the right hand, but then when I would hear how it transitioned into the next one, I'd be like, "Oh, that feels wrong." But like my reaction to that wasn't like I was frustrated where I was like, "Darn it, that sucks." I was like, "Oh okay, well, now I'll try some other stuff." It was just... It was really cool.

In this excerpt, Student 3 expresses great pride in his work ("I made this up all on my own"). He describes having the freedom to make compositional choices and enjoying the process because it felt constructive, rather than limiting ("What can I do with the other chords" and "Well now I'll try some other stuff"). It is indicated that he harnessed the *exploration* of cognitive apprenticeship in his description of the process by which he solved problems independently.[221] This points to self-efficacy supporting his sense of agency as a composer. Using the tools he acquired during our lessons through cognitive apprenticeship, Student 3 exercised his artistic voice and composed a piece that he was proud of.

6.2 Thematic Analysis of Interview and Questionnaire Narratives

Thematic Analysis of Questionnaire Narratives

The questionnaire, given to the students as a precursor to the interview, began the process of structured reflection and helped frame our discussion on the methodologies used in lessons. It was crucial to this study because it was the only space in which the students could reflect on the

[221] Collins et al., "Cognitive Apprenticeship," 483.

methodologies without me present. Coupled with the interview, this data provided a coherent collection of student reflections on the teaching and learning process in lessons. It also allowed the interviews to be more open, permitting space and time for semi-structured prompts and organic conversation. As discussed in Chapter Five, the questionnaire included a combination of ordinal and short answer questions. Below is an excerpt of the ordinal scale section of the questionnaire and relevant codes.[222]

[222] The full questionnaire can be found in Appendix E. It should be noted that the codes in italics were not present in the questionnaires given to the students. They are presented here for clarification of the implied methodologies.

1. **What helps you learn and understand best during lessons?**

	Not at all helpful	A little bit helpful	Somewhat helpful	Very helpful	Extremely Helpful
Teacher plays piece for me *(T-model – precision training)*					
Teacher demonstrates technique *(T-model – precision training)*					
Teacher explains technique *(T-model, modeling – precision training and cognitive apprenticeship)*					
When my teacher asks me what I focused on during my practice *(T-support ref/art, S-ref/art – metacognition, cognitive apprenticeship)*					
When my teacher asks me what I think about my playing/progress *(T-support ref/art, S-ref/art, S-eval –metacognition, cognitive apprenticeship, dialogic pedagogy)*					
When my teacher gives me feedback on what I've played *(T-eval, T-express – dialogic pedagogy)*					
When my teacher asks me questions about what is hard about the piece *(T-support ref/art, S-ref/art, S-eval – metacognition, cognitive apprenticeship, dialogic pedagogy)*					

7. When you hit a roadblock in a piece you are working on, what helps you keep feeling eager and ready to learn?

	Not at all eager and ready to learn	A little bit eager and ready to learn	Neutral	Somewhat eager and ready to learn	Very eager and ready to learn
Discussing roadblock and possible solutions *(S-ref/art, T-support ref/art – metacognition, cognitive apprenticeship)*					
Asking my teacher questions *(S-probe – dialogic pedagogy)*					
Teacher asks me questions *(T-probe – dialogic pedagogy)*					
When my teacher has me work on technique/passage repeatedly without interruption *(T-direct – precision training)*					
When my teacher gives me feedback on my progress while I am practicing a technique/passage *(coaching – cognitive apprenticeship)*					
Teacher demonstration of technique/passage *(T-model, modeling – precision training, cognitive apprenticeship*					

Figure 12: Student questionnaire excerpts

The answers to these questions indicate that students found the methods of precision training, cognitive apprenticeship, and dialogic pedagogy to be effective for their learning. Precision training was marked as "very helpful" or extremely helpful" 96% of the time. Cognitive apprenticeship methods were marked as "very helpful" or "extremely helpful" 75% of the time. Dialogic methods were marked as "very helpful" or extremely helpful" 88% of the time. That each method was viewed as predominantly "very helpful" and "extremely helpful" points to their efficacy. These methods were applied and dovetailed with each other to incorporate precision training practices with social constructivist paradigms of teaching and learning.

Student Agency Questions and Responses

Below are the questions that dealt with student agency, particularly concerning creative interpretation and taking command of the lesson plan. The answers to these questions were mixed. The distribution of answers indicates that students felt that being given agency was helpful for their learning, although not unanimously.

	Not at all helpful	A little bit helpful	Somewhat helpful	Very helpful	Extremely helpful
When my teacher asks me what I want to do next during the lesson *(T-support agency)*					
When my teacher asks me what I like about the piece *(T-support ref/art, T-support agency)*					
When my teacher asks me how I want the piece to sound (interpretation of piece) *(T-support agency)*					
When my teacher asks me to describe the emotion or mood of a piece. *(T-support agency)*					

Figure 13: Ordinal questions regarding agency

5. My piano lessons are a time when I can ask questions and make suggestions about how I can learn better. *(S-probe, S-initiate, S-agency)*

Strongly disagree	Disagree	Undecided	Agree	Strongly agree

Figure 14: Ordinal question regarding student agency, part 2

Another question concerning student agency is shown above. The results for this question were consistent, with three students marking “strongly agree” and one student marking “agree.” This indicates a lesson environment in which students felt at ease voicing their learning needs, preferences, and priorities.

This was discussed in further detail by several students in the short answer portion of the questionnaire. One prompt asked the students: “Please write a few sentences about what helps you feel eager and ready to learn new music by yourself (outside of a lesson).” Student 2 stated “I feel eager and ready to learn when I find a great piece of music I like and it is in my comfort level to play. It is rewarding and makes me excited to play because I personally like the piece. And knowing I have the skills to work out difficult parts makes me confident.” Here, Student 2 describes feeling agency in picking her own repertoire. Student 4 echoed similar sentiments by stating “I enjoy choosing music that is an appropriate challenge, and Rebecca’s role in that choice is critical – we discuss what I am interested in, she knows what is suitable, and typically we discuss a few options.” Student 4 describes a sort of collaborative agency, in which he makes his preferences known and I help refine the choices by giving him a few options of pieces that will fit well in his zone of proximal development. Both Student 2 and Student 4 highlight self-efficacy as an important part of choosing repertoire. Knowing that the music will be an appropriate challenge and will therefore elicit feelings of self-efficacy is critical to their eagerness to learn.

Student Self-Efficacy Questions and Responses

Below are the questions that dealt with student feelings of self-efficacy.

6. When I hit a roadblock in a piece I'm working on, I feel: *(S-self-efficacy)*

Not at all confident	A little bit confident	Neutral	Somewhat confident	Very confident

9. Has your confidence in your ability to learn and play piano changed over the course of the last year? *(S-self-efficacy)*

Not at all	A little bit	Undecided	Somewhat	Very much

Figure 15: Ordinal questions regarding self-efficacy

The results for these questions indicated that for the most part the students' feelings of self-efficacy were strong, and that they felt relatively confident in their abilities to overcome obstacles in their learning. I surmise that this is in large part due to the dialogic pedagogy and cognitive apprenticeship methodologies employed during lessons, both of which stress metacognition of problem solving to foster independence of learning. Several students remarked on this in the short answer portion of the questionnaire. The prompt asked, "Please share any additional thoughts you have about the way you and your teacher talk about your learning piano during lessons." Below are the responses from Students 2, 3, and 4:

> **Student 2**: She always asks me what I think before we decide how to approach a trouble area in a song. Any method we use to improve my playing can be changed to accommodate the song/comfort level. She is always patient and makes sure I understand new methods/concepts in the songs. By the end of the lesson I always feel comfortable and confident with the music.

> **Student 3**: I love when you give me feedback on how to practice, especially difficult spots of an exercise or piece. That often helps me get over roadblocks that have been difficult.
>
> **Student 4**: I've found I need to take notes each session on what we've discussed practicing, and I refer back to these during the week. My teacher starts each lesson asking me generally for an update on my practice, and I review the previous week's notes and my progress (or not) against each. She uses information from this to inform the next lesson, and this continuity helps me work through specific issues.

These three remarks all point to dialogic and cognitive apprenticeship methodologies being strongly linked to feelings of self-efficacy for these students. Student 2 comments on the prompting of reflection and articulation as our work begins. Student 3 describes the coaching process as I give him feedback for future practice. Student 4 practices metacognition in the form of notetaking, which frames our lessons. All of the practices described by students are housed within the dialogic model of communicating about the learning process as it unfolds. These dialogic processes were evident in the lesson narratives as the students iteratively participated in problem-finding and solving, reflecting upon and evaluating their learning in the process.

Thematic Analysis of Interview Narratives

The interviews, conducted after the final lesson of each student, provided another set of data regarding the students' experiences with the pedagogies implemented. The questions, which dealt with student experiences of the three methodologies, were designed to be relatively open-ended to allow for subjective student responses.[223] Below are some excerpts from the interviews.

[223] For a complete list of the interview questions, see Chapter Five.

Interview Excerpt 1: Student 1

Rebecca: Do you feel like in our lessons, you can ask me questions, like do you feel comfortable asking me questions? That's the first part of the question. And do you feel comfortable giving me your own ideas about a song?

Student 1: Yeah.

Rebecca: Like how you want it to sound or how you want it to play?

Student 1: Yeah, I feel comfortable.

Rebecca: Okay, good. Do you think that that's important? Do you think that the fact that you feel comfortable talking to me in our lessons helps you feel confident in your playing?

Student 1: Yeah, I think it is important to have that relationship with your teacher.

Interview Excerpt 2: Student 2

Rebecca: How does it make you feel when you and I stop to discuss how to solve a problem that we're having in a piece? Like when we're having a discussion about things you could do, tools you can use, in what ways is that useful to you?

Student 2: It definitely makes me start thinking and everything, and it definitely gets me involved a lot more than I would be if you were just like, "Okay, so here's how we fix this," and it makes me kind of call on my theory knowledge and just my critical thinking skills, and so definitely it helps a lot for me to just think on my own to solve problems like that, but you always... You tend to know when it's out of my knowledge about how to do something, if it's a fingering issue or something like that, you're like, "Okay, I'll solve this one," but when it's something that I would know how to do, you always ask me.

Rebecca: Do you feel that you can bring up questions and ideas in the lesson? And then follow up to that, do you think that's

important in helping you learn to play piano or in helping you learn how to become more confident in playing piano? The fact that you can bring up stuff on your own to me.

Student 2: Yeah, absolutely, I think again, it kinda helps the pianist think through things, so then when they're left with a challenge on their own, whatever it is, if they're learning a piece on their own or they're continuing something they're learning with their teacher, it definitely helps them develop those skills to be like, "Oh yeah, I know how to think through this on my own."

Interview Excerpt 3: Student 3

Rebecca: So, during our lessons, what helps you feel excited about learning to play? Not outside of our lessons, but during our lessons.

Student 3: I think when... It's like you diving into a part and either doing the new fingerings or asking me what I think the issue is, because I think a lot of times I kind of internally know what the... But I haven't given it enough thought or said it out loud, so I'm just like, "Okay, I know there's something in that section wrong," but I don't take the time to pull it out and be like, "Okay, if that's this, now, I should practice this." So, when you ask me about, just asking the question even of like, "Well, do you think it's a right-hand issue or a left-hand issue?" And I'm like, "Oh actually, I think it's exactly this," I think it's... I can get overloaded with information sometimes, and it was you pausing to stop and ask me the question about something, it's like, "Oh okay, I can give my input," and then, whatever solution that you give me makes a lot more sense.

Interview Excerpt 4: Student 4

Rebecca: So to what extent do you think the talking through the problem affects your feelings of agency versus if I was just like, “try it” and then I was just quiet?

Student 4: I think it's essential, right? Communication is how you get to the understanding. I think it's critical to it because it is that

> you are having me... Well I feel comfortable doing this. Or maybe you're having me do this, but just to describe, I describe back. It's not... It's not one way. So I feel as you are... Yeah we might play it and then you'll either give me feedback or you you'll ask me how it felt. And yeah. And this is how I'm kind of discovering it. Because then based on what I say, if I say well it felt great and you disagree, or if I think it didn't or if we did agree however, it was, then you just go to the next step.
>
> **Rebecca:** Right, right. What I'm hearing is, the evolution of the conversation informs our next steps.
>
> **Student 4:** Yeah. If we didn't have that communication, then I wouldn't be... Well I wouldn't be learning the feel and I wouldn't be learning... I'd just be receiving instruction. And then just trying it. And so the back and forth is key.

These excerpts reveal that all of the students felt that dialogic and cognitive apprenticeship processes were instrumental in their metacognition of learning and problem-solving abilities. Some of the students also made connections to their self-efficacy and agency. I ask Student 1 if she feels comfortable asking me questions and giving me input on the interpretation of her pieces. As she is only nine years old and discussing learning is a fairly abstract topic, some of these questions required more probing than with the older students. However, she does confirm that she feels comfortable and that it is "important to have that relationship with your teacher." Student 3 reiterates this point by saying "It was you pausing to stop and ask me the question about something, it's like 'okay I can give my input' and then, whatever solution that you give me makes a lot more sense." This points to the utility of student metacognition in collaborative problem solving, and the importance of student agency in supporting this process.

Student 2 and I discuss our conversations during problem-solving sessions and her agency in asking questions and making interpretive choices. She articulates the usefulness of cognitive apprenticeship methods, stating "It makes me kind of call on my theory knowledge and

just my critical thinking skills, and so definitely it helps a lot for me to just think on my own to solve problems like that." She continues, "so then when [the student is] left with a challenge on their own… it definitely helps them develop those skills." Here, Student 2 expresses gaining independence, self-efficacy, and metacognition through cognitive apprenticeship. Student 4 echoes this sentiment when he says "If we didn't have that communication, then I wouldn't be learning the feel and I wouldn't be learning… I'd just be receiving instruction." That Student 4 differentiates between *learning* and *receiving instruction* is the crux of the argument for dialogic pedagogy and cognitive apprenticeship. As Tobias Matthay stated in *Musical Interpretation* (1913), "the good teacher tries to make the pupil see and *think* things, so that, seeing their purpose, he can apply them by his own choice.… To insist on the pupil himself always using his own ears…his own judgement, his own reason and his own feeling."[224]

The students' accounts of their learning journey in the questionnaires and interviews further reinforces the six thematic patterns found in the lesson narratives. Descriptions of dialogic and cognitive apprenticeship processes deepening critical thinking and *agency* indicate that these methods helped students become more independent as learners. Furthermore, their recognition and description of these methods as beneficial to their learning is an example of *metacognition* (expressed through *reflection and articulation*). *Self-efficacy* was described as a positive outcome of working through problems together, implementing cognitive apprenticeship and dialogic processes of emotional metacognition (*evaluation* and *expression*) in the process.

The previous sections have analyzed the themes present in the lesson, interview, and questionnaire narratives, but more importantly, have highlighted their interrelatedness. The themes are so enmeshed that it was rare to see one theme without at least one other in co-

[224] Matthay, *Musical Interpretation*, 19.

occurrence. The following section will take a deeper look at the connections between the themes. The chapter will conclude with a discussion of the suggested pedagogical model and its relevance in the current educational landscape.

6.3 Interconnections: Thematic Co-Occurrences

The analysis of the lesson and interview narratives revealed that the themes co-occurred with one another quite frequently, as demonstrated. These co-occurrences formed a set of patterns which illustrate the suggested piano pedagogy model presented in this study. Here I present some numerical data of the thematic patterns to illustrate the model at work. I have taken the thematic transcript analysis of the four case studies at large and codified the aggregate data according to theme co-occurrence. This was then refined to include significant thematic co-occurrences within a ten second window (five seconds before and five seconds after the statement in the transcript). The six themes discussed thus far have been described as having two pathways, student-expressed and teacher-supported/prompted. This discussion will focus on the student-expressed themes to demonstrate their connections with the other themes and the student learning outcomes. This numerical data will support the pedagogical processes described in the suggested model of this study.[225]

1. Thematic Co-Occurrences with Reflection and Articulation (metacognition)

Reflection and articulation, core components of cognitive apprenticeship, are acts of metacognition. These processes aid in the concretization of learning through conversation and proved to be part of both the process and outcome of learning in this study. The following chart illustrates the five themes that co-occurred most frequently with student reflection and articulation.

[225] For data visualizations of these co-occurrences, see Appendix G.

Coaching – *cognitive apprenticeship*	58%
S-evaluation – *dialogic pedagogy*	47%
S-follow – *precision training*	40%
T-evaluation – *dialogic pedagogy*	36%
T-support reflection and articulation – *cognitive apprenticeship*	31%

Figure 16: Co-occurrences between student reflection and articulation and other themes

As shown, the themes that co-occurred with student reflection and articulation with the highest frequency were coaching, student evaluation, student following, teacher evaluation, and teacher supporting reflection and articulation. This collection of themes implies a problem-finding and solving environment. While the student and I worked on a particular technique or passage, I would coach their work and they would follow my instructions. We would evaluate their progress as we went, eliciting metacognition on the part of the student about their thought processes and comfort level with the work.

2. Thematic Co-Occurrences with Student Evaluation

Evaluation, a part of dialogic pedagogy, elicited both "local" and "global" metacognition on the part of the student. They would evaluate ephemeral moments of their learning process during lessons, as well as articulate broader sentiments about their progress in a grander temporal context. Student evaluation of progress and ability was indicated to be closely tied to reflection and articulation, coaching, teacher evaluation, and self-efficacy. The following chart shows the percentage breakdown of these thematic co-occurrences.

S-reflection and articulation – *cognitive apprenticeship*	151%
S-self-efficacy - *outcome*	57%
Coaching – *cognitive apprenticeship*	56%
T-evaluation – *dialogic pedagogy*	46%
T-support reflection and articulation – *cognitive apprenticeship*	38%
S-follow – *precision training*	37%
T-support self-efficacy – *outcome*	32%

Figure 17: Co-occurrences between student evaluation and other themes

Some of the co-occurrence percentages are higher than 100% because the theme would occur multiple times within the ten second time frame allotted.[226] As shown, student evaluation co-occurred quite frequently with student reflection and articulation. As mentioned earlier, self-assessment is a natural part of unpacking one's progress. If student evaluation occurred during a work session, the student would follow my instructions and I would coach them as they worked. As the work advanced, I would support the students' self-efficacy with positive statements about their progress and performance. They would often express feelings of self-efficacy at this time. The most notable of these co-occurrences is that of evaluation with self-efficacy. This strong co-occurrence implies a bi-directional relationship between dialogic processes and expressions of self-efficacy, and I would posit are causal to self-efficacy itself. The articulation of progress by

[226] This will be true for additional theme co-occurrences discussed in this section.

either the student or myself makes meaning of the small accomplishments along the path toward mastery.

3. Thematic Co-occurrences with Student Expression

Students often expressed emotions such as pride, happiness, and contentment when they evaluated their progress. These emotive interludes provided support which propelled their learning forward. The themes that co-occurred most frequently with student expression were student reflection and articulation, student self-efficacy, student evaluation, student agency, teacher supporting self-efficacy, teacher evaluation, and teacher expression. The percentage breakdown of these thematic co-occurrences is as follows:

S-reflection and articulation – *cognitive apprenticeship*	83%
S-self-efficacy – *outcome*	80%
S-evaluation – *dialogic pedagogy*	51%
S-agency - *outcome*	51%
T-support self-efficacy – *outcome*	49%
T-evaluation – *dialogic pedagogy*	43%
T-expression – *dialogic pedagogy*	34%

Figure 18: Co-occurrences between student expression and other themes

Like evaluation, expression often co-occurred with student reflection and articulation as the expression of positive emotions is a common component of self-assessment. Expressions of self-efficacy often co-occurred with expression as the students made assessments of their

progress and/or performance. Interestingly, student agency co-occurred more than half the time when students expressed emotion. This suggests that they often felt more in control of their learning and confident in making decisions when they were expressive and had strong feelings of self-efficacy.

4. Thematic Co-Occurrences with Self-Efficacy

One of the central learning outcomes of this study, self-efficacy proved to co-occur frequently with both the other learning outcomes and pedagogical frameworks employed. The themes that had the highest co-occurrences with student self-efficacy were student reflection and articulation and student evaluation. Other notable co-occurrences included coaching, student agency, teacher evaluation, teacher probing, teacher supporting self-efficacy, and teacher supporting reflection and articulation. Below is the percentage breakdown of these co-occurrences.

S-reflection and articulation – *cognitive apprenticeship*	117%
S-evaluation – *dialogic pedagogy*	82%
Coaching – *cognitive apprenticeship*	42%
S-agency - *outcome*	40%
T-evaluation – *dialogic pedagogy*	36%
T-probe – *dialogic pedagogy*	34%
T-support self-efficacy – *outcome*	33%
T-support reflection and articulation – *cognitive apprenticeship*	31%

Figure 19: Co-occurrences between student self-efficacy and other themes

Student self-efficacy *always* co-occurred with reflection and articulation, indicating an important connection between the two. When students were given the opportunity to verbally reflect upon their learning process and progress, it elicited feelings of self-efficacy as they might not have experienced otherwise. Taking the time to explore learning as it occurs gives the student space to define, evaluate, and experience their education in a profound way.

It is important to note that similar themes co-occurred when students expressed a lack of self-efficacy. An expression of a lack of self-efficacy co-occurred with student reflection and articulation at 93%, coaching at 83%, student evaluation at 76%, teacher supporting reflection and articulation at 34%, and teacher supporting self-efficacy at 31%. These percentages suggest that the same processes in cognitive apprenticeship and dialogic pedagogy have the potential to elicit positive and negative expressions of self-efficacy. Cognitive apprenticeship and dialogic pedagogy do not necessarily *cause* positive or negative feelings of self-efficacy, rather they give space for the student to acknowledge and articulate the feelings that they have regarding their learning, knowledge acquisition, and abilities. However, when a student illuminates for themselves how able they feel to perform a certain task, it may make feelings of self-efficacy easier to achieve. Once the problem or roadblock that lies in the way of learning is identified, particularly by the student, it can be solved more efficiently. Thus, when the student is metacognitive about their personal process of learning, both the triumphs and pitfalls, they have that much more agency in their journey.

5. Thematic Co-Occurrences with Agency

Students conveyed agency when they made decisions about their playing or practicing, or took command of the direction of the lesson. This proved to occur often during work sessions in lessons when they would articulate the ways that they wanted to work on something, whether

dealing with duration of practice or the amount of music to be covered. This implies student metacognition of their learning process in which they would gauge what type of work they wanted to do and how much of it they felt was necessary to integrate the new material or technique. Below are the percentage breakdowns of the most frequently co-occurring themes with student agency.

T-support agency - *outcome*	61%
S-reflection and articulation – *cognitive apprenticeship*	39%
S-follow – *precision training*	33%
Coaching – *cognitive apprenticeship*	31%

Figure 20: Co-occurrences between student agency and other themes

These co-occurring themes illustrate an active work environment in which I would support the students' agency by encouraging them to make decisions about the direction of our work. Once the direction had been chosen, we would begin the work and they would describe their cognitive processes and feelings of efficacy as they progressed using reflection and articulation. I would coach them, and they would follow my instructions. The most strongly co-occurring themes of teacher supported student agency and student reflection and articulation suggest a synergistic application of cognitive apprenticeship and traditional precision methods. Students felt agency to make choices about their learning in a collaborative environment.

6.4 Discussion: An Expanded Model for Relationality in Piano Pedagogy

The data analysis from the lesson, questionnaire, and interview narratives provided a rich depiction of the interwoven pedagogies at work. The recurrent narrative that emerged in lessons was as follows: cognitive apprenticeship in the form of reflection and articulation was

implemented as the students exercised metacognition of their learning processes. This metacognition not only fostered independence of learning, but feelings of self-efficacy as well, made evident through the dialogic processes of evaluation and expression. When students were emotionally metacognitive about their work and progress, feelings of self-efficacy were often expressed, and student agency was evident in the students taking command of lessons and their practicing and making interpretive choices in their music. This process was cyclic within lessons, and thematic in the students' learning journey overall.

These findings are significant given the changing contexts of the modern educational landscape. Social practices and educational priorities have changed in the approximately 450 years of recorded keyboard pedagogy. Private music education played a vital societal role during the eighteenth and nineteenth centuries. Social conventions dictated that music proficiency was a currency, an indication of a certain level of wealth and education. Concurrently, the piano became a common fixture in middle- and upper-class households. Private keyboard instruction followed the master-apprentice and transmission models, top-down practices that focused on the furthering of tradition. These models were not student-centered, nor did they make relational contexts of learning a focus or priority. As shown in Chapter Four, few extant sources of keyboard pedagogy discussed psychological, cognitive, or relational processes in lessons.

In the current educational landscape, music proficiency is still very much a desired skill, but the attitude concerning rigor in service of tradition is altered. Through research in the fields of psychology, sociology, and education, we have come to understand the learning process more holistically. In the twentieth century, new language to describe learning was codified in behaviorism and cognitivism. These frameworks are relevant to and have been present in keyboard pedagogy all along, as discussed in Chapters Two, Three, and Four. These are what I

would call pedagogical "givens," processes that are inherent in the progression of learning. Behaviorism in the form of reinforcement procuring replicable and demonstrable results and cognitivism with the emphasis on cognitive processes related to memory encoding, problem solving, and knowledge structure formation and integration.

In the last forty years, newer research has built upon these frameworks to describe the subjective and relational components of learning in constructivism and social constructivism. It is now understood that the social components and relational contexts of learning are a significant part of the process.[227] Social constructivism is a necessary pedagogical consideration in part because student diversity has increased profoundly. Diversity can be defined as cultural and socio-economic, but also as desired engagement. As discussed in Chapter Three, students who choose to take piano lessons now have different motivations and goals than those of the eighteenth, nineteenth, and even early twentieth centuries. Students today seek out piano lessons for a plethora of reasons. Children often begin piano lessons (sometimes by the demand of their parents) as a gateway to music education. Adults pursue piano lessons as a new hobby, for personal edification, for a potential shift in career, to acquire a new skill set, or simply to learn how to play their favorite song. Shifting our pedagogical approach from a "one-size-fits-all" master-apprentice model to something more nuanced and responsive adapts to our current educational contexts.

Dialogic pedagogy and cognitive apprenticeship, two frameworks housed in social constructivism, were of particular importance to this study. Research specifically devoted to

[227] For further reading on social constructivism in learning, see *Psychology for the Classroom: Constructivism and Social Learning* by Alan Pritchard and John Woollard (Hoboken, NJ: Taylor & Francis, 2010). For reading on social constructivism in music classrooms, see "Learner Agency and Teacher Communication in a Choral Classroom," by Maria A Difatta. (MM thesis, Oakland University, 2013), and "Nurturing a Social Constructivist General Music Classroom Through the Eyes of a Performing Instrumentalist," by Erica H. Batkins, (MM thesis, Oakland University, 2010).

dialogic pedagogy in private music instruction has been conducted by Leah Coutts, Margaret S. Barrett and Joyce Eastlund Gromko, Henrique Meissner and Renee Timmers, among others. The research of these studies suggests that dialogic pedagogy promotes feelings of self-efficacy and agency in students during the process of learning an instrument.[228]

My study adds another pedagogical layer to the dialogic model researched by these scholars. The addition of cognitive apprenticeship to dialogic and precision training methods further reinforces the problem-finding and solving culture discussed by Czikszentmihalyi and Getzels in 1988.[229] By creating a culture of inquiry and translating knowledge from tacit to explicit with the use of cognitive apprenticeship, students exhibited self-efficacy, agency, and metacognition. Crucially, this metacognition was holistic, about both their cognitive processes (using cognitive apprenticeship) and affective processes (using dialogic pedagogy) in response to their learning. My study findings show that when students were "emotionally metacognitive" about their progress using evaluation and expression, feelings of agency and self-efficacy were expressed frequently, yielding these as strong themes in the discourse gathered. This indicates that when combined, the cognitive apprenticeship processes of problem-finding and solving and dialogic processes of evaluation and expression cultivated self-efficacy and agency in students. There is a true symbiosis between the processes of cognitive apprenticeship and dialogic pedagogy. When applied together, these methods strengthen and support holistic learning and growth, serving the student outside the boundary of piano mastery.

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[228] Leah Coutts, "Empowering Students to Take Ownership of Their Learning: Lessons from One Piano Teacher's Experiences with Transformative Pedagogy," *International Journal of Music Education* 37, no. 3 (2019): 493-507; Margaret S. Barrett and Joyce Eastlund Gromko, "Provoking the Muse: A Case Study of Teaching and Learning in Music Composition," *Psychology of Music* 35, no. 2 (2007): 213-230; Henrique Meissner and Renee Timmers, "Young Musicians' Learning of Expressive Performance: The Importance of Dialogic Teaching and Modeling," *Frontiers in Education* 5, no. 11 (2020): 1-21.

[229] Mihaly Czikszentmihalyi and Jacob Getzels, "Creativity and Problem Finding in Art" in *The Foundations of Aesthetics, Art, and Art Education*, ed F. Farley and R. Neperud (New York: Praeger, 1988): 91-116.

The interaction between cognitive apprenticeship and dialogic pedagogy is critical to the efficacy of the suggested model. Each method is valuable on its own, but when combined they foster cognitive and affective metacognition and growth, bringing the whole learner into account (a hallmark of social constructivism). Furthermore, when combined with precision training methods, all three domains of learning (cognitive, affective, and motor) are addressed and supported. This is illustrated in the suggested model below, first discussed in Chapter Three.

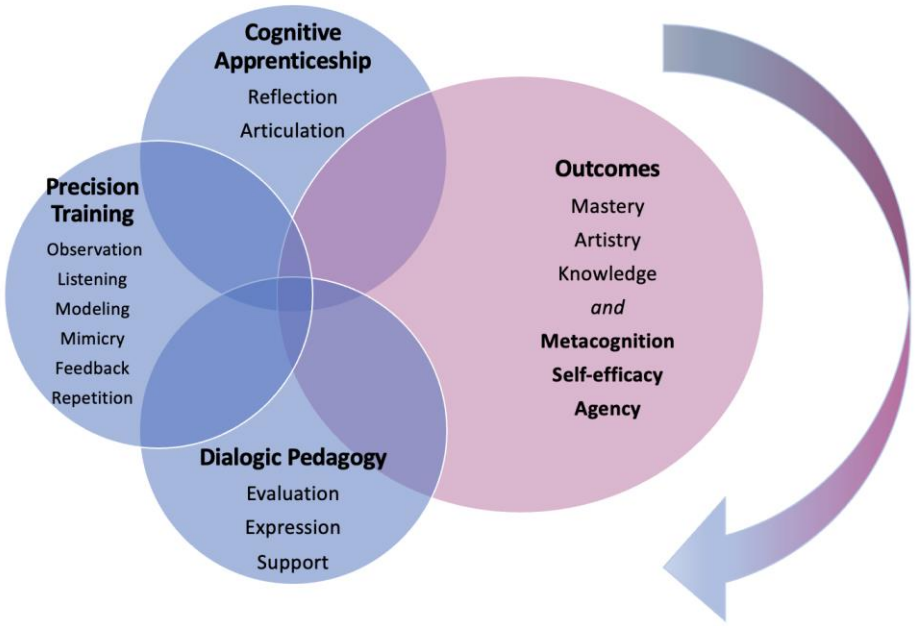


Figure 21: A suggested model of piano pedagogy

As shown in this model, precision training, dialogic pedagogy, and cognitive apprenticeship work synergistically to promote skills typically associated with piano proficiency including mastery, artistry, and knowledge, but also the cultivation of metacognition, self-efficacy, and agency; outcomes that will serve the student in many realms outside of playing piano. Confidence, motivation, and resilience honed in a socially constructed learning

environment elicits growth and education of the whole person. The traditional master-apprentice paradigms of rigor, practice, and repetition seeking mastery and artistry are still present, but are enhanced with social constructivist methods. As with traditional precision training methods, behaviorism is inherent in the emphasis on physiological precision, exactitude of technique, and focus on output. Likewise, cognitivism is demonstrated in the integration and metacognition of knowledge structures related to technique and artistry.

As discussed in Chapter Three, I do not mean to fully dismantle the practices of the master-apprentice model, nor invalidate the importance of methodologies used in embodied mediums to elicit mastery. In some ways, the relational dynamics of the master-apprentice model remain untouched; an expert coaches an emerging learner through a physical medium in which skills are immediately contextualized, applied, and refined. This teaching and learning method is powerful, effective, and appropriate for the context of learning an instrument (and many other embodied practices). Here the learner gets immediate feedback from both the expert and the instrument to guide and instruct them in the refinement of their skills. In my model, these components of the master-apprentice model are blended with additional methods to foster deep and independent learning. Dialogic pedagogy and cognitive apprenticeship enhance the master-apprentice model, creating a relational environment that supports the student in the acquisition of a new embodied skill. Furthermore, these methods make the tacit physical techniques and processes of playing piano explicit through metacognition and verbalization, thereby granting the student more agency and opportunity for self-efficacy in their learning.

This model is a significant contribution to the field of piano pedagogy as this domain is under-theorized and anecdotal, often serving the traditional master-apprentice model that was practiced in Western art music traditions hundreds of years ago. Historically, the culture shared

by teacher and student allowed for implicit learning motivations and expectations. As social contexts and learner diversities have changed, so too should our model of teaching. This model supports a multicultural and multiliterate student base.[230] The theoretical framework of my model brings together two strong social constructivist pedagogies with the same relational structure that has been used for centuries. This model aims to create a new relational dynamic therein to promote collaboration, co-creation, student success in feelings of self-efficacy and agency, and metacognition of cognitive processes and affective states.

It is imperative that we move away from the relational contexts embedded in the traditional master-apprentice model because current educational contexts serve a significantly more diverse student population. We can no longer assume that the transmission of expert knowledge will be enough to engage and educate the learner. Students of diverse cultural backgrounds and learning motivations require a pedagogical model that engages with their lived experiences and individual reasons for learning piano. Social constructivist and dialogic processes are more important in this context, enabling the teacher to meet the student where they are to coach them in their learning journey, building lifelong learning capacities along the way. This model supports and fosters student agency, thereby embracing student diversity. Learning music helps develop the sense of self, and the learning outcomes fostered by this model further support this development.[231] Furthermore, placing relationality and student agency at the center of this model supports the learning outcomes of technical mastery and artistry. When students

[230] "Multiliteracies", coined by The New London Group, refers to an approach to teaching that considers and engages with the multiple linguistic and cultural differences that our modern student body encompasses. For further reading, see The New London Group, "A Pedagogy of Multiliteracies: Designing Social Futures," *Harvard Educational Review* 66, no. 1 (1996): 60-93.

[231] This will be further explored in Chapter Seven.

are supported in the exploration of their artistic voice and are given agency to evaluate their progress, their musical identity and technical skills have the potential to expand and thrive.

The hypothesis of this study was tested and has shown promising results in the strong co-occurrences between the methodologies of precision training, dialogic pedagogy, and cognitive apprenticeship and student learning outcomes of metacognition, self-efficacy, and agency. The final chapter will explore the implications of these findings, suggested applications of the model, and potential further research to be conducted.

Chapter 7

Conclusion: Study Implications, Suggested Applications, and Further Research

7.1 Implications

The analysis of the coded lesson transcripts, questionnaires, and interviews elicited a set of six themes that co-occurred with regularity, including cognitive apprenticeship methods of reflection and articulation, dialogic pedagogy methods of evaluation and expression, and student learning outcomes of metacognition, agency, and self-efficacy. This indicates that the suggested blended pedagogical model of precision training, dialogic pedagogy, and cognitive apprenticeship promoted these learning outcomes. This chapter will discuss the implications of these findings in the current educational landscape, offer suggestions on applications of the model, and explore further research to be conducted.

7.2 Remote Learning Considerations

This study took place remotely rather than in-person because of the COVID-19 pandemic. Before the research began, I was dubious that an efficacious study of teaching piano could be conducted remotely, but I was proven wrong. As it turned out, dialogic pedagogy and cognitive apprenticeship were particularly instrumental in remote learning because demonstration on the instrument was much more limited in this setting. Speech was the only tool at my disposal to illustrate technique because the ability to adjust a student's playing by touch was not possible. Cognitive apprenticeship was used to verbalize physical processes whose nuances may have been lost otherwise. Descriptions of micro-movements and hand-eye coordination were critical.

The use of metaphor to describe attack, articulation, and affect were illustrative, helping to communicate physical gestures in a way that the students could interpret and digest more

easily. By modeling the use of descriptive language in tandem with musical vocabulary, the students felt encouraged to talk about music in their own words. They were able to discuss and describe their playing experiences and interpretive ideas more freely and were not worried that they were not using a particular musical term correctly. To scaffold their learning process, I would explain the musical vocabulary word to enrich their learning, not to replace their words. We would often use the descriptor and the vocabulary word together to reinforce the meaning. By modeling these types of communication, the students were encouraged to articulate their cognitive and motor processes as well. Dialogic pedagogy was also critical in buoying students' motivation during a difficult time. Evaluative feedback from me combined with prompting the students to participate in self-evaluation allowed us to check in on their feelings of self-efficacy and motivation during the progression of learning.

Maintaining relational connectivity is crucial when implementing this model in a remote learning setting. To accomplish this, I suggest that the teacher uses two cameras (or phones/tablets), one positioned at a bird's-eye-view above their hands, and one positioned so that they and the student can be "face to face". These two cameras allow for two pedagogical processes to occur: modeling and observation from the bird's-eye-view camera, and dialogic connection using the face-to-face camera.

With our increasingly interconnected world, there is a need for more diverse and inclusive learning settings and formats to encourage and incentivize the learning of music for students of all backgrounds. There is evidence that this model is effective remotely, thus opening piano pedagogy to a broader audience and dismantling this once exclusive pursuit. However, this access is irrelevant without a meaningful relational dynamic. Remote learning has the potential to be a depersonalized experience as social cues and body language are harder to communicate.

As such, dialogue is central to building connection between teacher and student. The pedagogical processes of this model are critical for motivation, resilience, and persistence in learning remotely.

With the use of social constructivist methods, we as educators can empathize with our students and make learning the piano more accessible. With this model, we move from the master-apprenticeship model to a blended cognitive apprenticeship model, helping us to move away from a transmission style of teaching which perpetuates inherent power dynamics and cultural norms. This new model de-centers these norms to accommodate multiliteracies and cultures. The master-apprentice model was efficacious in traditional music knowledge and practice dissemination, but cognitive apprenticeship and dialogic pedagogy work for a global educational setting.

This model underscores the importance of student learning outcomes that go beyond the domain in which they are learned. Metacognition, agency, and self-efficacy aid in the discovery and development of self. These outcomes exemplify the role that the arts play in lifelong learning, beyond the mastery of the instrument.[232] To know and understand one's own cognitive processes nurtures self-efficacy, motivation, and feelings of agency, instilling the student with propensities to continue their learning journey. By applying pedagogy in the arts through a lens situated in social constructivism, we get closer to finding and making meaning as humans.

7.3 Suggested Applications

To implement the suggested model, I suggest integrating a few types of communication into lesson plans. At the beginning of the lesson, the instructor should ask the student to describe

[232] Scholar Maxine Greene terms this "wide-awakeness." According to Greene, "human beings define themselves by means of their projects, and wide-awakeness contributes to the creation of self." Maxine Greene, "Toward Wide-Awakeness: An Argument for the Arts and Humanities in Education," *Arts and Humanities in Education* 79, no. 1 (September 1977): 119.

their practicing in their own words, and probe with additional questions such as "What went well?", "What did you focus on?", and "What was tough about practicing this week?" to garner further detail about their processes. These questions accomplish two things, fostering metacognition in the student and setting up a framework in lessons in which the student is an active and thoughtful participant in their learning. Once the instructor has gathered this information, they can ask the student how they would like to proceed, thereby fostering agency. As the student progresses through a playthrough, the problem-finding and solving can begin. I suggest giving the student positive feedback first, followed by constructive criticism, and asking the student to reflect on how they felt about their playthrough and if it was commensurate with their practicing. Again, this fosters metacognition through reflection and articulation. The student will most likely point out things that they would like to focus on and work through, and so instructor and student can collaboratively create a "plan of attack", again giving the student agency in their learning.

Throughout the problem-finding and solving sessions, I suggest asking the student to evaluate their process and progress. The instructor can model this by giving evaluative and expressive feedback first. This demonstrates to the student that it is beneficial to check in with oneself and acknowledge the small accomplishments along the way, as well as identify the roadblocks to make them tangible and therefore more manageable. These reflection/articulation and evaluation/expression exchanges should be iterative throughout the lesson, bringing communication and metacognition about the learning process to the center of the lesson.

This model could also be implemented in a classroom setting, for example in a college beginning piano class. Here there is room for peer-to-peer social constructivism. Students can converse with one another about their progress with new techniques, comparing methods for

learning and retention of new knowledge structures. The instructor could set up discussion prompts for the students after they work individually on a technique, exercise, or short piece. These prompts could include:

1. What did you find difficult about this technique/exercise/piece?
2. What tools did you use to problem-solve your way through it?
3. What are you paying attention to as you play this, i.e., hand-eye coordination, attack, fingering, etc.

In a group setting with younger piano students (perhaps six to eleven years of age), the instructor could ask the students to describe the sounds they hear in music to one another, using animals, things found in nature, or even colors to illustrate their interpretations. This encourages the use of metaphor and co-creation among young students. Collaborative music theory work sessions could also support the use of cognitive apprenticeship with this age group . The instructor could give a short lesson on a theory concept, such as intervals, triads, or meter, modeling their problem-solving skills. The students could then collaborate to work on interval, triad, or meter identification together, discussing their thought processes while doing so.

7.4 Study Limitations

The goal of this study was to highlight the relational context embedded in piano pedagogy and explore how this context could be positively affected by the addition of social constructivist methods, including dialogic pedagogy and cognitive apprenticeship. As with all studies, there are limitations in this study that I acknowledge. This points to further work that could be done to benefit the continuing development of blended models of piano pedagogy. Selection bias was a possible limitation because the study participants were ongoing students of mine, so it is implicit that they respond well to my teaching style. At the same time, since the

focus of the study was on the relational aspects of cognitive apprenticeship and dialogic pedagogy, the nature of the existing relationship was useful given the time constraints in creating a relational space with new students. Potential further research to be conducted will be explored in the next section.

7.5 Further Research to Be Conducted

The results on the implementation of the suggested model are promising, but more research could be conducted to further codify this model for broad usage. A study that includes a larger sample population with students of varying ages could test these methods more thoroughly. A study that includes multiple teachers with different interpersonal and communication styles could also be beneficial to better understand how adaptable this model is to different styles of instruction. The methods in this model could be blended in different proportions, and having multiple teachers apply this model would unearth its effectiveness with various teaching styles. Additionally, I suggest a study including teachers who have varying degrees of teaching experience to illuminate the potential for teacher development with this model. Finally, to better understand the stages of musical development in which dialogic processes are most effective, a study with a large sample population of children, adolescents, and adults of varying proficiencies would further clarify the efficacy of this model.

The current model is housed in a framework of communication in which subjective experiences and opinions are strongly weighted to make learning meaningful. This is based in recent findings in learning sciences about the importance of relational and affective dynamics in learning. However, we teach a diverse body of students with varying learning motivations, and this model of communication may not be a good fit for everyone. We need to investigate to what extent the principles and processes of dialogic pedagogy and cognitive apprenticeship are suited

to cultures around the world, and how this model could be aligned with different cultures of schooling. Once investigated, this model could be further expanded through the development and integration of a cultural dimension to serve a global population.

This study sought to test the efficacy of a blended social constructivist model of piano pedagogy in supporting the student learning outcomes of metacognition, self-efficacy, and agency in addition to traditional outcomes of mastery, artistry, and knowledge. The results were promising, showing strong connections between the methodologies of dialogic pedagogy, cognitive apprenticeship, and precision training with these learning outcomes. As cultural and societal contexts have changed, it is time to adapt our pedagogical approach to incorporate social constructivist methods to serve a diverse community, both in the learning of music, and in the building of skills that will nurture lifelong learning capacities.

Appendix A

Consent, Assent, and Parental Consent Forms

Claremont Graduate University

AGREEMENT TO PARTICIPATE IN *PIANO INSTRUCTION: AN EXERCISE IN COLLABORATIVE CREATIVITY THROUGH DIALOGIC PEDAGOGY* (IRB # 3889

You are invited to volunteer to be part of a research project. Volunteering may not benefit you directly, but you will be helping me explore the benefits of dialogic pedagogy on collaborative creativity during piano lessons. If you volunteer, you will continue our normal piano lessons, but I will record eight consecutive lessons and study them afterward. This will take about eight hours of your time but will occur during our regularly scheduled lessons. After the eight lessons have been recorded you will be given a short questionnaire and then participate in an interview with me about learning piano. Volunteering for this study involves no more risk than what a typical person experiences on a regular day. Your involvement is entirely up to you. You may withdraw at any time for any reason. Please continue reading for more information about the study.

STUDY LEADERSHIP: This research project is led by Rebecca Holman Williams, a doctoral candidate at Claremont Graduate University, who is being supervised by Dr. Robert Zappulla, chair of the music department at Claremont Graduate University.

PURPOSE: The goal of this study is to determine the benefits of dialogic pedagogy (defined as "an approach that seeks to facilitate students' construction of knowledge through the questioning, interrogation, and negotiation of ideas and opinions in an intellectually rigorous, yet mutually respectful manner") on collaborative creativity and student learning.

ELIGIBILITY: To be in this study, you must be a current student of mine, having taken lessons for at least six months.

PARTICIPATION: During the study, you will be asked to participate in eight consecutive piano lessons that will be recorded. Additionally, after the study you will be given a short questionnaire to fill out that will take no more than fifteen minutes, and then I will conduct an interview with you and ask you questions about your experience of learning piano.

RISKS OF PARTICIPATION: The risks that you run by taking part in this study are minimal.

BENEFITS OF PARTICIPATION: I do not expect the study to benefit you personally. This study is also intended to benefit scholars of pedagogy and piano pedagogy.

COMPENSATION: You will not be directly compensated.

VOLUNTARY PARTICIPATION: Your participation in this study is completely voluntary. You may stop or withdraw from the study at any time without it being held against you. Your decision whether or not to participate will have no effect on your current or future connection with anyone at CGU or myself.

CONFIDENTIALITY: Your individual privacy will be protected in all papers, books, talks, posts, or stories resulting from this study. I may use the data I collect for future research or share it with other researchers, but I will not reveal your identity with it. In order to protect the confidentiality of your responses, I will keep the recorded lessons on an encrypted hard drive and remove all possible identifiers from the paper.

FURTHER INFORMATION: If you have any questions or would like additional information about this study, please contact me at 650-714-5161 or Rebecca.holman.williams@gmail.com. You may also contact Dr. Robert Zappulla at 909-607-9664 or Robert.zappulla@cgu.edu. The CGU Institutional Review Board (IRB) has approved this project. If you have any ethical concerns about this project or about your rights as a human subject in research, you may contact the CGU IRB at (909) 607-9406 or at irb@cgu.edu. A copy of this form will be given to you if you wish to keep it.

CONSENT: Your signature below means that you understand the information on this form, that someone has answered any and all questions you may have about this study, and you voluntarily agree to participate in it.

Signature of Participant _____ Date _____

Printed Name of Participant _____

The undersigned researcher has reviewed the information in this consent form with the participant and answered any of his or her questions about the study.

Signature of Researcher _____ Date _____

Printed Name of Researcher _____

Claremont Graduate University

***PIANO INSTRUCTION: AN EXERCISE IN COLLABORATIVE CREATIVITY THROUGH DIALOGIC PEDAGOGY* INVITATION** (IRB # 3889)

Would you like to help us with our project by having our piano lessons recorded for two months? Helping with my project will probably not help you, but it will help me learn about teaching and learning in piano lessons. You don't have to help me. It's your choice. If you decide to help, it will take about eight hours of your time during our regular lessons, and about one additional hour including a questionnaire and an interview with me. Having our piano lessons recorded should not be scary. You should feel about the same as you do when you do normal activities. And remember, you don't have to help me. If you don't feel good, you can stop whenever you want.

STUDY LEADERSHIP This is Rebecca Holman Williams' project. Rebecca Holman Williams is a doctoral candidate at Claremont Graduate University. Dr. Robert Zappulla is one of Rebecca's teachers. Dr. Robert Zappulla will be helping Rebecca with the project.

PURPOSE: THE GOAL OF THIS PROJECT IS TO UNDERSTAND THE TEACHING AND LEARNING PROCESS IN PIANO LESSONS, AND HOW STUDENTS AND TEACHERS CAN BE CREATIVE TOGETHER.

ELIGIBILITY To be in this study, you must be a student of mine for at least six months.

PARTICIPATION: During the study, you will be asked to have regular piano lessons that will be recorded. This will take two months, or eight lessons. At the end of the two months, you will be asked to answer some questions about learning and playing piano in a questionnaire as well as in an interview with me.

RISKS OF PARTICIPATION The risks that you run by taking part in this study are minimal. This will not be scary. The risks include feeling a little shy or embarrassed being recorded.

BENEFITS OF PARTICIPATION: I **do not** expect this project to help you. This project will help Rebecca Holman Williams learn more about teaching piano and how students learn.

COMPENSATION: You will not be compensated for this study.

VOLUNTARY PARTICIPATION: Your parents said it's okay for you to help us, but you don't have to. It's your choice. It's okay if you want to stop because you are scared or uncomfortable. You can stop for any other reason, too. We want your help, but no one will be upset if you don't want to help, or if you decide to stop.

CONFIDENTIALITY: When I finish the project, I want to tell others about it. I will tell them how you helped me, but I won't tell them your name. I may let people working on other projects see your answers to the questions, but I won't tell them that the answers are yours. I will make sure

no one finds out what answers are yours, I will keep them somewhere safe and private on my computer. Only I will be able to see your answers there.

FURTHER INFORMATION: If you have any questions about this project, or if you want to know more about it, you can ask your parent(s) or me. If you can't, or don't want to, ask me in person, you can call me or send me a message. You may also call the professor helping me with this project.

Rebecca Holman Williams	Dr. Robert Zappulla
650-714-5161	909-607-9664
Rebecca.holman.williams@gmail.com	Robert.zappulla@cgu.edu

A team of people makes sure our project is as safe as can be for the people helping us. They said this project is okay. You or your parent(s) can also ask them questions. You can call them at 607-9406. Or you can send a message to irb@cgu.edu.

ASSENT: If you sign this paper it means that you have read this and that you want to help with the project. If you don't want to help with the project, don't sign this paper. Helping with the project is your choice, and no one will be upset if you don't sign this paper or if you change your mind later.

Signature of Participant _____ Date _____

Printed Name of Participant _____

The undersigned researcher has reviewed the information in this consent form with the participant and answered any of his or her questions about the study.

Signature of Researcher _____ Date _____

Printed Name of Researcher _____

Claremont Graduate University

AGREEMENT TO PARTICIPATE IN *PIANO INSTRUCTION: AN EXERCISE IN COLLABORATIVE CREATIVITY THROUGH DIALOGIC PEDAGOGY* (IRB # 3889

You child is invited to volunteer to be part of a research project. Volunteering may not benefit your child directly, but your child will be helping me explore the benefits of dialogic pedagogy on collaborative creativity during piano lessons. If you allow your child to volunteer, s/he will continue our normal piano lessons, but I will record eight of these lessons and study them afterward. This will take about eight hours of your child's time but will occur during our regularly scheduled lessons. After the eight lessons have been recorded, your child will be given a short questionnaire about learning piano, and then I will conduct an interview with your child about their experience learning piano. Volunteering for this study involves no more risk than what a typical person experiences on a regular day. Your child may withdraw at any time for any reason. Please continue reading for more information about the study.

STUDY LEADERSHIP: This research project is led by Rebecca Holman Williams, a doctoral candidate at Claremont Graduate University, under the supervision of Dr. Robert Zappulla, chair of the music department at Claremont Graduate University.

PURPOSE: The goal of this study is to determine the benefits of dialogic pedagogy (defined as "an approach that seeks to facilitate students' construction of knowledge through the questioning, interrogation, and negotiation of ideas and opinions in an intellectually rigorous, yet mutually respectful manner") on collaborative creativity and student learning.

ELIGIBILITY: To be in this study, your child must be a current student of mine, having taken lessons for at least six months.

PARTICIPATION: During the study, your child will be asked to participate in eight consecutive piano lessons that will be recorded. Additionally, after the study your child will be given a short questionnaire to fill out that will take no more than fifteen minutes, and then I will conduct an interview with your child about learning piano.

RISKS OF PARTICIPATION: The risks that your child runs by taking part in this study are minimal.

BENEFITS OF PARTICIPATION: I **do not** expect the study to benefit your child personally. This study is also intended to benefit scholars of pedagogy and piano pedagogy.

COMPENSATION: Your child will not be directly compensated.

VOLUNTARY PARTICIPATION: Your child's participation in this study is completely voluntary. Even if you give permission, s/he does not have to volunteer. In addition, your child may stop or withdraw from the study at any time without it being held against him or her. You and your

child's decision whether or not to participate will have no effect on your, or your child's, current or future connection with myself or anyone at CGU.

CONFIDENTIALITY: Your child's individual privacy will be protected in all papers, books, talks, posts, or stories resulting from this study. I may share the data we collect with other researchers, but we will not reveal your child's identity with it. In order to protect the confidentiality of your child's responses, I will keep the recorded lessons on an encrypted hard drive and remove all possible identifiers from the paper.

FURTHER INFORMATION: If you have any questions or would like additional information about this study, please contact me at 650-714-5161 or Rebecca.holman.williams@gmail.com or Dr. Robert Zappulla at 909-607-9664 or Robert.zappulla@cgu.edu. The CGU Institutional Review Board (IRB) has approved this project. If you have any ethical concerns about this project or about your rights as a human subject in research, you may contact the CGU IRB at (909) 607-9406 or at irb@cgu.edu. A copy of this form will be given to you if you wish to keep it.

CONSENT: Your signature below means that you understand the information on this form, that someone has answered any and all questions you may have about this study, and you voluntarily agree that your child may volunteer for the study.

Name of Participating Child _____

Signature of Parent or Guardian _____ Date _____

Printed Name of Parent or Guardian _____

The undersigned researcher has reviewed the information in this consent form with the participant and answered any of his or her questions about the study.

Signature of Researcher _____ Date _____

Printed Name of Researcher _____

Appendix B

IRB Research Outline

Claremont Graduate University

IRB Research Outline
Piano Instruction: An Exercise in Collaborative Creativity Through Dialogic Pedagogy

PI: Rebecca Holman Williams
Faculty Supervisor: Robert Zappulla

Date Last Updated: 02/01/2021 8:31 PM PST
Protocol Outline

Please provide direct, complete responses to each of the following elements. The IRB needs this information to make a sound determination about your research protocol, and we cannot process an application without it. Note that several items request materials related to your research. Those materials should be uploaded at the bottom/end of this application section.

Briefly **describe the overall goals of this study/project in lay language. What is the project designed to investigate, discover, or test?**

Answer: *Suggested Word Count Limit: 200, Current Word Count: 19*
The goal of this study is to determine the benefits of dialogic pedagogy on collaborative creativity and student learning.

Describe the role of human subjects in this study, including a *brief* summary of the procedures, paying special attention to what will happen to subjects and what they will be told about the study.

> **Note**: *If there are multiple phases in the study/project, provide the description for each phase, and clearly enumerate the phases.*

Answer:
Human subjects are of vital importance to this study. I will study and assess the benefits of dialogic pedagogy on my students' learning, growth, and collaborative creativity that results in our piano lessons. I will inform the students that I am writing my dissertation on piano pedagogy, and that I want to study our interactions and their learning process during lessons. However, the curriculum and social interactions will not change at all. Rather I am hoping to

study what happens during "typical" lessons. These lessons will include piano technique, reading and learning music, and discussions of music theory and music history.

If the study takes place during COVID, I will do these lessons via Facetime or Zoom and record the lessons with the students' permission. If the study takes place once we have resumed in-person lessons, I will submit an amendment to carry out the study in-person. Thereafter, I will record the lessons with either a video camera or my phone, (with the students' permission) and keep the video data saved on a secure hard drive.

This study will occur over a two-month period, or approximately eight lessons (one per week)

Subjects and Recruitment

Describe the *population* you propose to study. To *whom* would your conclusions apply?

Answer:
I will be studying piano students, both adults and minors.

My conclusions will apply to anyone interested in piano pedagogy, pedagogy, and inter- and transdisciplinary theory.

Describe the *sample*, including the approximate numbers of subjects to be recruited and expected to complete the study, differentiating these numbers for each phase or type of project element, if multiple.

Answer:
The sample will be four students, hopefully two adults and two minors. The eight-week study will include all four students.

Clearly state all inclusion/exclusion criteria for participation.

Answer:
To be included in the study, the student must be an existing student of mine, for at least six months prior to the study. They must agree to the study and feel comfortable with knowing that I will be recording our interactions and using the material for research purposes.

For each phase or type of project element, describe the recruitment procedures, including how and where potential subjects will first be made aware of the project or of the particular project phase or element and list the recruiting tools (email, HIT text, flyer, oral invitation, social media notice, etc.) you plan to use. A copy of each recruiting tool should be included with your protocol.

Answer:
I will discuss my study with a select group of students in person (or via Zoom/Facetime) during our lessons. I will tell them briefly about the length of study, what it entails for the student, and how I will record the data. I will ask them to take some time to consider if they would be

comfortable being part of the study. If they confirm that they are, either verbally or via email I will send them a consent form to sign.

Describe any compensation or incentives that will be offered.
Answer:
There will be no compensation or incentives offered.

Is any temporary deception of subjects planned?
Answer:

✓
No

Describe the *process* of gaining informed consent to participate in each phase or type of research element. In addition, upload (at the bottom of this page or on the main protocol page) a copy of each written consent or assent form or script that is to be used.

Answer:
I will verbally discuss my study with the selected students and ask for verbal acknowledgement and interest in participating in the study. Once I have received verbal interest, I will send consent forms to the students or parents of students in the case of minors. These are attached on the main protocol page.

Research Procedures and Methods

Describe the data collection procedures and materials, including when and where research will take place.

> **Upload** copies or images of the actual materials to be employed—such as questionnaires, interview protocols, media to be shown to subjects, pictures of apparatus to be used—in final form to the extent possible, otherwise in draft or outline form. Indicate whether attachments are draft or final. (**Note:** Data collection materials must be in final form before the protocol is approved.)

Answer:
The data collection will take place during the normal lessons for each student during the eight-week study. After the eight weeks of lessons have finished, I will send a written questionnaire. The questions I have uploaded are in draft form:

Describe procedures for maintaining subject confidentiality or anonymity, especially if tape recording, photographs, movies or videotapes will be used.

Answer:

I will keep recorded lessons on a secure hard drive on my personal computer. No identifiers will be used in my discussion of the human subjects. Age, gender, and level of student will be the only information disclosed in the dissertation.

If applicable, please describe the subject debriefing procedures here, and upload debriefing documents or scripts at the end of this section (or paste the text here).

> **NOTE: IF information about the research will be temporarily withheld during the consent process in order to mislead or deceive the subject, the deception *must* be fully disclosed in a debriefing after participation is completed, and the subject must be offered an opportunity to withdraw from the study.**

Answer:
There will be no debriefing, as the study will take place during typical lessons.

Potential Risks and Benefits
For the following items, describe the risks and specific benefits, as requested in each item. If risks are greater than minimal (the degree of risk one faces in everyday life), it is especially important to describe how the benefits might justify such risks.

Describe the nature and degree of real and potential risks to the subject, including possible inconvenience, discomforts, or negative consequences of a breach of confidentiality; and any risks to non-subjects. The lowest level of risk may be described as "minimal."
***The extent of risks described here should match the level of risk communicated during the informed consent procedure*.**

Answer:
The students may feel a bit awkward or embarrassed being recorded during the lesson. We will discuss this at the beginning of the recording, and I believe that after a few minutes the students will forget that they are being recorded and the lesson will continue as normal.

Describe definite or potential benefits to the subject, if any, anticipated as a *direct* result of participating in the research.

> **Note: Compensation is *not* a benefit.**

Answer:
No benefits as a direct result of participating in the research.

Describe definite or potential benefits to the researcher.

Answer:

The potential benefits of this study are understanding the benefits of dialogic pedagogy on student learning and collaborative creativity. Once I understand these benefits, I can incorporate dialogic pedagogy into my teaching more thoughtfully to become a more effective educator.

Describe the expected benefits *beyond* the research subjects, if any, to a specific social group or institution.

Answer:
Understanding the benefits of dialogic pedagogy in music instruction could benefit any music teacher hoping to become a more effective educator.

Describe the expected *scientific* benefits of the study.

Answer:
No expected scientific benefits of this study.

Requested Documents
Consent, recruiting, and data collection materials requested in the preceding items should be uploaded here. **Consent/Assent Forms** includes parental consent forms. **Recruiting Materials** includes letters, emails, posts on social media, HIT messages on Mü, scripts for oral recruiting, flyers, etc. **Data Collection Tools** includes surveys, interview protocols, observation protocols, focus group protocols, data requests, etc.

Appendix C

Comprehensive List of Piano Pedagogical Sources from 1720-1970

Year	Author(s)	Original Title	Translated Title
1724	Jean Philippe Rameau	*Méthode sur la mecanique des doigts sur le clavessin*	*Method for Finger Mechanics at the Harpsichord*
1751	Friedrich Wilhem Marpurg	*Die Kunst das Klavier zu spielen*	*The Art of Playing Keyboard Instruments*
1753/1762	Carl Philipp Emanuel Bach	*Versuch über die wahre Art das Clavier zu spielen*	*Essay on the True Art of Playing Keyboard Instruments*
1760	Jean Philippe Rameau	*Code de la musique pratique ou méthodes pour apprendre la musique*	*Practical Music Guide*
1775	Friedrich Wilhelm Marpurg	*leitung zum Klavierspielen der schöneron Ausübung der heutigen Zeit gemäss entworfe*	*Introduction to Playing Keyboard Instruments*
1789	Daniel Gottlob Türk	*Klavierschule oder Answeisung zum Klavierspielen*	*School of Piano/Instruction in Piano Playing*
1796	Francis Linley	*Assistant for the Piano-Forte or Harpischord Containing the Necessary Rudiments for Beginners*	
1798	Louis Adam	*Méthode ou principe général du doigté pour le forté-piano*	*Method or General Principles of the Fingers for Fortepiano*
1803	Muzio Clementi	*Introduction to the Art of Playing the Pianoforte*	
1806	Gottlieb Graupner	*Preliminary Remarks on Fingerings with Examples, Thirty Fingered Lessons, and a Plain Direction for Tuning*	
1817	Butler Challoner	*A New Preceptor for the Pianoforte*	
1817	Justin Heinrich Knecht	*Kleine Theoretische Klavierschule*	*Little Theoretical School of Piano*
1820	John Freckleton Burrowes	*The Piano Forte Primer*	
1826	Benjamin Carr	*The Analytical Instructor for the Pianoforte*	
1828	Johann Nepomuk Hummel	*Ausfèuhrliche theoretische-practische Anweisung zum Pianoforte-Spiel*	*A Complete Theoretical and Practical Course of Instructions on the Art of Playing the Piano Forte Commencing with the Simplest Elementary Principles and Including Every Requisite to the Most Finished Style of Performance*
1830	Friedrich Wilhlem Kalkbrenner	*Méthode pour apprendre le piano a l'aide du guide-mains*	*Method for Teaching Piano with the Help of the Hand Guide*
1837	Ignaz Moscheles and François Joseph Fétis	*Méthode des Méthodes de piano: Traite de l'Art de jouer de cet Instrument, op. 98*	*Method of methods of the Piano*
1839	Carl Czerny	*Complete Theoretical and Practical Piano Forte School from the First Rudiments of Playing to the Highest and Most Refined State of Cultivation; With the Requisite Numerous Exxamples, and Expressly Composed for the Occasion, op. 500*	
1848	Henry Lemoine	*Méthode théorique et pratique pour le piano*	*Theoretical and Practical Method for the Piano*
1848	Theodor Kullak	*Schule des Oktavenspiel*	*School of Octave Playing*
1853	Nathan Richardson	*Modern School for Piano-Forte*	
1859	Nathan Richardson	*Progressive Arrangement, Adaptation and Simplicity, founded upon a New and Original Plan, and Illustrated by a Series of Plates, Showing the Positions of the Hands and Fingers*	
1860	Ferdinand Beyer	*The Beyer Preparatory School*	
1861	Septimus Winner	*Winner's Perfect Guide for the Piano in which the Instructions Are So Clearly and Simply Treated, as to Make It Unneccessary to Require a Teacher*	
1865	Adolph Kullak	*Aesthetik des Klavierspiels*	*The Aesthetics of Pianoforte-Playing*
1865	Sigismund Lebert and Ludwig Stark	*Grosse theoretisch-praktische Klavierschule*	*Grand Theoretical and Practical Piano-School: For Systematic Instruction in all Branches of Piano-Playing, From the First Elements to the Highest Proficiency*
1874	Félix Le Couppey	*De l'enseignement du piano*	*The Teaching of Piano*

Year	Author(s)	Original Title	Translated Title
1884	Carl Buttschardt	*Schule der Klavier-Technik*	*Method of Pianoforte Technique*
1888	Hortense Parent	*Exposition de ma méthode d'enseignement pour le piano*	*Introduction to my Method of Teaching Piano*
1890	William Townsend	*Balance of Arm in Piano Technique*	
1890/1892	William Mason	*Touch and Technic for Artistic Piano Playing*	
1891	C. A. Ehrenfecter	*Technical Study in the Art of Pianoforte-Plyaing (Deppe's Principles)*	
1892/1894	W. S. B. Mathew	*Standard Graded Course of Studies*	
1902	Malwine Bree	*The Groundwork for the Leschetizky Method*	
1903	Tobias Matthay	*The Act of Touch in All Its Diversity: An Analysis and Synthesis of Pianoforte Tone-*	
1905	Rudolph Maria Breithaupt	*Die natürlische Klaviertechnik*	*The Natural Piano Technique*
1905	Friedrich Adolf Steinhausen	*Die physiologischen Fehler und Umgestaltung der Klaviertechnik*	*The Physiological Misconceptions and Reorganization Transformation of Piano Technique*
1911	Harriette Brower	*The Art of the Pianist*	
1913	Tobias Matthay	*Musical Interpretation*	
1916	Dorothy Gaynor Blake	*Melody Book*	
1918	Angela Diller and Elizabeth Quaile	*Diller-Quaile First Solo Book*	
1922	Elisabeth Caland	*Die Ausnützung der Kraftquellen beim Klavierspiel, physiologisch-anatomische Betrachtungen*	
1924	John M. Williams	*First Year at the Piano*	
1925	Dorothy Gaynor Blake	*First Steyps in the Use of the Pedal*	
1925	Otto Ortmann	*The Physical Basis of Piano Touch and Tone: An Experimental Investigation of the*	
1927	Dorothy Gaynor Blake	*Keyboard Secrets*	
1927/1929	Louise Robyn	*Technic Tales,* (Books 1 and 2)	
1927	Thomas Fielden	*The Science of Pianoforte Technique*	
1928	Ernest Schelling and Osbourne McConathy	*Oxford Piano Course*	
1928	Alfred Cortot	*Principi razionali della technica pianistica*	*Rational Principles of Piano Technique*
1929	Ernest Schelling and Osbourne McConathy	*The Beginner's Book for Older Pupils*	
1929	Abby Whiteside	*The Pianist's Mechanism: A Guide to the Production and Transmission of Power in Playing*	
1930	Maria Levinskaya	*The Levinskaya System of Pianoforte Technique and Tone-Colour Through Mental and Muscular Control*	
1932	Louise Robyn	*Teaching Musical Notation with Picture Symbols*	
1932	Karl Leimer and Walter Gieseking	*The Shortest Way to Pianistic Perfection*	
1932	Tobias Matthay	*The Visible and Invisible in Pianoforte Technique, Being a Digest of the Author's Technical Teachings Up to Date*	
1934	James Ching	*Piano Technique: Foundation Principles*	
1936	John Thompson	*Teaching Little Fingers to Play*	

Year	Author(s)	Original Title	Translated Title
1936	Arnold Schultz	*The Riddle of the Pianist's' Finger and Its Relationship to a Touch-Scheme*	
1937	Raymond Burrows, Ella Mason Ahearn, D. Gaynor Blake	*Adult Explorer at the Piano*	
1938	Karl Leimer and Walter Gieseking	*Rhythmics, Dynamics, Pedal and Other Problems in Piano Playing*	
1941	David Hirschberg	*Technic is Fun*	
1941	Raymond Burrows and Ella Mason Ahearn	*The Young Explorer at the Piano*	
1942	Bernard Wagess	*Adult Piano Course*	
1943	John Thompson	*The Adult Preparatory Book*	
1945	Raymond Burrows and Ella Mason Ahearn	*Young America at the Piano*	
1946	John Schaum	*Adult Piano Course*	
1946	Michael Aaron	*Adult Piano Coruse*	
1947	June Weybright	*Technic for Pianists*	
1950	John Schaum	*Technic Tricks*	
1950	Raymond Burrows	*Piano Series for the Older Beginner*	
1952	Luigi Bonpensiere	*New Pathways to Piano Technique: A Study of the Relations Between Mind and Body with Special Reference to Piano Playing*	
1953	Maxwell Eckstein	*Adult Piano Book*	
1953	Louise Robyn	*Keyboard Town*	
1954	Guy Maier and Herbert Bradshaw	*Thinking Fingers*	
1954	Cora B. Ahrens and G.D. Atkinson	*For All Piano Teachers*	
1955	Frances Clark	*Time to Begin*	
1955	Abby Whiteside	*The Indespensibles of Piano Playing*	
1956	Ada Richter	*The Older Student*	
1956	William S. Newman	*The Pianist's Problems: A Modern Approach to Efficient Practice and Musicianly Performance*	
1957	Frances Clark	*Look and Listen*	
1958	Frank Merrick	*Practicing the Piano*	
1962	Otto Ortmann	*The Physiological Mechanics of Piano Technique: An Experimental Study of the Nature of the Muscular Action as Used in Piano Playing, and the Effects Thereof upon the Piano Key and Piano Tone*	
1965	József Gát	*The Technique of Piano Playing*	
1967	Heinrich Neuhaus	*The Art of Piano Playing*	
1967	Raymond Thiberge	*Une Nécessaire révolution pédagogique dans l'enseignement musical, le pianiste, sa technique manuelle, sa technique cérébrale*	*The Pianist: His Manual Technique, His Mental Technique*
1967	George Kochevitsky	*The Art of Piano Playing: A Scientific Approach*	
1970	William Mason	*Memories of a Musical Life*	

Appendix D

Pedagogical Methodologies Used in Historical Keyboard Sources

Pianist/Pedagogue	Source	Date	Collaboration	Collaborative Creativity	Dialogic Pedagogy	Behaviorism	Cognitivism	Constructivism	Social Constructivism	Cognitive Apprenticeship	Transmission model	Master-apprentice model	Student voice	Metacognition	Student agency	Student Self-Efficacy	Physiologic/Technique-based	Etude
J.S. Bach	Clavier-Buchlein vor Wilhelm Friedemann Bach	1720								✓						✓	✓	
C.P.E. Bach	Essay on the True Art of Playing Keyboard Instruments	1753/1762				✓				✓	✓					✓	✓	
Daniel Gottlob Türk	School of Clavier	1789			✓		✓				✓	✓		✓		✓	✓	
Muzio Clementi	Introduction to the Art of Playing the Pianoforte	1803								✓						✓	✓	
Johann Baptist Cramer	Studio per il pianoforte (84 Etudes - 2 sets of 42)	1804/1810								✓						✓	✓	
Muzio Clementi	Gradus ad Parnassum	1817-26								✓						✓	✓	
Ignaz Moscheles	Op. 70 Studien	1825-6								✓						✓	✓	
Johann Nepomuk Hummel	A Complete Theoretical and Practical Course	1828			✓			✓	✓		✓	✓		✓		✓	✓	
Ignaz Moscheles	Charakterististische studien op. 96	1836-7								✓						✓	✓	
Frédéric François Chopin	Op. 10 and Op. 25	1833/1837														✓	✓	
Robert Schumann	Op. 68 Album for the Young	1839															✓	
Carl Czerny	Op. 500 Complete Theoretical and Practical Piano Forte School	1839								✓						✓	✓	
Frédéric François Chopin	Chopin: Pianist and Teacher	1840s			✓	✓					✓	✓		✓	✓	✓		
Robert Schumann	Advice for Young Musicians	1839						✓				✓	✓	✓				
Amy Fay - Liszt	Music Study in Germany	1897		✓				✓			✓	✓		✓				
Amy Fay - Kullak	Music Study in Germany	1897								✓	✓							
Amy Fay - Deppe	Music Study in Germany	1897			✓					✓		✓		✓	✓	✓		

Pianist/Pedagogue	Source	Date	Collaboration	Collaborative Creativity	Dialogic Pedagogy	Behaviorism	Cognitivism	Constructivism	Social Constructivism	Cognitive Apprenticeship	Transmission model	Master-apprentice model	Student voice	Metacognition	Student agency	Student Self-Efficacy	Physiologic/Technique-based	Etude	
Friedrich Adolf Steinhausen	The Physiological Errors and the Reshaping of Piano Technique	1905								✓						✓			
Rudolph Maria Breithaupt	The Natural Piano Technique	1905-1912								✓						✓			
Harriette Brower	The Art of the Pianist: Technic and Poetry in Piano Playing for Teacher and Student	1911									✓					✓			
Tobias Matthay	Musical Interpretation	1912	✓	✓	✓		✓	✓		✓			✓		✓	✓			
Harriette Brower	Piano Mastery: Talks with Master Pianists and Teachers	1915									✓					✓			
Theodore Leschetizky	Leschetizky as I Knew Him - Ethel Newcomb	1921	✓	✓	✓			✓	✓		✓	✓		✓					
Otto Rudolph Ortmann	The Physical Basis of Piano Touch and Tone	1925								✓						✓			
Thomas Fielden	The Science of Pianoforte Technique	1927								✓						✓			
Alfred Cortot	Rational Principles of Piano Technique	1928					✓	✓		✓						✓			
Otto Rudolph Ortmann	The Physiological Mechanics of Piano Technique	1929								✓						✓			
Arnold Schultz	The Riddle of the Pianist's Finger	1936								✓						✓			
Heinrich Neuhaus	The Art of Piano Playing	1958/1973	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
George Kochevitsky	The Art of Piano Playing: A Scientific Approach	1967								✓						✓			
Raymond Thiberge	The Pianist: His Manual Technique, His Mental Technique	1967								✓						✓			
Max Camp	Developing Piano Performance: A Teaching Philosophy	1981					✓	✓			✓	✓		✓	✓				
Max Camp	Teaching Piano: Synthesis of Mind, Ear and Body	1992					✓	✓			✓	✓		✓		✓			

Appendix E

Student Questionnaire

Participant Number:

Age:

How many months/years have you been taking piano lessons?

Instructions: Check the box that describes you best. I am interested in your learning process and practice routine. Please do not check a box of what you *think* you should do!

1. What helps you learn and understand best during lessons?

	Not at all helpful	A little bit helpful	Somewhat helpful	Very helpful	Extremely Helpful
Teacher plays piece for me					
Teacher demonstrates technique					
Teacher explains technique					
When my teacher asks me what I focused on during my practice					
When my teacher asks me what I think about my playing/progress					
When my teacher gives me feedback on what I've played					
When my teacher asks me questions about what is hard about the piece					

When my teacher asks me if an exercise was "easy, medium, or hard", or asks me to rate how comfortable I feel with an exercise on a scale of 1 to 10.					
When my teacher asks me to identify tricky sections of a piece or exercise					
When my teacher asks me what I want to do next during the lesson					
When my teacher gives me advice for future practice					
When my teacher asks me questions on how comfortable I feel when I play					
When my teacher asks me if what she has explained makes sense to me					
Asking questions of the teacher					
When my teacher asks me what I like about the piece					
When my teacher asks me how I want the piece to sound (interpretation of piece)					

When my teacher asks me to describe the emotion or mood of a piece.					
When I ask questions and discuss my progress while I try a technique/passage					
When my teacher discusses progress on a technique/passage while I try it					

2. What helps you learn and understand best when you are practicing on your own (not during a lesson)?

	Not at all helpful	**A little bit helpful**	**Somewhat helpful**	**Very helpful**	**Extremely helpful**
Remembering what my teacher and I discussed during lessons					
Noting what I want to talk to my teacher about next lesson.					

3. **How encouraged do you feel when you can bring up problems with your teacher and solve them together?**

Not at all encouraged	Not really encouraged	Undecided	Somewhat Encouraged	Very encouraged

4. **How encouraged do you feel when you discuss your progress during lessons?**

Not at all encouraged	Not really encouraged	Undecided	Somewhat encouraged	Very encouraged

5. **My piano lessons are a time when I can ask questions and make suggestions about how I can learn better.**

Strongly disagree	Disagree	Undecided	Agree	Strongly agree

6. **When I hit a roadblock in a piece I'm working on, I feel:**

Not at all confident	A little bit confident	Neutral	Somewhat confident	Very confident

7. **When you hit a roadblock in a piece you are working on, what helps you keep feeling eager and ready to learn?**

	Not at all eager and ready to learn	A little bit eager and ready to learn	Neutral	Somewhat eager and ready to learn	Very eager and ready to learn
Discussing roadblock and possible solutions					
Asking my teacher questions					
Teacher asks me questions					
When my teacher has me work on technique/passage repeatedly without interruption					
When my teacher gives me feedback on my progress while I am practicing a technique/passage					
Teacher demonstration of technique/passage					

8. **Please write a few sentences about what helps you feel eager and ready to learn new music by yourself (outside of a lesson).**

9. **Has your confidence in your ability to learn and play piano changed over the course of the last year?**

Not at all	A little bit	Undecided	Somewhat	Very much

10. **Please share any additional thoughts you have about the way you and your teacher talk about your learning piano during lessons.**

Appendix F

Example of Coded Transcript

Student 3 – Lesson 8

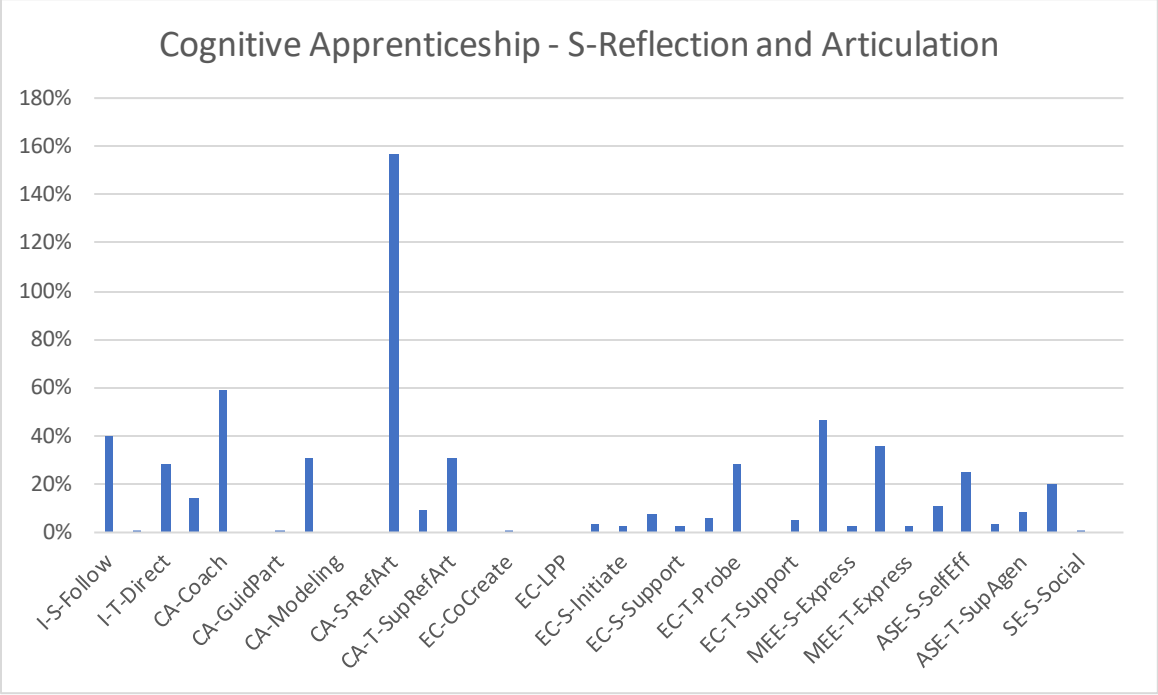
	Instruction	Cognitive Apprenticeship	Exploration/Co-construtuion	Metacog- express/eval	Agency/self-efficacy	Social-emotional
0:00:04.0 Rebecca: So... And you've had a lot going on. So what have you been able to do?		T-support ref and art				
0:00:10.7 Student 3: So I've been doing the Arpeggios quite a bit.		S-ref and art				
0:00:13.3 Rebecca: Nice.						
0:00:14.2 Student 3: And those are actually really fun to play!		S-ref and art		S-eval		
0:00:17.3 Rebecca: They are! Yeah, they are fun.						
0:00:19.7 Student 3: And it's funny, like hearing that sound, especially doing like the two octaves. There's a part in like Final Fantasy music, that's like really iconic. That sounds, I guarantee is just literally like a long Arpeggio going up and backed down, which is why when I started playing, I was like, "that sounds really similar".			S-initiate			S-social
0:00:39.8 Rebecca: Awesome, so now you know... Now, you know the secret. It's like Arpeggios sound super fancy. They're not that hard. But they sound cool.						
0:00:46.4 Student 3: Yeah!						
0:00:46.7 Rebecca: Yup, yup.						
0:00:47.4 Student 3: So I did that with... I practiced like one octave with hands and separate, and then I did one octave with hands together, and I was doing it both like going in the same direction and then doing it in like opposite direction.		S-ref and art				
0:01:02.7 Rebecca: Nice.						
0:01:03.6 Student 3: And then two octaves, I've been just doing hands separate. It's still... I'm not like super consistent at it too... Like... Yeah, where it's like, the jump is, it always feels super long still where I'm like, Oh, it's just like I'm trying to drill it in, but the two octaves has been, like, tough for me...		S-ref and art		S-eval	S-self-efficacy lack	

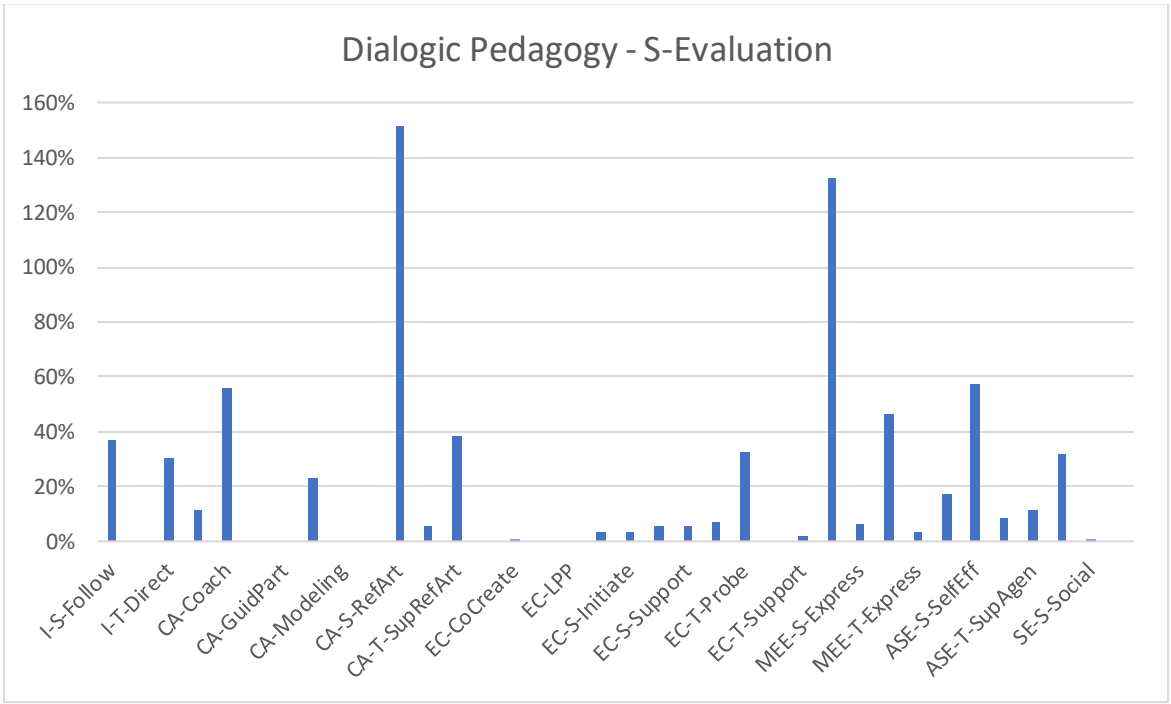
	Instruction	Cognitive Apprenticeship	Exploration/Co-construtution	Metacog- express/eval	Agency/self-efficacy	Social-emotional
0:01:21.7 Rebecca: That's... Oh yeah, that's definitely, I mean, a lot harder than the one octave because of the big... You're traversing such a big distance there. But I'll... I have some tips and tricks, so I'll watch you do it and give you some intel on that, and probably what's happening is that, your tempo, when you're doing two octaves just needs to be pulled back a little bit, most likely. And I also have you do some, like, stretching stuff, like flexibility stuff, that'll also like help... It'll help your body memorize the distance, and so it doesn't feel like you're speculating, it feels like you like you know, Oh yeah, that's how big that one is, this is how big this one is. Okay, so we got good Arpeggio work going, and then how about our piece?		coaching, T-support ref and art	T-probe			
0:02:08.7 Student 3: So I feel like I've actually made a decent dent in it.		S-ref and art		S-eval	S-self-efficacy	
0:02:12.3 Rebecca: Nice!						
0:02:12.6 Student 3: These, like, last few parts that I am tryin to learn on the piece are just like really difficult for me. So it's been like a ton of like... Just practice, practice, practice.		S-ref and art				
0:02:25.4 Rebecca: Right.						
0:02:26.6 Student 3: This has been super difficult. But, I can... I can't play super fluently, but I was like, at least kind of got it down from, and this is with both hands. I can build up to... I can go up to 32, measure 32.		S-ref and art		S-eval		
0:02:46.2 Rebecca: Great, good for you.				T-eval	T-support self-efficacy	
0:02:47.4 Student 3: Like... Well, actually, I guess I could play the whole thing. But, yeah up to 32, I can do both hands. Like I get kind of slowed down a bit in between there, but I can, at least like... I feel like I am hitting the keys when I am supposed to at-least!		S-ref and art		S-eval		
0:03:00.4 Rebecca: Yes, yes, yes, yeah. You've got the choreography and the mechanics of where things are supposed to be and when. Good.				T-eval		

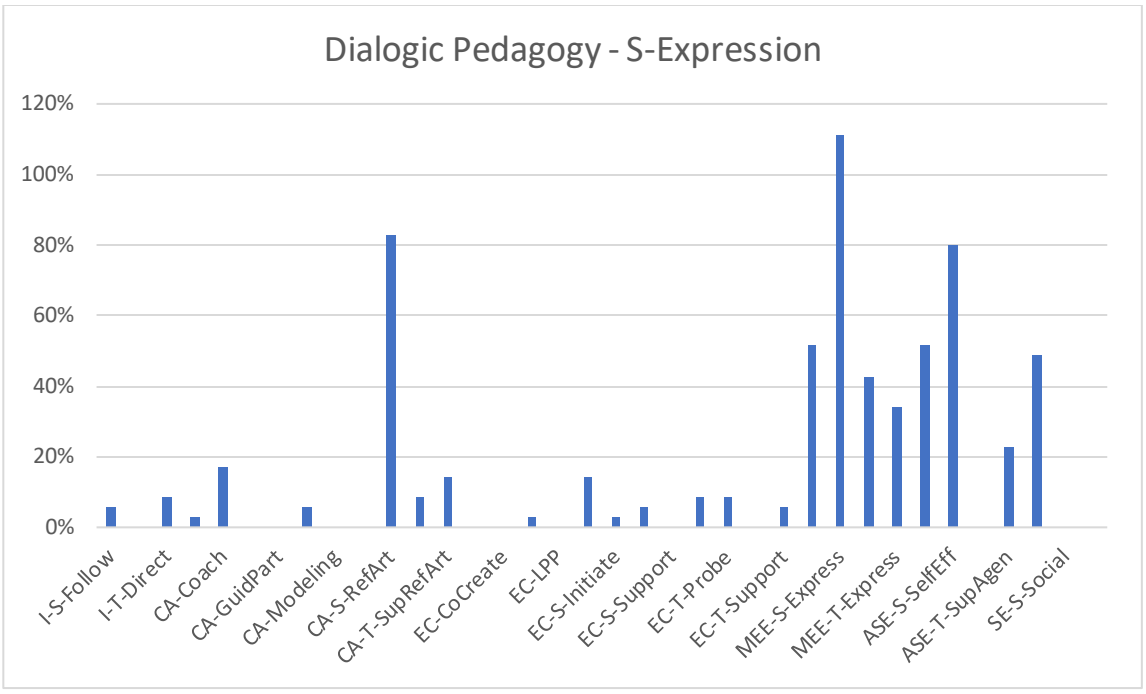
	Instruction	Cognitive Apprenticeship	Exploration/Co-construction	Metacog- express/eval	Agency/self-efficacy	Social-emotional
0:27:30.9 Rebecca: So let's try that section again and just kinda ease into it, play it like... Luxuriously slow.	T-direct	coaching				
0:27:37.7 Student 3: Okay.						
[music]	S-follow					
0:28:15.4 Rebecca: Yeah, overall smoother, for sure.				T-eval		
0:28:19.3 Student 3: Yeah. Yeah, that helps a lot.		S-ref and art				
0:28:21.4 Rebecca: Yeah. Yeah, yeah. [chuckle]						
0:28:23.6 Student 3: Yeah yeah!						
0:28:24.0 Rebecca: One of those things that... It always works, it always helps. The only one I want to check on... I'm trying to decipher if the transition between measures 30 to 31... There's a teeny bit of a lag happening there, and I can't tell if it's a right-hand issue, a left-hand issue or just a hands together issue. So... Do you have any thoughts on that moment?		T-support ref and art	T-probe			
0:28:48.3 Student 3: I know it's my right hand because I always... I get mixed up when... Kind of to jump to the A, C#, B, and then I'll forget if I need to go to F# or D#, so... Where I'm like, "Is this one the F#?" And then I jump to G, B, G# because then it happens again where I... Right after I do A, C#, E and then I go G#.		S-ref and art		S-eval		
0:29:10.8 Rebecca: Oh, I understand. Yeah, you're right, it totally does. Okay, good observation on your part. So the way I would be thinking about the first one in 30 to 31 is that I'm looking at the upper voice, so remember how we talked about the voicing of stems in different directions, the top voice with the high stem E, F#, G, I just think of that as a scale. And so I'm thinking, "Okay, these go in order." So I get...		modeling				
[music]	T-model					
0:29:39.8 Rebecca: I'm thinking of that as a chronological kind of upward trajectory. It doesn't help that it negates it a second later and it goes to the opposite where it goes... It jumps around, but maybe you can think like, "Okay, first time I do it, I go in order. The first time I do it, I just walk up. Second time I jump over."		modeling				

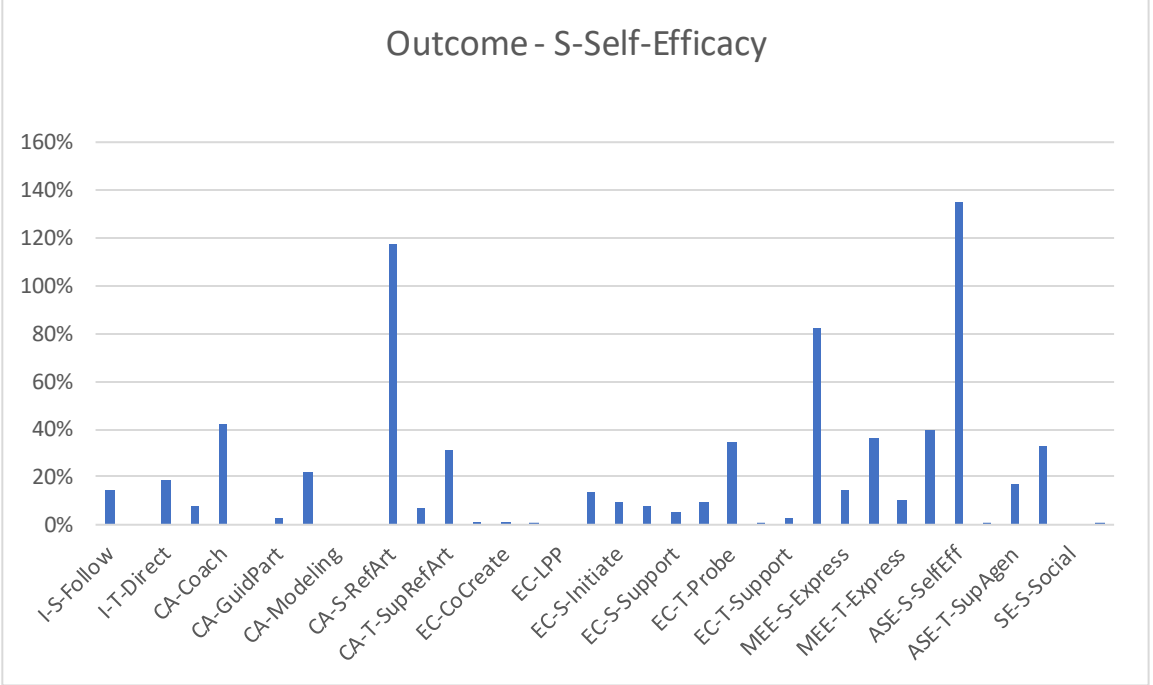
Appendix G

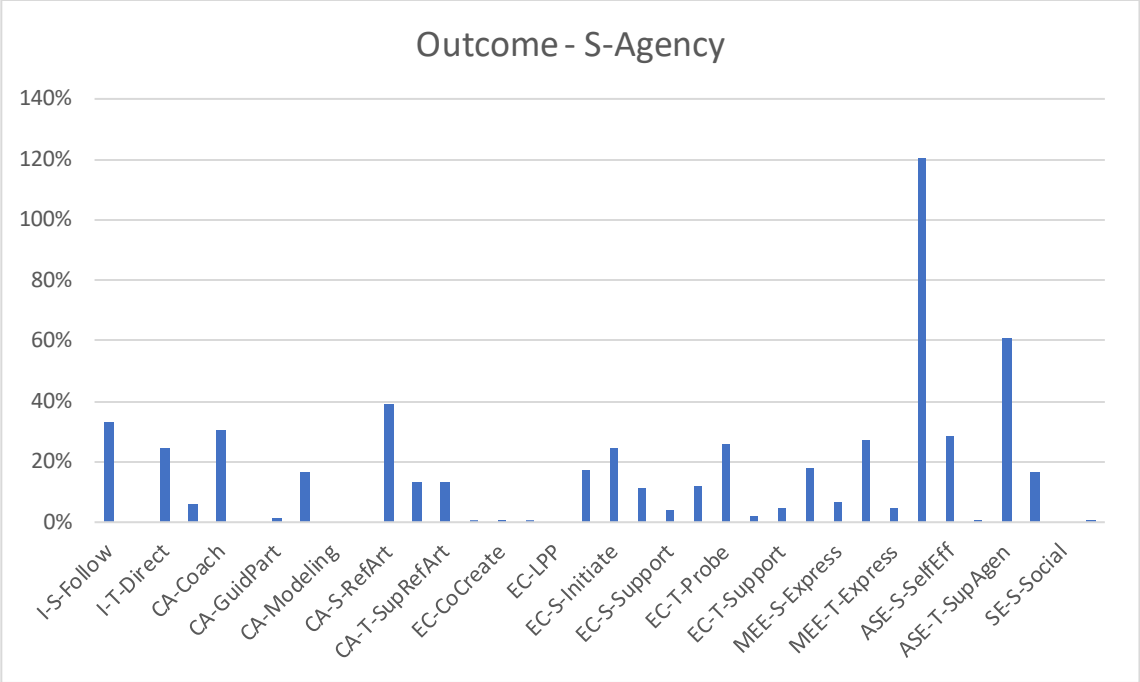
Data Co-occurrence Visualizations

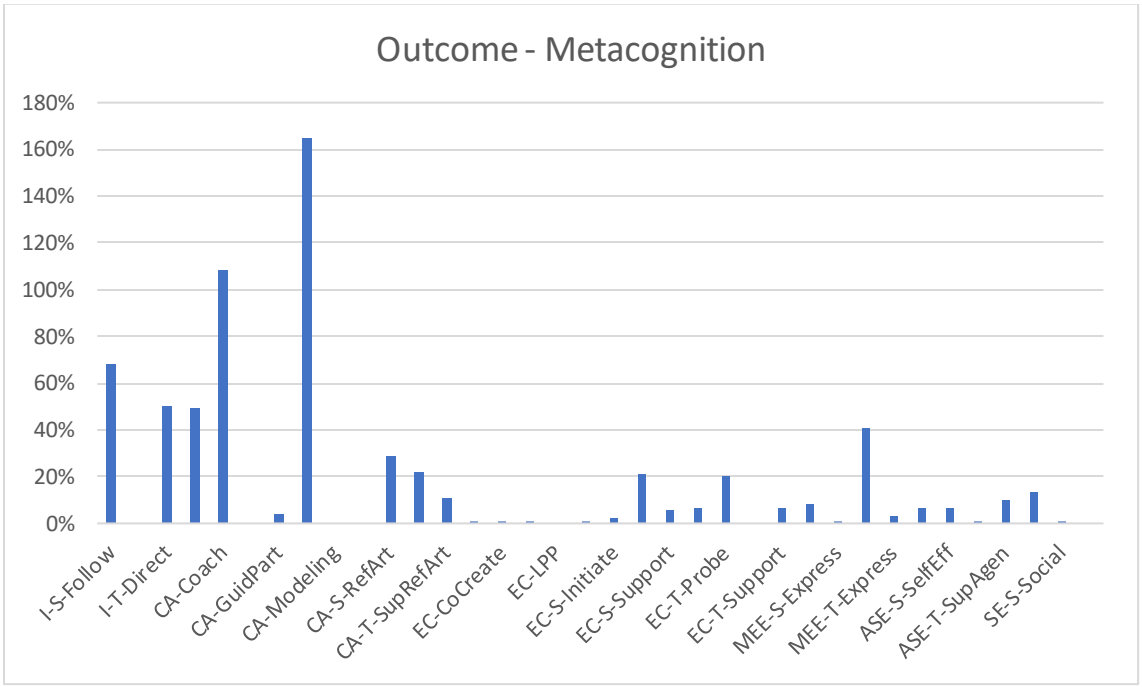





Dialogic Pedagogy - S-Expression
120%
100%
80%
60%
40%
20%
0%
I-S-Follow
I-T-Direct
CA-Coach
CA-GuidPart
CA-Modeling
CA-S-RefArt
CA-T-SupRefArt
EC-CoCreate
EC-LPP
EC-S-Initiate
EC-S-Support
EC-T-Probe
EC-T-Support
MEE-S-Express
MEE-T-Express
ASE-S-SelfEff
ASE-T-SupAgen
SE-S-Social


Outcome - S-Self-Efficacy
160%
140%
120%
100%
80%
60%
40%
20%
0%
I-S-Follow
I-T-Direct
CA-Coach
CA-GuidPart
CA-Modeling
CA-S-RefArt
CA-T-SupRefArt
EC-CoCreate
EC-LPP
EC-S-Initiate
EC-S-Support
EC-T-Probe
EC-T-Support
MEE-S-Express
MEE-T-Express
ASE-S-SelfEff
ASE-T-SupAgen
SE-S-Social


Outcome - S-Agency
140%
120%
100%
80%
60%
40%
20%
0%
I-S-Follow
I-T-Direct
CA-Coach
CA-GuidPart
CA-Modeling
CA-S-RefArt
CA-T-SupRefArt
EC-CoCreate
EC-LPP
EC-S-Initiate
EC-S-Support
EC-T-Probe
EC-T-Support
MEE-S-Express
MEE-T-Express
ASE-S-SelfEff
ASE-T-SupAgen
SE-S-Social


Outcome - Metacognition
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
I-S-Follow
I-T-Direct
CA-Coach
CA-GuidPart
CA-Modeling
CA-S-RefArt
CA-T-SupRefArt
EC-CoCreate
EC-LPP
EC-S-Initiate
EC-S-Support
EC-T-Probe
EC-T-Support
MEE-S-Express
MEE-T-Express
ASE-S-SelfEff
ASE-T-SupAgen
SE-S-Social

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