Exploring the Relationships Between PreK-6 Music Teachers' Engagement in Professional Development and Their Self-Efficacy

by

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ABSTRACT

This study applied the Social Cognitive Theory (SCT) to explore the sources of self-efficacy and professional development activities that are most predictive of PreK-6 music teachers' efficacious beliefs. This study also compared teacher efficacy levels across different groups. The target population for this study was PreK-6 music teachers in the state of Arizona. The survey was disseminated through the National Association for Music Education (NAfME), the Arizona chapters of the American Orff-Schulwerk Association (AOSA), the Organization of American Kodály Educators (OAKE), and snowball sampling via a Facebook message. Of the 660 teachers invited to participate, 92 (13.94%) voluntarily completed the survey. Results from simultaneous multiple regression analyses indicated that teacher efficacy for instructional strategies was best predicted by their mastery experience, followed by vicarious experience, while mastery experience was the strongest predictor of teacher efficacy for student engagement. Additionally, the acquisition of method certification and watching teaching resources via YouTube were significant predictors of teacher efficacy for instructional strategies, while observation hours per year was the only predictor of teacher efficacy for student engagement. Results from factorial between-subjects ANOVAs indicated that teaching experience had a significant main effect on teacher efficacy for instructional strategies and student engagement. However, neither main teaching areas nor the combined effects of main teaching areas and teaching experience had a significant effect on teacher efficacy for instructional strategies and student engagement. Results from independent-samples *t*-test analyses showed that school types had a significant effect on teacher efficacy for student engagement, while no differences were found between school types

regarding teacher efficacy for instructional strategies. The analysis of open-ended comments identified themes related to factors that strengthen or weaken participant teacher efficacy, the impact of the COVID-19 pandemic on teacher efficacy, the types of professional development activities that they engaged during the year, the most effective professional development activities for enhancing teacher efficacy. Findings of this study have theoretical and practical implications for school principals, school administrators, policy makers, music teacher educators, and music teachers to promote and support music teachers' self-efficacy.

DEDICATION

This dissertation is dedicated to all PreK-6 music teachers in the state of Arizona. Your teaching practice is significant. Your confidence is significant. Your efficacious beliefs are significant. You are significant.

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CHAPTER 1

OVERVIEW OF THE STUDY

Introduction

Self-efficacy is one of the psychological characteristics related to teacher effectiveness (Barnes, 1998; Klassen & Tze, 2014; Magno & Sembrano, 2008; Steele, 2010). Self-efficacy, for purposes of this study, is defined as one's belief in their personal capabilities to complete a task and accomplish any set of related outcomes (Bandura, 1997). The term confidence differs somewhat from self-efficacy in that it mirrors an individual's certainty of their beliefs, but it can also be vague. As Bandura (1997) noted, "I can be supremely confident that I will fail at an endeavor" (p. 387), suggesting that confidence can represent the firmness of beliefs in either a negative or positive direction. In contrast, self-efficacy includes both one's certainty levels of capability and the strength of their beliefs. Bandura (1997) claimed that one's behavior and cognition rely on one's self-efficacy. Furthermore, perceived self-efficacy is associated with one's choices, motivations, and emotions, resulting in positive or negative consequences (Bandura, 1997). Without strong efficacious beliefs, individuals may lose their aspirations and undermine their own efforts to achieve their goals when facing perceived obstacles (Bandura, 1997). For example, a music teacher with a low level of efficacious belief may think, "No matter how hard I try, I won't be able to motivate my students to engage in musical activities. It feels like my effort won't make a difference in helping them learn."

Over the past few decades, efficacious beliefs have been explored in educational psychology, especially in the teaching domain (Hoy & Spero, 2005; Tschannen-Moran &

Hoy, 2001). Teacher self-efficacy is associated with indicators of teaching performance and student achievement outcomes (Klassen & Tze, 2014; Zee & Kooman, 2016). Teachers with a high sense of self-efficacy are more likely to provide new pedagogical methods that may better meet the needs of individual learners (Allinder, 1994; Guskey, 1988; Zee & Koomen, 2016) and motivate students to engage in classroom activities (Holzberger et al., 2013). Researchers have also identified characteristics and behaviors of teachers that are related to levels of efficacious beliefs. Teachers with higher senses of efficacious beliefs are more likely to report greater job satisfaction (Edinger & Edinger, 2018) and remain in the teaching profession longer (Hancock, 2008; Hughes, 2012; Zee & Koomen, 2016) than teachers with low efficacious beliefs. The demand for new teachers, resulting from teachers who leave the teaching profession early, causes social and economic issues. The United States (US) spends more than $2 billion annually on teacher turnover and attrition (Haynes, 2014), and the demand for new teachers, resulting from teachers who leave the teaching profession early, causes social and economic strain. Thus, teachers' efficacious beliefs have significant impacts not only on students' learning outcomes but also on society.

According to Bandura (1997), efficacious beliefs are constructed from four primary sources of information: (a) mastery experiences, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological and affective state. Mastery experiences are the strongest source of self-efficacy. People who have performed a task successfully are more likely to have confidence in carrying out a similar task. The second source of self-efficacy, vicarious experiences, occurs as individuals gain confidence in completing a task through observation of others' successful achievement of a similar task. The third

source of self-efficacy, verbal persuasion, occurs when someone convinces others that they can accomplish a task. The fourth source of self-efficacy is the individual's physiological and affective state. For example, physical exhaustion (e.g., fatigue and pain) and negative emotions (e.g., stress) can lower levels of self-efficacy. These four sources of self-efficacy— enactive, vicarious, social, and/or physiological—convey information from which individuals construct their efficacy beliefs (Bandura, 1997).

Self-efficacy of music performance has been a frequently debate issue (Dempsey & Comeau, 2019; Hendricks, 2014, 2016; Hendricks et al., 2015; Hewitt, 2015; Lewis & Hendricks, 2022; Lewis et al., 2021; Ritchie & Williamon, 2012; Zelenak, 2015). Previous researchers have explored the relationship between self-efficacy and its sources (Lewis & Hendricks, 2022; Lewis et al., 2021; Hendricks, 2014, 2016; Zelenak, 2015), self-evaluation (Hewitt, 2015), and music performance anxiety (Dempsey & Comeau, 2019). Previous research on the four sources of self-efficacy for music performance has produced mixed findings. Some studies suggest that mastery experience is the strongest indicator of self-efficacy in music performance (Zelenak, 2015), whereas others have highlighted that physiological and affective states are the most influential factor affecting self-efficacy for music performance (Lewis & Hendricks, 2022). Besides, verbal persuasion, such as demonstrated belief in student potential or encouragement, was frequently cited as a factor influencing self-efficacy for music performance among collegiate music students (Lewis et al., 2021). High self-efficacy for music performance has also been associated with low levels of music performance anxiety (Dempsey & Comeau, 2019) and better musical performance quality (Hewitt, 2015; Ritchie &

Williamon, 2012). However, this current study focuses on teacher efficacy rather than self-efficacy for music performance.

Mastery experiences for teachers may arise from past successful authentic teaching practices which positively affect current efficacious beliefs in teaching their domain. Vicarious experiences for teachers may result from observing other teachers' successes or failures. Verbal persuasion for teachers may occur when receiving positive or negative comments on their teaching practices. Physiological and affective state for teachers may also determine increasing or decreasing efficacious beliefs in teaching when teacher feel energetic or fatigued concerning their teaching practices.

In the field of music education in the US, researchers have investigated the self-efficacy or confidence of music education undergraduate students (Fisher et al., 2021; Prichard, 2017; Regier, 2021a) and have, collectively, found: (a) significant associations between music performance efficacy and teacher efficacy (Fisher et al., 2021), (b) impacts of professional teaching experiences—giving private lessons—on teacher efficacy (Regier, 2021a), (c) correlations between teacher efficacy and commitment to teaching music (Prichard, 2017), and (d) relatively stronger music teaching efficacy than classroom management efficacy levels (Prichard, 2017). In another study, Bernhard and Stringham (2016) found that senior undergraduate students have higher confidence in teaching improvisation than freshmen, sophomores, or juniors (Bernhard & Stringham, 2016). In contrast, in another educational context, specifically Turkey's educational system, researchers discovered that first-year undergraduate students in pre-school/primary school education departments reported lower sense of self-efficacy in music teaching and musical performance than students past the first year (Burak, 2019).

Male undergraduate students were found to be more likely to have a higher sense of self-efficacy in teaching music than female undergraduate students (Kaleli, 2020). Collectively, these findings suggest that the undergraduate years in music education are a critical period during which pre-service music teachers develop their efficacious beliefs in teaching music as well as classroom management.

In recent years, researchers have also examined links between in-service music teachers' efficacious beliefs and predictor variables (Biasutti et al., 2021; Hanson, 2017; Regier, 2019a; West & Frey-Clark, 2019). They have found, for example, that teacher efficacy may or may not differ by gender (Biasutti et al., 2021; Regier, 2019a) and that teachers in urban settings were more likely to report higher levels of self-efficacy related to their ability to use and combine existing resources in innovative ways, while also reporting less support for their innovations than suburban teachers (Hanson, 2017).

Research about the influence of years of teaching experience on teacher efficacy has shown mixed results. Part of the problem in this body of literature is that researchers have defined early, middle, and late career teachers differently, and the demarcation of years of teaching experience is unclear in some studies (Regier, 2019b, 2021b; West & Frey-Clark, 2019). In the subsequent studies, Regier (2019b, 2021b) supported this finding, although the definition of an early-career music teacher was slightly different using different samples: (a) instrumental teachers (Regier 2019b) and (b) high school band directors (Regier, 2021b). Regier (2019b, 2021b) defined early career as a teacher within the first seven years. Regier found that instrumental teachers (n = 139) with more than 23 years of teaching experience were more likely to have higher senses of teacher efficacy than all other groups of music teachers (early-career, 1–7 years; mid-career, 8–

23 years). Consistently, Regier (2021b) also uncovered that late career (more than 23 years, *n* = 139) high school band director group were more likely to report higher self-efficacy for teaching strategies than midcareer (8-23 years, *n* = 263) and early-career directors (1-7 years, *n* = 206). Likewise, West and Frey-Clark (2019) found that music teachers with more than 10 years of teaching experience (*n* = 88) reported higher teacher efficacy than those with less than 10 years of teaching experience (*n* = 55). In general, fewer years of teaching experience is related to a lower sense of teacher efficacy. Given that the level of teacher efficacy can have a direct impact on whether a teacher remains or leaves the teaching profession (Ingersoll & Smith, 2003; Perrachione et al., 2008), years of teaching experience might be a key factor in predicting commitment to teaching.

While professional development experiences may be related to teacher self-efficacy, the influence of participation in professional development activities on teacher efficacy remains unknown. Professional development activities, including teacher workshop participation (Roulston et al., 2005; Stark, 2021) and acquisition of certifications in specific methods (Svec, 2017) can have significant impact on the development of a teacher's knowledge and teaching practice (Hookey, 2002). Professional development may be of importance to teacher efficacy because professional development activities may boost teacher confidence through experiences associated with the four sources of self-efficacy—mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective state. For example, teachers may increase their efficacious beliefs in teaching music by observing, in a professional development experience, others' successful achievement of a teaching task that they themselves want to perform in the future—a vicarious experience. Or, teachers may build their efficacious

beliefs in teaching music by receiving positive feedback from others (verbal persuasion) or accomplishing successful teaching performances in professional development workshops (master experience).

A broad range of professional development experiences are available to teachers, such as workshops and courses, online and print resources, and mentoring. However, the links between the types of participation in professional development activities and teacher efficacy has not been studied thoroughly. In this study of teacher efficacy among Pre-Kindergarten through Grade 6 (PreK-6) music teachers, the relationship between teacher efficacy and predictor variables (e.g., the total number of hours spent participating in professional workshops per year, the total number of method certifications acquired, the total number of hours spent watching teaching resources via YouTube per month, the total number of hours spent listening to music educators' podcasts per month, the total number of music educators' academic journal articles read per month, the total number of hours spent observing other teachers per year) may provide a more nuanced picture of how teacher efficacy can be developed. Moreover, the results of this study may provide empirical bases for guiding the design of professional development programs and workshops to ensure that the best influential factors contribute to PreK-6 music teachers' efficacious beliefs in teaching music. Furthermore, local school district professional development coordinators or music education faculties may take into consideration specific expectations to promote teacher efficacy gleaned from an examination of analysis of open-ended comments about what PreK-6 music teachers need for building their teacher efficacy.

Purpose of Study

The primary purpose of this study was to examine the link between PreK-6 music teachers' efficacious beliefs in teaching music and predictor variables associated with the four sources of self-efficacy and professional development experiences. Based on PreK-6 music teachers' self-reports of efficacious beliefs, the secondary purpose of this study was to explore how those beliefs may differ by teachers' main teaching areas, years of teaching experience, combinations of these two variables, and school types (e.g., urban/rural Title I school versus urban/rural Non-Title I school).

Theoretical Framework: Social Cognitive Theory

Social Cognitive Theory (SCT) proposed by Albert Bandura is the primary theoretical lens for this study. SCT is a means of describing or understanding human behavior. Initially, SCT drew from Social Learning Theory (SLT) in the 1960s. A key premise of SLT is that the social context of learning results from the interactions with and observation of others (Bandura, 1977). Observational learning, which is described as a "natural tendency for humans to imitate what they see others do" (Hergenhahn & Olson, 1997, p. 326), functions as the foundation of SLT. Conceptions of observational learning originated in behaviorism, which was firmly based on stimulus-response and reinforcement theory in the 1940s (Gibson, 2004). Essentially, behaviorist researchers believed that imitation and reinforcement were crucial to the process of learning (Hergenhahn, & Olson, 1997). However, in 1986, Bandura (1986) relabeled SLT as SCT to differentiate his approach from existing behaviorist theories. In his writings, Bandura highlighted the two main aspects of SCT: (a) social and (b) cognitive. A central element of SCT is the role of social context as a setting for learning, since learning occurs when

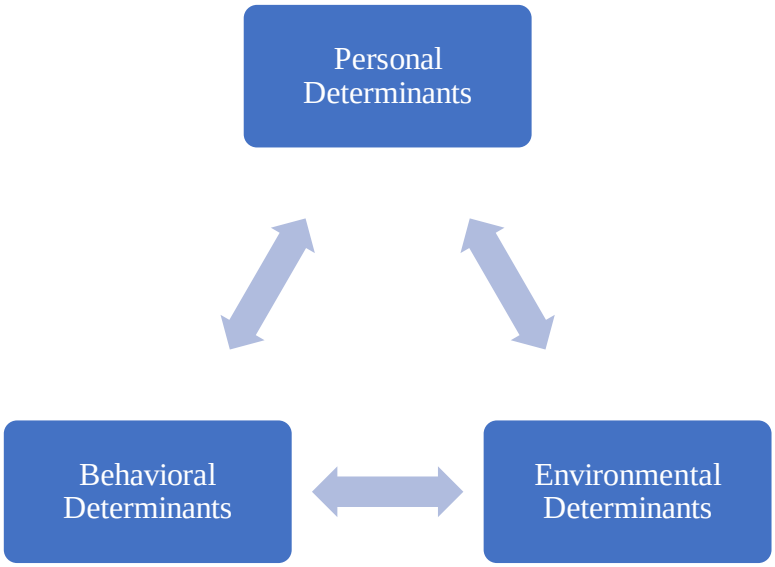
one observes others' actions (Bandura, 1986). Bandura also posited that individuals cognitively process information while observing the behavior of others. Similar to Bandura's earlier SLT, SCT also emphasized the importance of observational (vicarious) learning (Bandura, 1986). In vicarious experience, the potential modeling and observation of the desired behavior can take place in three different ways: (a) through a live demonstration by a peer or teacher; (b) through verbal instruction, in which behaviors are explained in detail then demonstrated; or (c) through symbolic modeling, in which behaviors are portrayed in television, movies, or other media (Bandura, 1986).

As a principle of SCT, *triadic reciprocal determinism* refers to the notion that bi-directional relationships exist between cognition (the perception of being able to carry out the task), environment (the setting), and behavior (the actual task being carried out) (Bandura, 1986, 2012). (see Figure 1). Environmental determinants—social models, instruction, feedback, standards, rewards, opportunities for self-evaluation—pertain to the setting in which a particular behavior takes place and affect both behavioral and personal determinants (Bandura, 1997; Schunk & Usher, 2019). Personal determinants that influence and are influenced by both environmental and behavioral factors including cognitions, beliefs, perceptions, and emotions (Schunk & Usher, 2019). As such, formulating a triangular relationship between personal, environmental, and behavioral factors that determine a behavior, reciprocal determinism also suggests that the three factors vary depending on the context (Bandura, 1986). Consequently, the interplay of personal, environment, and behavior influences results in triadic reciprocity, whereby individuals can be either/both products or/and producers of their environments (Bandura, 2005; Wood & Bandura, 1989). However, each of these sets of determinants exerts a

different degree of influence depending on different circumstances and individuals (Bandura, 1978).

Figure 1

Schematization of Triadic Reciprocal Determination (Bandura, 2012, p. 12)

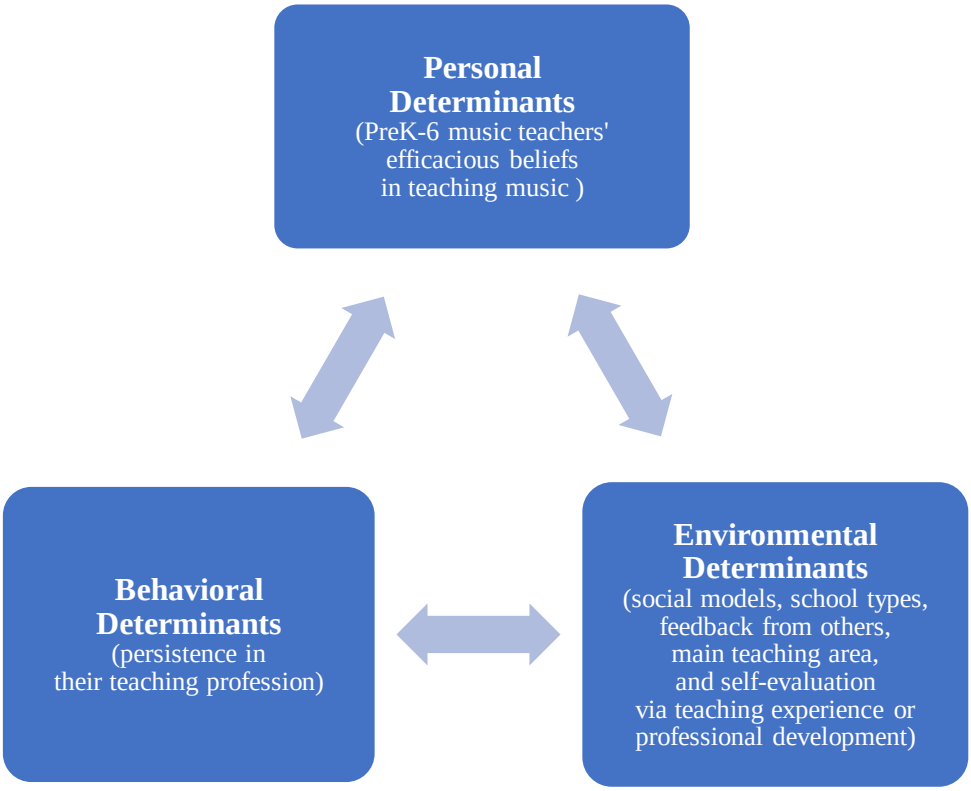


Drawing on the triadic reciprocal determination model, this study focuses on personal, environmental, and behavioral determinants that are interconnected and influence each other in the lives of music teachers. PreK-6 music teachers have their own efficacious beliefs in teaching music (personal determinants), which may be influenced by both environmental and behavioral determinants. Environmental determinants may include social models (e.g., observation of other teachers, which is one kind of vicarious experience), feedback from students, parents, principals, and other teachers (i.e., verbal persuasion), school types (i.e., urban/rural Title I or urban/rural Non-Title I school), main teaching area (i.e., band, orchestra, choir, general music, other, and mixed), and opportunities for self-evaluation through previous teaching experience or professional

development (i.e., participating in professional workshops, acquiring method certification, watching teaching resources, listening to music educators' podcasts, reading music educators' journal articles, and observing other teachers). In this study, these environmental determinants may impact behaviors, including how long PreK-6 music teachers might persist in their teaching profession (i.e., persistence—years of teaching experiences). Applying the triadic reciprocal determination model to this current study, I accordingly added the specific factors mentioned above into the previous model illustrated (see Figure 2):

Figure 2

Schematization of Triadic Reciprocal Determination Applied in the Current Study



Concerning the sources of self-efficacy, individuals' efficacious beliefs are formed in four ways, As Bandura (1997) argued, a person's sense of self-efficacy, which is a personal determinant, is developed through four main sources: mastery experience, vicarious experience, verbal persuasion, and physiological and affective states. A strong sense of self-efficacy is most effectively and permanently built through mastery experience (Bandura, 1997). In overcoming the trials and obstacles of completing an essential task successfully, an individual develops perseverance and self-confidence (Bandura, 1989). As a second means of building a sense of self-efficacy, vicarious experience refers to the process of gaining knowledge through the observation of others (Bandura, 1997). Further, individuals also learn what they should and should not replicate from observing someone else's successes and failures (Bandura, 1997). The third determinant of self-efficacy, verbal persuasion, refers to another's positive or negative feedback about a person's task performance and its consequences (Bandura, 1997). As the fourth source affecting self-efficacy levels, physiological and affective states refer to how physical state and emotions affect judgement regarding one's chances of success when performing a task (Bandura, 1997). Accordingly, these four sources of self-efficacy influence one's sense of self-efficacy levels.

As Bandura (2012) claimed, self-efficacy affects a person's cognitive, emotional, motivational, and decision-making processes. First, people think positively or negatively by their views in their efficacy. If they have low levels of self-efficacy, they may think that they cannot deal with difficulties to do a certain task. Second, when facing adversity, self-efficacy also is crucial in enabling people to maintain control over their emotion. Depending on their levels of self-efficacy, they are more or less prone to stress and

depression. Third, by setting goals, expecting outcomes, and identifying causal attributions for successes and failures, self-efficacy determines how effectively people motivate themselves and persist when faced with difficulties. Last but not least, at crucial decision moments, self-efficacy influences the alternatives individuals consider and the decisions they make.

In the current study, four sources of self-efficacy function as independent variables affecting PreK-6 music teachers' efficacious beliefs in teaching music. For example, how successful one's teaching was in the past was—mastery experience—may lead to increase or decrease in PreK-6 music teachers' efficacious beliefs in teaching music. Participating in professional workshops, acquiring methods certification, watching teaching resources via social media, listening to music educators' podcasts, reading music educators' journal articles, and observing other teachers—which are often largely vicarious experiences—may affect positively or negatively their current efficacious beliefs in teaching music. Verbal persuasion in the form of feedback from others, including students, parents, principals, and other teachers, may increase or decrease PreK-6 music teachers' efficacious beliefs in teaching music. Last but not least, physiological and affective states, including emotions or personal physical states, may positively or negatively affect efficacious beliefs in music teaching.

When applying SCT as a lens to this study, I explicitly assume that PreK-6 music teachers' behaviors are the result of their own choices within their school environments. Since Bandura's SCT regards individuals as self-organizing, self-reflecting, and self-regulating (Bandura, 1986), PreK-6 music teachers act as agents of their actions. In addition, PreK-6 music teachers' cognition and their belief in their abilities to teach music

are the main component of a teacher's ability to perform behaviors. Furthermore, to achieve the desired goal, teachers are motivated as they try to achieve their goals in terms of music learning and teaching. Diverse types of the four sources of self-efficacy may exist for PreK-6 music teachers (Bandura, 1997, 2001). Accordingly, within this study I use the principles of SCT to help interpret what factors affect PreK-6 music teachers' senses of self-efficacy.

Research Questions

The following research questions guide this study:

1. To what extent do the four sources of teacher efficacy identified by Bandura (1997) affect reported composite teacher efficacy scores of PreK-6 music teachers?
2. To what extent do various dimensions of professional development activities—(a) the total number of hours spent participating in professional workshops per year, (b) the total number of method certifications acquired, (c) the total number of hours spent watching teaching resources via YouTube per month, (d) the total number of hours spent listening to music educators' podcasts per month, (e) the total number of music educators' academic journal articles read per month, (f) the total number of hours spent observing other teachers per year—relate to reported composite teacher efficacy scores of PreK-6 music teachers?
3. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by the main teaching area (i.e., general music, band, orchestra, choir, other, and mixed)?

4. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by years of teaching experience (i.e., 1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience)?
5. Is there a differential effect associated with the interaction of the main teaching area and years of teaching experiences?
6. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by school types (Urban/Rural Title I school, Urban/Rural Non-Title I school)?

Need for Study

Teacher efficacy has been widely recognized as a crucial attribute of effective music teachers (Barnes, 1998; Magno & Sembrano, 2008; Steele, 2010). Researchers have further demonstrated the importance of teacher efficacy in music learning and teaching (de Vries 2013; Fisher et al., 2021; Regier, 2019a, 2019b, 2021a, 2021b; Steele, 2010; Wagoner, 2011, 2015; West & Frey-Clark, 2019). Music teachers with high levels of self-efficacy have been shown to have a positive impact on student engagement and learning outcomes (Regier, 2021b), while those with low levels of self-efficacy are more likely to leave the teaching profession (Perrachione et al., 2008).

Of the four sources of self-efficacy, previous successful teaching experiences, or mastery experience, have been reported as the most influential predictor of self-efficacy (Bandura, 1997), especially among both high school instrumental teachers (Regier, 2019b) and elementary generalist teachers who teach music (de Vries, 2013). Additionally, researchers have identified that five predictor variables—the quality of teacher preparation programs, the number of years of teaching, participation in

professional development activities, gender, and school setting—can lead to increased or decreased efficacy levels of music teachers (Auh, 2004; de Vries, 2013; Fisher et al., 2021; Regier, 2019a, 2019b; Svec, 2017; West & Frey-Clark, 2019).

Despite these findings, there is a paucity of research exploring whether the four sources of self-efficacy theorized by Bandura (1997) predict PreK-6 music teachers' efficacious beliefs in teaching music. For instance, vicarious experiences have been deemed as a less influential predictor of self-efficacy than mastery experiences (Bandura, 1997, de Vries, 2013; Regier, 2019b), and little research has examined the impact of the number of years of teaching, main teaching area, and participation in professional development activities affect teacher efficacy of PreK-6 music teachers. Additionally, potential professional development activities that could bolster the efficacious beliefs of PreK-6 music teachers require further investigation. Ultimately, both music education faculty members in higher education and professional development coordinators may find results of this study of music teacher self-efficacy useful when designing teacher education programs, curricula, and professional development workshops to meet needs of current and future music teachers. Thus, via this study, PreK-6 music teachers may be better able to choose the best strategies to explore to build their confidence in teaching music.

Definitions

For the purpose of this study, the following terms are defined:

Confidence

Confidence is one's firmness of beliefs in their own ability to accomplish something as intended.

Self-efficacy

Self-efficacy is one's perceived capability to perform a current task to achieve the desired outcome in the future (Bandura, 1997).

Teacher Efficacy

Teacher efficacy is one's perceived capability to achieve the desired outcome in educational settings (Fisher et al., 2021). Teachers may overestimate or underestimate their actual abilities (Hoy & Spero, 2005).

Teacher Efficacy for Instructional Strategies

Teacher efficacy for instructional strategies is a teacher's belief in their capability to design, execute and assess instructional strategies that lead to positive learning outcomes for students.

Teacher Efficacy for student engagement

Teacher efficacy for student engagement is a teachers' belief in their ability to foster and maintain students' active involvement and motivation in the learning process.

Elementary Music Teachers

Elementary music teachers are any teachers who currently teach at least one class of children in grades PreK-6 each week in one or more than one music teaching area: general music, band, orchestra, choir, other (e.g., guitar), or mixed.

Main Teaching Area

Main teaching area is the area in which music teachers spend the most of their time teaching students in grades PreK-6. In this study, teachers will self-define their main teaching area at the elementary level (PreK-6) as the one of the following: general music, band, orchestra, choir, or other. Participants reported the percentage of their time they

teach each of the above options at their current school or schools. Accordingly, the main teaching area can be determined by the percentage of their teaching time: general music, band, orchestra, choir, other, or mixed. The mixed group indicates that their responses revealed more than two areas with the equivalent or multiple areas with less than 50% teaching time.

Mastery Experience

Mastery experience is a previous successful experience that achieves some desired goal. Mastery experience helps to build one's confidence in their ability to successfully accomplish the desired outcomes in the future.

Vicarious Experience

Vicarious experience occurs when an individual learns by observing others' actions, which results in expecting similar outcomes from the future actions based on their observation. Such vicarious experience may strengthen or weaken one's perceived capability to achieve the desired results.

Verbal Persuasion

Verbal persuasion occurs when others provide feedback from which an individual raises or lowers their confidence about their ability to reach the desired outcomes.

Physiological and Affective State

Physiological and affective state is one's positive emotions (e.g., happiness and cheerfulness), negative emotions (e.g., anxiety and stress), neutral emotions, or physical condition (e.g., energetic, exhaustion, or fatigue). One's physiological and affective state may influence one's sense of efficacy.

Years of Teaching Experience

For this study, years of teaching experience consists of three groups: (a) early career group (one to five years of teaching experience), (b) middle career group (six to 10 years), and (c) veteran career group (more than 10 years). I decided on these groupings for the following reasons. First, low teacher efficacy levels impact whether to remain in the profession during the first five years of teaching (Pedota, 2015). Second, PreK-6 music teachers with more than 10 years of teaching experience (i.e., veteran career group), treated as a single group in this study, are likely to report higher levels of self-efficacy than those having less than 10 years of teaching experience (West & Frey-Clark, 2019). Third, PreK-6 music teachers with 6 to 10 years of teaching experience are then considered a mid-career group to examine how experience affects teachers' self-efficacy across the career span.

Professional Development Activity

Professional development activity may influence PreK-6 music teachers' efficacious beliefs in teaching music and may be related to the four sources of teacher efficacy (McSweeney, 2020). Professional development activity includes: (a) participating in professional workshops related to teaching in general or music teaching in particular, (b) acquiring teaching method certification, (c) watching teaching resources via YouTube, (d) listening to education or music educators' podcasts, (e) reading music educators' journal articles, and (f) observing other teachers.

Study Delimitations

In this study, the focus is on the self-efficacy of music teachers who teach one or more groups of PreK-6 students in music each week. I excluded teachers who teach only grades 7 to 12. Thus, the results of this study may not be applicable to all music teachers.

This study included participants who are currently working in the state of Arizona and who teach at least one class a week in at least one of the following PreK-6 teaching areas: (a) general music, (b) band, (c) orchestra, (d) choir, (e) other, and (f) mixed. The "other" category includes guitar, jazz, music history, music theory, composition, and keyboard. Participants self-reported their teaching areas based on the percentage of hours they spend teaching at their current school or schools. Depending on their responses, I reclassified their main teaching area as one of the options (i.e., general music, band, orchestra, choir, other, and mixed) if participants report one of the options as more than 50%. However, if their responses indicated more than two areas with the equivalent or multiple areas with less than 50 % teaching time, I reclassified them as a "mixed" group. Therefore, this study delimits music teachers' self-efficacy to these six main teaching areas.

Participants reported their efficacious beliefs in teaching music using a 11-point Likert scale. However, self-efficacy levels may fluctuate daily, weekly, monthly, or yearly. Although participants reported their self-efficacy levels in the last month, their responses may reflect an overall sense of their self-efficacy with a focus on the last month. Thus, the results of this study may not generalize to other time frames.

Regarding PreK-6 music teachers' professional development activities, I did not collect information regarding the content of professional workshops, music teaching

videos, music educators' podcasts, and journal articles. The focus was on participants' involvement in professional development activities; however, this study did not make any assumption about the quality of those professional activities.

In addition, this study delimits the casual link between PreK-6 music teachers' efficacy levels and their involvement (frequency of participation) in different types of professional development activities. Professional development activities are not necessarily limited to indirect or vicarious experiences and are not necessarily always positive. For example, participants may experience successful teaching performances (mastery experience) during professional development or receive positive feedback about their teaching practice from others (verbal persuasion) during a workshop. They may feel energetic or frustrated (physiological and affective state) during professional development resulting in strengthening or weakening their efficacious beliefs in teaching music. This study revolves around the causal link between PreK-6 music teachers' efficacy levels and their involvement (frequency of participation) in different types of professional development activities. Thus, this study may not be informative on the links between the four sources of self-efficacy and the quality of professional development activities.

To further delimit the scope of this study, I categorized participants' years of teaching experience into three career groups: (a) the first career group with one to five years of teaching experience, (b) the second career group with six to ten years of teaching experience, and (c) the third career group with more than 10 years of teaching experience. The range of teaching experience in the sample might vary from person to person. Even though I collected the information about both years of PreK-6 teaching experience at

their current school and the total number of years of PreK-6 teaching experience, I intend to compare their self-efficacy levels based on their total number of teaching experience among the aforementioned grouping categories. Thus, grouping categories may not generalize to the current teaching experience of other specific categories.

Organization of the Dissertation

In Chapter One, I included an overview of this investigation and stated the purpose of this study. I posed research questions and then argued for the need to examine PreK-6 music teachers' self-efficacy and the link between their teacher efficacy and the hypothesized predictor variables (i.e., the four sources of self-efficacy, professional development activities, years of teaching experience, main teaching area, and school types). In Chapter Two, I review research literature relevant to teacher efficacy to clarify and situate within the current literature the scope and purpose of the study. I also describe the theoretical framework of Bandura's SCT in more detail, as well as the concepts surrounding teacher efficacy and the four sources of self-efficacy. In addition, in Chapter Two, I include information about instruments used to measure teacher efficacy in previous studies. In Chapter Three, I present and detail the methods and procedures of this study, including the research design, sampling procedures, survey instrument, participant recruitment approaches, and methods of data analysis. In Chapter Four, I present the results and analyses of data, based on the quantitative dataset generated via a survey instrument during the data collection phase. In Chapter Five, I discuss in more detail the results, overall conclusions, limitations of this study, and the implications for future research.

CHAPTER 2

RELATED LITERATURE

Introduction

Bandura (1997) defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3), which provides a foundation for explaining how individuals behave in given situations. Over the past few years, music education researchers have examined self-efficacy among pre-service (Bernhard & Stringham, 2016; Fisher et al., 2021; Regier, 2021a) and in-service music teachers (Button, 2010; West & Frey-Clark, 2019). In examining teaching performance, Magno and Sembrano (2008) suggested that self-efficacy positively helps music teachers improve their teaching practice. As Steele (2010) identified, self-efficacy plays an essential role in music teacher effectiveness. Furthermore, Button (2010) found that music teachers with higher senses of self-efficacy in teaching demonstrate the following four characteristics: (a) clear explanations of musical concepts to students, (b) better relative goal-setting for students with different needs, (c) meticulous care of students with little musical experience, and (d) enthusiastic instruction.

Considering the complexity of educational contexts, in-service music teachers might find certain tasks and situations differently challenging. Self-efficacy may vary from task to task or situation to situation because "self-efficacy beliefs are context-specific, rather than global [traits]" (Regier, 2019a, p. 58). Teachers might judge themselves differently or self-efficacy may vary depending on groups of students or types of tasks, as well as how teachers believe they perform when interacting with students. Put differently, teachers' self-efficacy varies by the types of tasks in which they engage, the

people with whom they engage, and settings in which they teach. During COVID-19 pandemic, teacher sense of self-efficacy, especially for instructional strategies, may differ by the types of instruction. Clearly, unprecedent COVID-19 policies led to changing instruction (e.g., in-person, hybrid, and remote teaching), resulting in challenges in teaching and learning and varied levels of teacher efficacy. For example, Pressley (2021) compared elementary teachers' instructional efficacy by the type of instruction during 2020-2021 school year. Pressley's findings demonstrated that in-person instruction group reported the highest instructional efficacy (M = 6.22, SD = 1.67, n = 17), followed by hybrid (M = 5.91, SD = 1.63, n = 94) and virtual group (M = 5.32, SD = 1.65, n = 218). This suggests that teacher efficacy for instructional strategies can be vulnerable to a virtual setting.

In music education, a large amount of studies suggests that holding efficacious beliefs in teaching music may also vary by different demographics (e.g., gender, age, education, years of teaching, certificates, and teaching area), the levels of subject-specific knowledge gained, and professional development engaged, all of which can function as independent variables in measures of teachers' self-efficacy (Auh, 2004; de Vries 2013; Regier, 2019a, 2019b; West & Frey-Clark, 2019). Ultimately, many questions remain about music teachers' self-efficacy.

In this chapter, the literature review provides a discussion of relevant research focused on factors that pertain to self-efficacy and teacher efficacy for music teachers. More specifically, this chapter addresses variables of social cognitive theory, including agency, self-efficacy, teacher efficacy, and the four sources of efficacy. This chapter also covers critiques of Bandura's social cognitive theory. In addition, the extant literature

related to factors affecting music teachers' efficacious beliefs in music teaching and measurement of teacher efficacy is discussed.

Defining Agency

To explain the concept of self-efficacy, Bandura (1997) first theorized that human agency is a key factor in explaining how and why behavior operates. Human agency is not a straightforward term, but a much-debated concept. The basic concept of agency refers to the capacity to initiate purposeful and strategic action that suggests autonomy and choice (Bandura, 1997; Biesta & Tedder, 2007; Priestly et al., 2015). Bandura (2018) broadened the conceptualization of human agency to include three different features: (a) individual, proxy, and collective. Personal (individual) agency refers to how an individual directly exerts control. Proxy agency refers to relying on others to act on one's behalf. Collective agency refers to group action with socially coordinated efforts. Furthermore, Bandura claimed that personal agency has core features: (a) forethought, (b) self-reactiveness, and (c) self-reflectiveness. Forethought enables individuals to be self-motivated, such as by preparing plans to achieve anticipated goals. Self-reactiveness allows individuals to decide whether they will modify or continue their behaviors. Self-reflectiveness refers to individuals' reflecting on their efficacy, actions, thoughts, and the meaning of their pursuits. From a social cognitive perspective, self-efficacy is at the core of human agency and includes these features. These ideas suggest that unless individuals believe that their actions will yield desired results, they are unlikely to act or persevere when difficulties arise (Bandura, 1997).

From a sociocultural perspective, human agency has been conceptualized and theorized as "a temporally embedded process of social engagement" (Emirbayer &

Mische, 1998, p. 963) and dynamic interaction among the following dimensions: (a) the past or iterative dimension (experience from the past), (b) the present or practical-evaluative dimension (an engagement of the past and the future at the moment) (c) future projective dimension (an orientation toward alterative possibilities in the future) (Emirbayer & Mische, 1998; Biesta et al., 2015). The iterative dimension has to do with making choices based on past experiences. The projective dimension has to do with making choices based on future expectations (i.e., hopes or fears). The practical-evaluative is related to challenges encountered concerning cultural (values, beliefs, ideas), structural (social structures; relationships or roles) and material constraints (resources, physical environment) on one's work affecting making a choice. These three dimensions suggest, in part, that people's prior experiences affect their agency pertaining to their present contexts (Biesta et al., 2015). Accordingly, teacher agency is mediated by previous professional experiences, their contexts, and one's hope or fears related to their desired goals in the future.

Taken together, human agency enables humans to have the power whereby they serve as voluntary subjects in changing their environments to achieve their goals. However, altering the teaching environment is not an easy task for teachers because they do not have always that power. Teachers' agency presents a more complex picture in school settings. For example, some teachers may have agency about the curriculum while they do not have agency about room in which they are teaching. Other teachers have the power to choose what they plan to teach while they do not have the power to choose when the semester starts/ends and how often the class meets. Some school districts may say "you choose to teach whatever you want as long as you follow the national standards,

other may say “we do not care about how you teach the songs, but you teach those songs.” Depending on their environment, teachers may have limited agency in various ways. Agency for teachers remains complicated due to the environments or pressures that surround them in school settings. Hence, this study makes assumptions: some teachers may not only have agency about something, but also not have agency about other things.

Defining Self-Efficacy

Bandura (1986) conceptualized self-efficacy within SCT as one’s own belief in one’s abilities to reach desired outcomes. SCT suggests that people will make an effort to attain desired outcomes depending on their own beliefs in having the power to accomplish desired results. SCT further posits that cognition, behavior, and environmental conditions are integrated within a broad network of sociostructural influences (Bandura, 1986, 1997). Since strength of influence varies with different tasks or under different circumstances, people can become organizers or by-products of social systems, where their choices, motivations, emotions, and successes or failures can be explained by their efficacious beliefs. More expressly, SCT emphasizes that human behavior is not regulated exclusively by the anticipation of external environmental factors, such as rewards and punishments (Bandura, 1986, 1997). The central tenet of SCT, rather, is a paradigm shift away from behaviorism and toward a model in which human behavior can be changed by social interactions between people, not just motivated by external rewards.

Bandura (1977) elaborated on self-efficacy as having two dimensions: efficacy expectation and outcome expectancy. Efficacy expectation is defined as “the conviction that one can successfully execute the behavior required to produce outcomes,” while

outcome expectancy is defined as "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p. 193). In other words, based on their own beliefs in their capabilities to execute a particular action (efficacy expectation), individuals are able to anticipate either positive or negative outcomes may result from their behaviors (outcome expectation) (Feather, 1992). Thus, self-efficacy enables individuals to evaluate how well they might perform while, simultaneously, they expect certain outcomes.

The concept of self-efficacy is different from constructs such as self-concept, self-esteem, and locus of control (Bandura, 2006; Bong & Skaalvik, 2003; Shavelson et al., 1976). Self-concept is described broadly as a person's perception of oneself (Shavelson et al., 1976). Shavelson et al. (1976) argued that self-concept is influenced by environmental reinforcements and significant others. Both self-concept and self-efficacy are designed to explain an individual's thoughts, emotions, and actions. However, these two concepts are slightly different (Bong & Skaalvik, 2003). As Bong and Skaalvik (2003) claimed, the nature of self-concept is multidimensional, while the nature of self-efficacy is unidimensional. Self-concept involves cognitive and affective evaluation of oneself in comparison with others. In contrast, self-efficacy involves only cognitive evaluation of one's own capabilities based on previous experiences. However, self-efficacy beliefs are multidimensional, since efficacious beliefs can be developed through motivational, cognitive, and affective processes (Bandura, 1989). Self-efficacy beliefs are strong predictors of human motivation, emotion, and behavior, all of which lead to desired outcomes.

Unlike self-efficacy, self-esteem is defined as a measure of an individual's sense of personal value or worth (Bandura, 2006). According to Gardner and Pierce (1998),

these two concepts can be differentiated by belief and time. Belief refers to one's worthiness versus one's ability to execute a particular task, while time perspective is an assessment of one's current self versus one's future success at a task. Even though self-esteem emphasizes a person's current sense of self-worth, it may still be associated with self-efficacy (Bandura, 1997).

Locus of control refers to "people's basic motivational orientations and perceptions of how much control they have over the conditions of their lives" (American Psychological Association, n.d.). This enables individuals to attribute their success and failure to their own effort or to outside influences. Rotter (1966) theorized that outcomes are determined by one's performance (e.g., effort) or by external forces (e.g., luck, rewards, and punishments), which are defined as the internal and external locus of control factors, respectively. However, locus of control does not subsume the role of self-perception. Thus, this construct is different from self-efficacy, which acts to confirm one's level of current abilities to perform, and ultimately results in self-motivation to learn.

In SCT, a high level of perceived self-efficacy can positively affect one's confidence in performing a particular task, along with maintaining a positive mindset and contributing to coping with difficulties and stress (Bandura, 2012). As such, Bandura's SCT laid the foundation of self-efficacy studies. In other words, perceived self-efficacy is one's own belief in the extent of their abilities to achieve the targeted goals and to successfully handle future challenges.

Critiques of Bandura's Social Cognitive Theory

Again, as defined by Bandura (1977, 1997, 1998), self-efficacy causally influences outcome expectancy, while outcome expectancy does not causally influence self-efficacy (see Figure 3). As Bandura (1997) claimed, "the outcomes people anticipate depend largely on their judgements of how well they will be able to perform in given situations" (p. 21). Hence, self-efficacy directly influences one's behavior to achieve the desired outcome, but outcome expectancy does not influence one's self-efficacy and behavior.

Figure 3

Diagrammatic Representation of the Conditional Relations between Efficacy Beliefs and Outcome Expectancies (Bandura, 1977, p. 193)

If outcome expectancy is a source of self-efficacy, this causal relationship is inconsistent with self-efficacy theory. In contrast to Bandura, some researchers have argued that anticipated outcomes affect self-efficacy, not vice versa (Pajares, 1996; Williams, 2010; Wolpe, 1978). Wolpe (1978) posited that one's perceived self-efficacy is a function of contextual factors related to one's outcome expectancy. For example, an

expert skier who suffers from weak knees (i.e., contextual factor) may cease skiing (i.e., perceived self-efficacy) to prevent damaging consequences (i.e., outcome expectancy). That is, if an individual perceives pain or anxiety, it may cause one to avoid the behavior. Supporting this notion, Pajares (1996) claimed that "individuals infer their efficacy beliefs from imagined outcomes" (p. 559). These arguments suggest that one's self-efficacy beliefs and behaviors are regulated and directly influenced by how valuable or consequential an individual perceives the outcome to be.

The causal relationship between self-efficacy and outcome expectancy must be theoretically clarified for future research. Williams (2010) suggested that "either the operational definition of self-efficacy must be modified such that expected outcomes cannot influence self-efficacy or self-efficacy theory must be modified such that outcome expectancies can influence self-efficacy" (p. 421). This suggestion indicates that researchers must inform respondents whether or not expected outcomes should be or not be taken into account when rating their self-efficacy.

Defining Teacher Efficacy

Within the context of teaching, *self-efficacy* has been conceptualized as *teacher efficacy,* which is a teacher's own belief in their capabilities to affect how well students engage in classroom activities (Guskey & Passaro, 1994; Tschannen-Moran & Hoy, 2001). Not only does teacher efficacy have a significant impact on how students are motivated, but it also plays a crucial role in teachers' professional behaviors. Previous researchers have found that teachers with higher senses of teacher self-efficacy exhibited enthusiasm and confidence in delivering clear instruction and were more willing to implement new teaching techniques to meet individual student needs (Allinder, 1994;

Guskey, 1988; Zee & Koomen, 2016). Holzberger et al. (2013) also found that higher teacher-efficacy was associated with more attention to students' individual learning processes, and that teachers with higher teacher efficacy were more likely to motivate students to actively engage in classroom activities. Furthermore, past research has suggested that higher teacher efficacy predicted commitments to teaching (i.e., teacher retention) and teachers' job satisfaction (Coladarci, 1992; Zee & Koomen, 2016). In other words, low or high levels of teacher efficacy can serve as a critical component in deciding whether to remain in or leave the teaching profession (Ingersoll & Smith, 2003; Perrachione et al., 2008). These findings indicate that teacher efficacy for instructional strategies and student engagement likely has a remarkable impact on students' learning processes as well as the future demand for new teachers in schools (i.e., subsequent staffing difficulties).

Teacher Efficacy for Music Teachers

Like other academic subjects, both pre-service and in-service teachers in music show different levels of perceived self-efficacy (Barnes, 1998; Bernhard & Stringham, 2016; Fisher et al., 2021; Prichard, 2017; Regier, 2019b; Wagoner, 2011). Research on pre-service music teachers has examined their self-efficacy for teaching music and classroom management. Barnes (1998) examined the changes in teacher efficacy among pre-service string music education students (N = 18). Participants provided music lessons to community children during two consecutive semesters, and their efficacious beliefs were evaluated by themselves and experienced educators. A significant correlation existed between participants' efficacy beliefs and their self-evaluations as well as their teachers' evaluations of their teaching effectiveness. These findings suggest that pre-

service teaching experiences may positively impact both teacher efficacy beliefs and the effectiveness of teaching as they gain teaching experience.

In a mixed-method study, Prichard (2017) investigated college students majoring in music education (N = 684). Prichard found that music teachers' belief in their teaching capabilities starts to develop during undergraduate coursework and is associated with a strong commitment to teaching music. For example, one participant stated: "I think that I'm very well-suited to teach music as a career. I'm really, really sure that I want to teach, and I also feel pretty sure that I *can* be a good teacher" (Prichard, 2017, p. 245). These findings suggest that teacher efficacy serves as a strong indicator of how much undergraduate students in music education will be committed to teaching music in the future.

In a survey study, Fisher et al. (2021) defined teacher efficacy as "one's perceived capability to execute specific teaching tasks" (p. 2). Fisher and colleagues investigated undergraduate music education students (N = 124) and found that a high self-efficacy score predicted music performance efficacy (i.e., how confident they were that they would perform well) and professional behaviors. These findings suggest that pre-service music teachers with a high level of teacher efficacy have greater relative confidence in teaching music (e.g., organizing effective lessons to meet diverse age levels), playing musical instruments (e.g., accurate pitch, rhythm and error detection), and possess greater broad-mindedness (e.g., acceptance of others' criticisms) and trustworthiness.

Bernhard and Stringham (2016), who also studied undergraduate students, explored how confident undergraduate music education students (N = 397) were in teaching improvisation per the National Association for Music Education (NAfME) K-12

Achievement Standards (1994). They found that there was a statistically significant difference by academic years ($F = 3.01$; $df = 9, 903.07$; $p < .01$). Regardless of their primary instruments (e.g., woodwind, piano, brass, voice, string, percussion), senior undergraduate students were more confident than their younger peers in teaching improvisation to students using grades K-4 standards (Bernhard & Stringham, 2016). Similarly, Burak (2019) found that first-year undergraduate students reported a significantly lower sense of self-efficacy in music teaching and musical ability ($F(3.391) = 6.389$, $p = .000$, $\eta^2 = .09$) than students in other college-level years. Concerning classroom management efficacy, not only do college-level years matter, but also mentoring via observation of experienced teachers' classroom management strategies may positively affect pre-service music teachers' classroom management efficacy. Bergee (2002) concluded that mentoring with experienced teachers via videotaped rehearsals in middle/high school settings may lead to greater increase in pre-service music teachers' classroom management efficacy than observation only. Taken together, these findings suggest that teacher efficacy of undergraduate students in music education increases by academic year and that mentoring systems (e.g., feedback and suggestions on teaching practice from experienced teachers) may boost efficacious beliefs.

Other researchers have examined attributes of teacher efficacy among in-service music teachers (Regier, 2019b; Steele, 2010; Wagoner, 2011). For example, Wagoner (2011) examined K-12 music teachers' identities ($n = 392$) and developed the Music Teacher Identity Scale (MTIS), which is comprised of two constructs to define identities: Music Teacher Self-Efficacy and Music Teacher Commitment. Four measurable behaviors related to teacher efficacy were included: (a) perseverance through adversity,

(b) security in one's abilities, (c) problem-solving skills, and (d) setting achievable goals and priorities. Six measurable behaviors in relation to commitment to teaching were identified: (a) amount of leisure time, (b) energy for outside interests, (c) financial satisfaction, (d) attitude toward professional music teaching goals, (e) attitude toward investing in these goals, and (f) involvement in professional experiences. Wagoner (2011) found that the four dimensions of music teacher efficacy were highly correlated with the six dimensions of commitment to teaching, indicating that music teacher efficacy functions as an important indicator of how much music teachers invest effort into their profession.

Regier (2019b) also investigated teaching strategies of instrumental teachers (N = 610) with a focus on teacher efficacy. Regier found that there was a statistically significant difference between higher and lower teacher efficacy groups. Three teaching behaviors among the higher teacher efficacy group were identified: (a) presenting a lesson with clarity, (b) motivating students, and (c) frequently making eye contact with students. These findings suggest that music teachers with higher self-efficacy were more likely to focus on student learning outcomes. In a follow-up study, Regier (2021b) examined high school concert band directors' (N = 610) self-efficacy. He suggested that participants with high levels of self-efficacy for pedagogical strategies also feel confident in their ability to improve student performance skills. These findings indicate that high teacher efficacy levels can lead to student engagement and student learning outcomes in music practice (e.g., performance skills).

Regardless of pre-service and in-service music teacher status, teacher efficacy directly influences students' learning outcomes, as well as teachers' professional

dispositions in the future. Undergraduate years appear to be a critical period where music education students develop and enhance their teacher efficacy, resulting in a strong belief in their future careers and their abilities to teach music. This sense of teacher efficacy continues until they become in-service music teachers. Once pre-service music teachers become PreK-12 music teachers, their sense of teacher efficacy may vary. Characteristics of music teachers with higher teacher efficacy seem to be consistent with previous findings, such as high confidence in teaching and resilience in the face of challenges (see Allinder, 1994; Coladarci, 1992; Guskey, 1988; Holzberger et al., 2013; Steele, 2010; Zee & Koomen, 2016). As with other academic subject teachers, music teachers with higher relative teacher efficacy invest more effort into organizing lesson plans, setting challenging goals, and implementing flexible teaching methods, and with better classroom management (Steele, 2010). Teachers with higher efficacy are also more tolerant of students' mistakes and show a strong commitment to teaching in the long run (Steele, 2010). All of this logically, and likely empirically, impacts student engagement and performance skills (Regier, 2019b, 2021b). Due to these positive outcomes, I next explore more fully how teacher efficacy can be developed.

Four Sources of Efficacy

Within SCT, Bandura (1997) argued that four sources contribute to the development of self-efficacy: (a) mastery experiences, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological and affective state. As with general self-efficacy, teacher efficacy beliefs may change depending on the type(s) of sources within a given situation (i.e., a particular teaching task) (Hoy & Spero, 2005). Various researchers have recommended that instructional quality hinges upon teacher efficacy and is related to

these four sources of self-efficacy (Hoy & Spero, 2005; Steele, 2010). Others have advocated that these four sources of self-efficacy may help music teachers to further develop teacher efficacy (Bucura, 2019; Chua & Welch, 2019; Regier, 2019b; de Vries 2013). Thus, it can be concluded that one's belief in their capabilities is potentially strengthened by these four sources of self-efficacy (see also Bandura, 2012). In the next section, I discuss indicators of the four sources of self-efficacy and their implications for teacher efficacy among music teachers.

Mastery Experiences

Mastery experiences have been regarded as the most powerful determinant of self-efficacy among the four sources (Bandura, 1997, 2006; Bandura & Adams, 1977; Bucura, 2019; Regier, 2019b, 2021b; de Vries 2013; Zimmerman, 2000). Since mastery experiences depend significantly on successful performance of tasks, mastery experiences can be viewed as authentic evidence and sufficient indicators of self-efficacy (Bandura, 1997). Conversely, one's prior experiences of failure can undermine self-efficacy, which may lead to approaching future tasks with pessimism or doubt (Bucura, 2019). In a narrative study, de Vries (2013) explored five Australian generalist primary school teachers (i.e., elementary teachers) and their efficacious beliefs in teaching music. He found that mastery teaching experiences allowed teachers to achieve high self-efficacy in teaching and conducting choirs. Regier (2019b) investigated how each source or determinant of efficacy affects high school instrumental teachers' (N = 610) self-efficacy. He found that high school concert band directors were significantly affected by mastery experiences, which in turn were the strongest predictors of teacher efficacy among the four sources. In a subsequent study, Regier (2021b) supported the previous finding that

mastery experiences are the most potent indicator of high school concert band directors' self-efficacy (N = 610). However, there is still limited understanding of the relationship between mastery experience and teacher efficacy in the field of music education.

Vicarious Experiences

Bandura (1997) identifies vicarious experiences as the second determinant of self-efficacy. Vicarious experiences occur when people judge their own capabilities in comparison to others' accomplishments in similar situations (Bandura, 1997; Zimmerman, 2000). The key to vicarious experiences is self-reflection on one's efficacious belief by observing others' performance (i.e., watching a model) (Bandura & Adams, 1977; Hoy & Spero, 2005); however, researchers have found mixed results in studies of the effect of vicarious experience on teacher efficacy. De Vries (2013) found that one study participant, an elementary teacher, was motivated to use Garageband on iPads in her classroom after observing her boyfriend, who had no previous musical background, create drum loops and bass melody lines. Her observations led to implementation of a new technology in music for her students; she had confidence in teaching her students to make music using iPads based on her vicarious experiences seeing someone else create music in such a way. Chua and Welch (2019) also investigated factors that may affect efficacious beliefs in teaching music among primary and secondary school music teachers (N = 72) in Singapore. They found that vicarious experiences, such as watching others' lessons via music teachers' blogs, expert demonstrations, and YouTube videos, helped music teachers increase their efficacious beliefs. Four participants also spoke about the importance of interacting with musical others (e.g., pedagogy experts and artists). This finding contradicted Regier (2019b), who

found that vicarious experiences did not affect instrumental teachers' efficacious beliefs at any career stage: early career (1–7 years, n = 206), mid-career (8–23 years, n = 263), and late career (more than 23 years, n = 139).

Given that comparative self-appraisal may also lead to negative effects that are related to decreases in self-efficacy (Bandura, 1997), it is hard to confirm that vicarious experiences are positively associated with one's sense of teacher efficacy. Furthermore, vicarious experiences do not appear to have a significant effect on teacher efficacy for music teachers. Thus, further exploration on how vicarious experiences, such as observational learning through watching a model, affects efficacy of music teachers is needed.

Verbal Persuasion

Verbal persuasion is Bandura's third determinant of developing one's beliefs in what they can do to achieve what they desire. Similar to vicarious experiences, verbal persuasion can minimize or maximize a sense of efficacy (Bandura, 1997). If people take positive encouragement from others, they are likely to be tenacious when facing difficulties (Bandura, 2012). In terms of teacher efficacy, verbal persuasion takes place when teachers receive specific performance feedback from significant others (e.g., a supervisor, colleague, students) (Hoy & Spero, 2005). However, the effect of verbal persuasion on self-efficacy has not been corroborated by music education researchers. Regier (2019b) found that verbal persuasion was a strong predictor of instrumental teachers' efficacious beliefs in the early career group (1 to 7 years, n = 206), but not in the middle and late career groups. These findings suggest that beginning music teachers might need more affirmation about their performance via positive task feedback from

students and colleagues than their peers with more experience in order to support self-efficacy.

Physiological and Affective State

Physiological and affective state is the fourth determinant of developing one's self-efficacy, according to Bandura's SCT. Aside from the other sources, people also judge their capabilities based on their current physiological and affective states, such as levels of anxiety, stress, and fatigue (Bandura & Adams, 1977). Individuals tend to interpret physiological reactions, such as fatigue, as an indicator of their perceived self-efficacy (Zimmerman, 2000). Stressful situations can also trigger one's negative emotional states, thus resulting in lower personal efficacious beliefs (Bandura & Adams, 1977). As Steele (2010) stated, interpreting one's physiological and affective responses is the key to raising one's efficacy levels. Even if people feel negative mood states and physiological responses (e.g., fatigue and pain), they should not read them as indicators of physical inefficacy (Bandura, 1997).

However, previous empirical research has confirmed the negative effects of music teachers' physiological state on teacher efficacy (Regier, 2019b; de Vries, 2013). De Vries (2013) found that negative physiological states, such as feeling nervous and sick, affect elementary teachers' efficacy in teaching music. One study participant felt nervous and sick while she participated in teacher training experiences. When she had to sing alone to be evaluated by the lecturer, she felt embarrassed, and this experience lowered her confidence in singing. She eventually decided not to teach singing in her classroom. Similarly, Regier (2019b) found that physiological state is a strong determinant of instrumental teachers' efficacy, especially in the mid-career group (8–23 years, $n = 263$).

These findings suggest that teacher efficacy may be linked to how teachers interpret their negative physical reactions and emotional states based on prior experiences.

These four sources of self-efficacy, based on Bandura (1997)'s social cognitive theory, are likely contributors to the development of one's efficacious beliefs. Empirical studies have supported that the four sources of efficacy may function as predictor variables of one's belief in their capabilities to teach music. These findings suggest that four sources of efficacy beliefs, which occur in life experiences, are intertwined and hold distinctive characteristics. Drawing on these empirical studies, I discuss next a set of other factors that may also be related to teacher self-efficacy of music teachers.

Factors Related to Teacher Efficacy

Teacher efficacy of music teachers may also be related to a variety of other professional constructs. Teacher efficacy may vary by the nature of academic subjects or different role demands in music-specific teaching areas, such as general music, orchestra, band, and choir settings. Such contextual situations need to be further explored, as do other variables. Overall, factors related to music teacher efficacy appear to be associated with the quality of teacher preparation programs, years of teaching experience, participation in professional development activities, and gender (Auh, 2004; de Vries, 2013; Fisher et al., 2021; Regier, 2019a, 2019b; Roulston et al., 2005; Svec, 2017; West & Frey-Clark, 2019).

Quality of Teacher Preparation Programs

Music teacher preparation programs play a vital role in the initial development of teacher efficacy. During undergraduate coursework, various opportunities to provide authentic experiences in teaching music may be available to pre-service music teachers

and may increase their teacher efficacy. As Draves (2013) argued, field experiences and student teaching are a key component of undergraduate coursework, as they allow music education students to experience and build skills that may contribute to their teacher efficacy.

Researchers have conducted investigations of the impact of teacher preparation programs on teacher efficacy among both pre- and in-service music teachers (Auh, 2004; Fisher et al., 2021; Regier, 2019a, 2019b; Roulston et al., 2005). Auh (2004) used pre- and post-test questionnaires to examine changes in pre-service music teachers' confidence levels before and after completing an elementary music methods course. Study participants ($N = 48$) took the author's course where they engaged in teaching musical concepts through activities such as singing, performing, composing, and listening. Auh found that most pre-service teachers (98%) showed stronger confidence in teaching music at the end of the course as compared to the beginning. Auh also found improvement of presentation skills and quality of teaching ideas related to musical concepts. In contrast, in a study of pre-service music teachers ($N = 124$), Fisher et al. (2021) revealed that seven coursework-related variables were found to be not statistically significant predictors of teacher efficacy: (a) observation hours, (b) peer teaching hours, (c) K-12 teaching hours, (d) non-coursework teaching hours, (e) music education credit hours, (f) education credit hours, and (g) professional development hours.

Few music education researchers have examined the effects of undergraduate coursework on music teacher efficacy among in-service teachers (Regier, 2019a; Roulston et al., 2005). Roulston et al. (2005) found that beginning music teachers regarded their undergraduate coursework as both positive and negative in relation to

teacher efficacy. Some teachers enjoyed their elementary methods classes and student teaching because of their hands-on teaching experiences in authentic settings, which allowed them to develop efficacy during their coursework. Meanwhile, others pointed out disconnections between coursework and the real educational experience in the schools that they encountered. However, Regier (2019a) revealed that positive relationships existed between undergraduate coursework and high school band directors' self-efficacy (N = 133). Regier found that band director self-efficacy scores in jazz pedagogy significantly differed by the total number of music education credit hours in jazz (e.g., jazz method course, jazz ensemble participation, and jazz field experiences) during the undergraduate program ($F(5, 101) = 6.07$, $p = .00$). This study suggests that more opportunities for exposure to professional settings during university coursework are conducive to increasing efficacious beliefs in teaching music.

Collectively, these studies demonstrate that teacher preparation curriculum can be an important factor in cultivating the teacher efficacy of music teachers. Some researchers considered constructs regarding the quality of teacher preparation programs as predictors, while other researchers only investigated the correlation between these constructs and teacher efficacy, focusing on the magnitude of these relationships. Previous research suggests that teacher efficacy might also differ by the quantity of exposure to teaching music-related experiences. As such, constructs related to coursework should be further investigated because they may be associated with teacher efficacy of music teachers, especially considering transitions from university to school settings. Last, these studies suggest that field experiences may be critical components that help pre-service teachers develop their teacher efficacy (Auh, 2004; Draves, 2013; Fisher

et al., 2021; Regier. 2019a; Roulston et al., 2005).

Years of Teaching

Over the past few decades, years of teaching has been another critical factor when conducting teacher efficacy research studies (Conway & Eros, 2016; Eros, 2013; Hoy & Spero, 2005; Regier, 2019b; Roulston et al., 2005). Generally, teacher efficacy significantly increases during student teaching, but decreases during the first year of teaching (Hoy & Spero, 2005). However, the way in which the category of years of teaching is defined varies within music education research, as noted previously. Roulston et al. (2005) defined beginning music teachers as teachers in their first three years of teaching, and they found that 12 beginning music teachers in their study struggled with the following problems: "management of student behavior, working with large numbers of students, teaching at a new school, dealing with interpersonal conflicts with colleagues and students, managing performance commitments, and maintaining focus on the goals of teaching music" (p. 71). Roulston et al. (2005) did not find links between these teachers' perceived issues and self-efficacy. Nevertheless, these findings suggest that various demands and tasks make beginning music teachers feel overwhelmed, potentially resulting in a decrease in their teacher efficacy levels.

Other researchers have also found that lower relative senses of teacher efficacy appear to be related to fewer years of teaching experiences. In other words, the more years of teaching, the higher the sense of teacher efficacy among music teachers. Regier (2019b) found that late career instrumental music teachers (more than 23 years, $n = 139$; $M = 40.39$, $SD = 3.77$) had significantly higher self-efficacy scores for teaching strategies than other groups of music teachers (mid-career, 8–23 years, $n = 263$; $M = 38.56$, $SD =$

4.57; early career, 1–7 years, n = 206; M = 35.21, SD = 4.39). West and Frey-Clark (2019) found a statistically significant difference in self-efficacy between two groups by experience level; music teachers with more than 10 years of teaching experience reported a higher sense of teacher efficacy than those with 10 years or less of teaching experience. Although the category of years of teaching experience seems to be defined in different ways, it is quite evident that beginning music teachers have a relatively lower sense of teacher efficacy than more experienced teachers.

Participation in Professional Development Activity

Professional development activities may help music teachers develop higher senses of teacher efficacy. The term professional development refers to participation in an activity or action that leads to "a change in a teacher's knowledge base and actions" (Hookey, 2002, p. 888). Teacher workshop participation (see Roulston et al., 2005; Stark, 2021), method certification (Svec, 2017), and watching teaching videos via YouTube (Chua &Welch, 2019; de Vries, 2013) are examples of professional development activities. The impact of professional development on teacher efficacy has been supported by music education researchers. Roulston et al. (2005) found that music teachers who participated in professional development workshops improved their teaching skills, including how to organize lesson plans and teach music more effectively. Similarly, Stark (2021) found that music teachers gained pedagogical ideas from workshops that they could effectively apply by imitating and adapting ideas. Even though authors did not directly focus on teacher efficacy, the link between professional development and efficacious beliefs seems plausible and should be further examined.

Few researchers have conducted studies of the relationship between specific kinds of music teaching methods certification (e.g. Kodály, Orff, Suzuki) or watching music instruction via YouTube and teacher efficacy. Claiming that professional development, such as certification courses, provides music teachers with opportunities to enhance teaching effectiveness, Svec (2017) found that Kodály (n = 220; 51.28%) and Orff-Schulwerk (n = 178; 41.49%) courses were the highest reported certifications among US music teachers (n = 998). Two studies highlighted the link between watching music teaching resources via YouTube and music teachers' sense of self-efficacy (Chua & Welch, 2019; de Vries, 2013). De Vries (2013) found that vicarious instruction videos through YouTube contributed to one's self-efficacy. Similarly, Chua and Welch (2019) uncovered that primary and secondary music teachers identified watching others' teaching practice via YouTube as an influential factor. Taken together, research regarding the effects of such method certifications or watching music teaching online resources on teacher efficacy, though, is still limited.

Music teachers attain pedagogical knowledge and teaching ideas from others through diverse types of professional development experiences, such as participating in professional workshops, watching teaching demonstrations or reviewing resources via YouTube, listening to music educators' podcasts, and reading music educators' journal articles. Studies on the relationships between involvement in diverse types of professional development activities and teacher efficacy are still much needed.

Gender

As a factor associated with teacher efficacy of music teachers, gender has been regarded as a controversial issue among scholars (Burak, 2019; Regier, 2019a). Regier

(2019a) investigated whether gender predicts music teacher's efficacious beliefs in teaching music. He found that male respondents (n = 82, M = 86.8, SD = 34.6) reported considerably higher self-efficacy scores in jazz pedagogy compared to female respondents (n = 31, M = 66.7, SD = 33.1). At the elementary school level, Burak (2019) found no statistically significant difference in the self-efficacy of elementary classroom pre-service music teachers (N = 395) by gender (t = 1.119, p = .231). These findings suggest that the role of gender in self-efficacy is still inconclusive, but results should be interpreted with caution, considering that some teaching areas are gender-dominated fields.

School Setting

The relationship between school setting (urban, suburban, and rural) and music teacher's efficacious belief levels is undetermined in current literature. Hanson (2017) examined K-12 music teachers' teacher efficacy in New York (N = 576) and how efficacy levels varied by school settings. Participants in urban schools showed significantly higher levels of teacher efficacy than those in suburban settings (F(2, 569) = 4.65, p = .01, d_{Cohen} = .42). Particularly, participants in urban schools reported confidence in innovating teaching methods, however, these findings cannot be generalized to all music teachers who currently work in the other states in the US or to teachers who work in different contexts, such as rural settings. Teacher efficacy is situational and content-specific and may be related to subject area (e.g., general music versus orchestra), grade level, and student characteristics (e.g., socioeconomic status) (Tschannen-Moran et al., 1998). Students' socioeconomic status is closely related to school settings (Title I versus

Non-Title I schools), which may also impact teacher efficacy levels. These variables need to be further investigated to determine differences in teacher efficacy of music teachers.

In sum, the current literature suggests that five indicators—the quality of teacher preparation programs, years of teaching, participation in professional development activities, gender, and school setting—can contribute to teacher efficacy of music teachers. In the current study, I used years of teaching, participation in professional development activities, and school setting as independent variables. In what follows, I focus on how previous researchers have measured teacher efficacy and implications for future research and inquiry.

Measurement of Teacher Efficacy

Teacher efficacy has been conceptualized and measured differently by various researchers (Armor et al., 1976; Gibson & Dembo, 1984; Tschannen-Moran & Hoy, 2001) with multiple teacher efficacy scales being developed to assess generalized expectations of teachers' efficacious beliefs. The original construct of teacher efficacy was conceptualized from two Rand Corporation evaluations of innovative educational programs (Armor et al., 1976). The researchers examined teachers' level of efficacy by calculating a total score for participant agreement based on their responses to two 5-point Likert scale questions: (a) "When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment," and (b) "If I try really hard, I can get through to even the most difficult or unmotivated students" (Armor et al., 1976, p. 73). These items were derived from the locus of control concept in Social Learning Theory (SLT). The first item above describes an external locus of control, while the second implies an internal locus of

control. High scores for the first item indicate the respondent believes that environmental factors can undermine any teaching effort. High scores for the second item indicate the respondent believes that teaching efforts can overcome any difficulties associated with student learning outcomes. The sum of item scores indicates how much a respondent believes in his/her own ability to elicit student learning outcomes and enhance motivations.

Based on the Rand Corporation's two-item scale, Gibson and Dembo (1984) further developed the Teacher Efficacy Scale (TES). In a Likert-type format with a 6-point scale (1 = strongly disagree, 6 = strongly agree), the TES instrument consists of 30 items that are labeled as two subscales: General Teaching Efficacy (GTE) and Personal Teaching Efficacy (PTE). GTE measures a teacher's belief in the power of external factors compared to the impact of the teacher's effort, while PTE measures a teacher's belief in his/her confidence to overcome factors that affect student learning outcomes. GTE and PTE subscales expanded the Rand Corporation's two-item scale. Furthermore, Gibson and Dembo (1984) claimed that the two subscales were based on the two expectancies of Bandura's SCT; PTE captures one's self-efficacy where a teacher assesses his/her abilities to influence positive student learning outcomes, while GTE can measure a teacher's belief that external factors, such as family background, IQ, and school conditions, impede the ability of a teacher to effectively motivate a student to learn. The two factors (i.e., PTE and GTE) were found to be moderately correlated (r = -.19), and the Cronbach alpha estimates for the PTE and GTE were .75 and .79, respectively. This means that the two subscales measure clearly distinguishable constructs (Gibson & Dembo, 1984). Gibson and Dembo's (1984) findings also suggest

that a teacher who displays a high level of PTE but a lower GTE might believe that environmental factors beyond his or her control have a lesser impact on student learning than they do.

Reviewing existing measures of teacher efficacy, Tschannen-Moran and Hoy (2001) developed the Teachers' Sense of Efficacy Scale (TSES). They employed the stem "How much can you do…?" in each item to explore teachers' beliefs about three aspects related to self-efficacy: (a) student engagement, (b) instructional strategies, and (c) classroom management. Teachers responded to each item using a nine-point Likert-type scale (1 = nothing, 3 = very little, 5 = some influence, 7 = quite a bit, 9 = a great deal). The researchers found that the three subscales had high reliability (Cronbach's α = .91,.90, and .87, respectively). These findings suggest that even though Tschannen-Moran and Hoy (2001) did not follow Bandura (1997)'s recommendation for an 11-point Likert scale, the use of "can you do" questions can consistently elicit respondents' self-reflections on their own capabilities.

Bandura (1997) suggested that efficacious beliefs should be measured using three dimensions: *level*, *strength*, and *generality*. Teacher efficacy scales may vary by these dimensions (Bandura, 1997, 2006). The key to measuring *level* is to evaluate levels of task difficulty related to teaching. Teacher efficacy scales can measure level by examining how teachers perceive the challenge of the same task. If teachers perceive their self-efficacy as too high or low, discrepancies may occur between how well they predict they can do and how well they actually do (Bandura, 2006). For *generality*, teacher efficacy can be measured by how effectively teachers transfer their efficacious beliefs across teaching activities. Teacher efficacy scales can measure generality by

determining whether teachers can extend their efficacious expectations across activities or apply their beliefs only in particular teaching domains. That means some teachers perceive their self-efficacy similarly in all the domains related to teaching, while others perceive their self-efficacy differently in each teaching domain (Bandura 2006). In terms of *strength*, one's efficacious beliefs in one's abilities to teach can be measured by how certain one feels she can perform a teaching task successfully despite any challenges. Those who report a tenacious sense of self-efficacy are more likely to perform successfully despite numerous challenges than those with a weak sense of self-efficacy (Bandura, 2006). Such teacher efficacy scales can measure strength by examining different teachers' certainty levels using a Likert-type scale (Bandura, 2006).

As self-efficacy must be measured by levels of task demands that indicate varying degrees of confidence to reaching their ultimate goals (Bandura, 2006), teacher efficacy scales must be linked to factors related to educational settings. If teachers do not perceive challenges or if they do perceive challenges but believe they can overcome them, then they can accomplish their targeted goals, which indicates a high level of teacher efficacy. More importantly, researchers should focus on multiple dimensions (*level*, *strength*, and *generality*) when measuring efficacious beliefs. Bandura (1997) suggested that researchers provide items representing different levels of task demands so that respondents can report how much they believe in their capabilities to perform current tasks. He also recommended two types of scales: (a) a 100-point scale, consisting of 10-point intervals from 0 ("Cannot do") through 100 ("Highly certain can do"), where 50 indicated intermediate degrees of assurance ("Moderately certain can do"); and (b) a 10-

point scale, ranging in single unit intervals.[1] These two scales are unipolar, meaning they do not include negative numbers, as zero indicates a perception of complete incapability (Bandura, 2006). Bandura (2006) also argued that "the items should be phrased in terms of can do rather than will do" (p. 308). This is because efficacious beliefs are not linked to one's intentions, but actually portray one's own judgments of their capabilities. Ultimately, Bandura (2006) emphasized that instructions for each item should be clearly communicated so respondents can visualize how their capabilities may lead to success in the future.

To ensure reliability, Bandura (2006) posited that homogeneity of items, which is desired, should be evaluated by determining if correlations between items within the same domain of efficacious beliefs are strong and statistically significant. To measure different domains of efficacy, different sets of scales with homogeneity are required within each scale. Using Cronbach's alpha estimates, researchers should determine internal consistency reliabilities and remove or revise items that have weak correlations with other resident items ($r <$. 20) or that pull overall correlations down ($r <$. 70; see Tavakol & Dennick, 2011) (Bandura, 2006).

Measurement of Teacher Efficacy in Music

Some music education researchers (see Wagoner, 2015; West & Frey-Clark, 2019) have measured general characteristics of music teacher's self-efficacy levels by adapting existing measurement instruments (Armor et al., 1976; Gibson & Dembo, 1984; Tschannen-Moran & Hoy, 2001). Meanwhile, other researchers (see Biasutti et al., 2021;

[1] Bandura (1997, 2006) appears to mistakenly regard a 101-point scale (ranging from 0 to 100) as a 100-point scale. This scale should be defined as a 101-point scale. A 10-point scale (ranging from 0 to 10) is actually an 11-point scale.

Potter, 2021; Regier, 2019a) have attempted to adapt existing measures (e.g., TSES) to focus on task-specific performance associated with teaching music in classroom contexts. As Bandura (2016) posited, "there is no all-purpose measure of perceived self-efficacy" (p. 307). Without considering situational contexts, researchers are unable to fully capture efficacious beliefs.

Wagoner (2015) developed and distributed the Music Teacher Identity Scale (MTIS) instrument to K-12 music teachers (N = 333) to capture the following constructs: (a) Music Teacher Self-Efficacy (MTSE, nine items) and (b) Music Teacher Commitment (MTC, eight items). The MTSE employed a 5-point Likert scale ranging from 5 (*extremely strong*) to 1 (not strong), and included four dimensions: (a) "having security in one's abilities," (b) "setting goals and priorities in achievable ways," (c) "problem solving", and (d) "persevering through adversity" (Wagoner, 2015, p. 33). These dimensions are aligned with characteristics of a high level of efficacious beliefs based on previous findings (Bandura, 1997). Twelve items were described as "I can" statements; for example, "I can set musical goals for my students that they are able to achieve" (Wagoner, 2015). The MTC included five dimensions: (a) "involvement in teaching activities," (b) "personal resources of time and energy," (c) "personal attitude/investment toward professional music teaching goals," (d) "personal resources of money," and (e) "personal involvement in professional activities" (Wagoner, 2015, p.35). Eleven items were described as observable behaviors representing music teachers' commitment to the teaching profession. These two constructs were found to be adequately reliable (a = .87 and a = .67). However, the 5-point Likert-type format Wagoner (2015) employed needs to be expanded to more accurately measure the magnitude of efficacious beliefs.

Slightly adapting Wagoner's (2015) original measurement instrument, West and Frey-Clark (2019) attempted to capture generalized music teacher self-efficacy. They used the same dimensions as Wagoner's (2015) instrument, but West and Frey-Clark (2019) modified response options to 7 points (1 = "strongly disagree" to 7 = "strongly agree"). Additionally, they collected demographic data, such as gender, race, teaching concentration, school location, level of teaching experience, and certification route. This instrument had high reliability (a = .80). The West and Frey-Clark (2019) instrument, then, appears to attempt to capture more variance in music teacher's efficacious beliefs via use of a 7-point Likert scale.

Exploring elementary music teachers' classroom management self-efficacy, Potter (2021) adapted items from the TSES proposed by Tschannen-Moran and Hoy (2001) by including "music teacher" and "elementary general music" in the items. Potter (2021) employed the same 9-point scale with multiple anchors, such as "How much can you do," to check future behaviors related to efficacious beliefs. Potter also used open-ended items to explore relationships between teaching experience, school setting, and classroom management efficacy. Reliability estimates derived were also high (α = .90). Similarly, Biasutti et al. (2021), who collected the sample (N = 335) from European countries, employed the TSES to measure music teacher's efficacious beliefs in their capabilities to deal with typical teaching situations. Biasutti et al. attempted to reduce 24 items of the original version of the TSES to 12 items. However, the three dimensions (i.e., engagement, instruction, and management scales) and 9-point Likert-type scale still remained. Compared to Potter's instrument, Biasutti's (2021) instrument had similar reliability (α = .90) and was even more concise.

Otherwise, few researchers have explored the impact of the four sources of efficacy (i.e., mastery experience, vicarious experience, verbal persuasion, and physiological and affective state) identified by Bandura (1997) on teacher efficacy of music teachers. Regier (2019a) proposed the Band Director Pedagogy Self-Efficacy Measure (BDPSEM) to measure how these four sources of efficacy affected instrumental teacher's efficacious beliefs in concert, marching, and jazz ensemble pedagogy. He developed 36 self-efficacy items by modifying items from an instrument used in a study of students' efficacious beliefs in mathematics (Usher & Pajares, 2009) (e.g., "I have had positive experiences teaching concert band in the past"). An 11-point Likert scale was employed (0 = "strongly disagree" to 10 = "strongly agree") in line with Bandura (1997, 2006); however, the option statements were also not as intuitive as in the case of West and Frey-Clark's (2019) statements.

In sum, the measurement of teacher efficacy by music education researchers has varied. Some researchers attempted to capture generalized characteristics of teacher efficacy by using existing scales in general education, while others modified existing scales to focus on the context of music teaching and learning in given situations. Notwithstanding, further investigation into how Bandura's four sources of efficacy affect teacher efficacy is still, also, needed. Although the conceptualization and measurement of music teacher self-efficacy is not conclusive, future research should further investigate both generalized teacher efficacy levels of music teachers and more task-specific performances as related to teaching music in educational settings.

Conclusions

Research in music education and other disciplines suggests that teachers with higher relative senses of teacher efficacy possess effective teaching skills, resulting in the improvement of student motivation and engagement (Button, 2010; Regier, 2019b, 2021b; Roulston et al., 2005; Steele, 2010). Furthermore, teachers with relatively higher efficacious beliefs in their teaching are more likely to report higher levels of job satisfaction, thus lowering music teachers' risks of attrition and migration (Hancock, 2008; Hughes, 2012; Ingersoll & Smith, 2003; Perrachione et al., 2008; Zee & Koomen, 2016). This literature ultimately suggests that five determinants—the quality of teacher preparation programs, years of teaching, participation in professional development activities, gender, and school setting—may predict a music teacher's efficacious belief in teaching in most any workplace, although context matters.

CHAPTER 3

METHODOLOGY

Introduction

The primary purpose of this study was to examine the link between PreK-6 music teachers' efficacious beliefs in teaching music and predictor variables associated with the four sources of teacher efficacy and professional development experiences. The secondary purpose of this study was to explore how those beliefs may differ by teachers' main teaching areas, years of teaching experience, combinations of these two variables, and school types (e.g., urban/rural Title I school versus urban/rural Non-Title I school). To achieve these goals, I chose a quasi-experimental design to determine whether the four sources of self-efficacy and specific types of participation in professional development affect Arizona PreK-6 music teachers' efficacious beliefs. The quasi-experimental design is widely used in evaluating educational programs (Gribbons & Herman, 1997). A quasi-experimental design is akin to experimental design in that researchers seek to examine the effectiveness of an intervention (Price et al., 2015). However, a quasi-experimental design is different from an experimental design in that random assignment is not feasible in the quasi-experimental design; random assignment is usually not possible in educational settings (Gribbons & Herman, 1997; Price et al., 2015). Since I intend to evaluate the effectiveness of the four sources of self-efficacy and various types of professional development experiences as educational interventions for teachers who cannot be randomly assigned to groups, a quasi-experimental design is appropriate in this study.

This chapter addresses descriptions of survey research study methods,

operational definitions of variables, a description of the survey instrument, research questions and hypotheses, pilot test, main study procedures, participants, data analysis plan, survey instrument reliability and content validity, and generalizability.

Survey Research Study

I employed a survey research method for this study. Survey research allows researchers to collect data in a standardized, efficient, and uniform way (Bryson et al., 2012; Diem, 2002; Edmondson et al., 2012; Jamieson, 2004; Suskie, 1996). By simultaneously exploring "hundreds or even thousands of survey respondents" (Babbie, 1990, p. 41), survey research studies enable researchers to infer information about a population based on responses from a sample (Mills & Gay, 2019). Accordingly, a survey research method was also appropriate for this study in that I conducted this study during the COVID-19 pandemic, and a survey approach allowed me to collect all data safely from a distance.

Operational Definitions of Variables

Teacher Efficacy

In this study, the measure of teacher efficacy functions as a dependent variable measured by two subscales: teacher efficacy for instructional strategies and teacher efficacy for student engagement. Teacher efficacy for instructional strategies encompasses creating a positive learning environment, selecting appropriate materials, creating effective lessons that cater to students' varying ability levels, modifying lessons for students with special needs, communicating effectively with students, and creating effective lessons for classes of various sizes. Teacher efficacy for student engagement includes keeping students on task during classes, motivating students to participate in

music activities, encouraging students' creativity, using multiple teaching strategies to keep students engaged, and positively influencing students' attitudes toward music. These two subscales of teacher efficacy are measured by responses to questions using a 11-point Likert type scale ranging from 10 (*I am certain I can do this*) to 0 (*I cannot do this at all*). These are continuous variables where zero indicates no efficacy in teaching music and high scores indicate higher levels of teacher efficacy.

The Four Sources of Teacher Efficacy

The four sources of teacher efficacy—mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective state—are independent variables. These are continuous variables measured by a 11-point Likert type scale ranging from 10 (*I strongly agree*) to 0 (*I do not agree with this statement whatsoever*).

Involvement in Professional Workshops

Involvement in professional workshops is an independent variable measured by the total number of hours spent participating in professional workshops per year. This is a continuous variable where zero indicates none.

Acquisition of Method Certification

Acquisition of method certification is an independent variable measured by the total number of method certifications acquired. This is a continuous variable where zero indicates none.

Watching Teaching Resources via YouTube

Watching teaching resources via YouTube is an independent variable measured by the total number of hours spent watching teaching resources via YouTube per month. This is a continuous variable where zero indicates none.

Listening to Music Educators' Podcasts

Listening to music educators' podcasts is an independent variable measured by the total number of hours spent listening to music educators' podcast per month. This is a continuous variable where zero indicates none.

Reading Music Educators' Journal Articles

Reading music educators' journal articles is an independent variable measured by the total number of music educators' journal articles read per month. This is a continuous variable where zero indicates none.

Observing Other Teachers

Observing other teachers is an independent variable measured by the total number of hours spent observing other teachers per year. This is a continuous variable where zero indicates none.

Main Teaching Area

Main teaching area serves as a categorical variable and includes the categories of general music, band, orchestra, choir, other, and mixed areas. These grouping variables are independent variables. To determine main teaching area, participants reported the percentage of time they teach general music, band, orchestra, choir, and other classes at their current school or schools. Main teaching area for each respondent was determined by percentage of teaching time reported, as follows: If a participant indicated an area that was more that 50% (e.g., 60% general music and 40% band or 100% general music), their main teaching area was considered that particular area. If a participant had no area more than 50% (e.g., 30% band, 20% choir, 50% other) their main teaching area was mixed.

Years of Teaching Experience

Years of teaching experience is a categorical variable, including 1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience. These grouping variables are independent variables.

School Type

School type is a categorical variable, including urban/rural Title I school and urban/rural Non-Title I school. These grouping variables are independent variables.

Survey Instrument

This study employed the online platform *Qualtrics Survey Software* to generate and collect data. The survey instrument for this study was comprised of four sections: (a) the PreK-6 Music Teacher Efficacy Scale (Pk6MTES) which has two subscales, (b) the Four Sources of PreK-6 Music Teacher Efficacy Scale (FS-PMTES) which has four subscales, (c) professional development activity questionnaire, and (d) demographic questionnaire. Per guidelines from self-efficacy theory (Bandura, 1997), Pk6MTES and FS-PMTES consistently collected data via an 11-point Likert-type scale where participants used sliders to rate each item. The total questionnaire contained 53 items, including open-ended questions in sections 2 and 3 to retrieve more qualitative and in-depth free responses from study participants (Miller, n.d.; Suskie, 1996).

PreK-6 Music Teacher Efficacy Scale (Pk6MTES)

PreK-6 music teacher efficacy was measured using the PreK-6 Music Teacher Efficacy Scale (Pk6MTES), an 11-item instrument with an 11-point Likert-type scale ranging from 10 (*I am certain I can do this*) to 0 (*I cannot do this at all*). As discussed in Chapter 2, the measurement of teacher efficacy has varied among researchers. For this

study, I adapted the Pre-service Music Teacher Efficacy Scale (PMTES) by Fisher et al. (2021) and redesigned the instrument with two distinguishable subscales: (a) teacher efficacy for instructional strategies and (b) teacher efficacy for student engagement. The Cronbach's alpha estimate of the PMTES as developed by Fisher et al. (2021) was .98, indicating the PMTES was acceptable (see Vaske et al., 2017). Fisher et al. operationalized 11 items (e.g., "*I can effectively keep students on task during class*," "*I can incorporate new teaching strategies into my lessons*") to measure only one construct—pre-service music teachers' efficacious belief—without separating subscales of the construct. As such, Fisher et al. (2021) did not identify any underlying factor structure of the PMTES. In this study, I changed the wording and sentences by considering the context of in-service music teachers and developed two subscales within the measure of teacher efficacy: (a) teacher efficacy for instructional strategies and (b) teacher efficacy for student engagement). Accordingly, I relabeled this instrument the PreK-6 Music Teacher Efficacy Scale (Pk6MTES). Table 1 shows six items aligned with the first subscale (i.e., teacher efficacy for instructional strategies) and five items with the second subscale (i.e., teacher efficacy for student engagement). All 11 items in the Pk6MTES accounted for the two subscales of the teacher efficacy concept. Thus, two dependent variables—teacher efficacy for instructional strategies and teacher efficacy for student engagement—are derived from different measures (items) of the same construct (i.e., teacher efficacy) (see the full survey instrument in Appendix A).

Table 1

Dependent Variables and Items in the Pk6MTES Scale

Dependent Variable	Item Number	Example Question
Teacher Efficacy for Instructional Strategies	Item 1-6	*"I can create a positive learning environment for students."*
Teacher Efficacy for Student Engagement	Item 7-11	"*I can keep students on task during classes.*"

For the 11 items in the Pk6MTES, study participants used sliders to rank their levels of agreement with the statements using an 11-point Likert-type scale ranging from 10 (*I am certain I can do this*) to 0 (*I cannot do this at all*). Likert-type scale item responses for each subscale were aggregated, and scores were calculated based on average scores of the items for each subscale. Mean scores of teacher efficacy for instructional strategies and for student engagement range from 0 to 11; lower scores denote indicate low efficacy, while higher scores indicate high efficacy. The mean scores for two subscales were used in this study as dependent variables and were considered continuous variables (see Appendix A).

Four Sources of PreK-6 Music Teacher Efficacy Scale (FS-PMTES)

The four sources of self-efficacy were measured with the Four Sources of PreK-6 Music Teacher Efficacy Scale (FS-PMTES), a 16-item instrument with a 11-point Likert-type scale ranging from 10 (*I strongly agree*) to 0 (*I do not agree with this statement whatsoever*). I developed the Four Sources of PreK-6 Music Teacher Efficacy Scale (FS-PMTES) based on Bandura's (1997) social cognitive theory. The FS-PMTES represents the four sources of self-efficacy: (a) mastery experiences, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological and affective state.

Table 2 shows the 16 items of the FS-PMTES linked to the four independent variables corresponding to Bandura's four sources of self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective state. Each of the four subscales of the FS-PMTES contains four items. Items related to mastery experiences (12-15) employed the stem "I have...", because mastery experiences are experiences of the past. Items related to vicarious experiences (16-19) have to do with observing others for the purposes of improving one's teaching practice. Items related to verbal persuasion (20-23) are associated with previous experience related to positive feedback for one's teaching practice. Items related to physiological and affective state (24-27) are related to emotions or personal physical states related to one's teaching practice (see the full survey instrument in Appendix A).

Table 2

Independent Variables and Items in the FS-PMTES

Independent Variable	Item Number	Example Question
Mastery Experience	Item 12-15	"*I have done a good job planning for music experiences for students."*
Vicarious Experience	Item 16-19	"*Observing my music teacher colleagues teaching effectively allows me to imagine myself teaching effectively too.*"
Verbal Persuasion	Item 20-23	"*I have been praised for my music teaching by principals.*"
Physiological and Affective State	Item 24-27	"*I never get depressed when I think about teaching music.*"

Participants used sliders to rate the items related to the four sources of self-efficacy on a 11-point Likert-type scale ranging from 10 (*I strongly agree*) to 0 (*I do not agree with this statement whatsoever*). Likert-type item responses for each of the four sources were aggregated, and a score for each subscale was computed based on average

score of the questions. Mean scores of the four sources of self-efficacy range from 0 to 11; higher scores indicate greater strength of that particular source of self-efficacy. The mean scores for four subscales were used in this study as independent variables and were considered continuous variables.

Open-ended questions included in this section of the survey instrument were used to investigate other factors that may contribute to strengthening or undermining participants' confidence in teaching music. In addition, I asked whether the COVID-19 pandemic affected their confidence in their teaching (see Appendix A).

Professional Development Activity Questionnaire

Professional development activities of PreK-6 music teachers were measured in the third section of the survey instrument using 10 items. Two items (32-33) were associated with specialized music teacher certifications, such as the total number of method certification acquired and the name of method certifications acquired (e.g., Dalcroze, Gordon, Kodály, and Orff-Schulwerk levels). Six items (34-39) were related to other kinds of professional activities: (a) involvement in professional development workshops provided by school/district per year, (b) involvement in professional development workshops outside of school/district per year, (c) watching music teaching videos via YouTube or other media sources per month, (d) listening to music educators' podcasts per month, (e) reading music education journal articles per month, and (f) observing other teachers per year. Teachers self-reported numbers (e.g., certifications completed, hours per year or month) for each item, depending on the question. I also added two open-ended questions (40-41) to explore other kinds of professional development activities in which participants engage and what professional development

activities most positively affect their confidence in teaching music (see the full survey instrument in Appendix A).

Demographic Questionnaire

The last section of the survey instrument encompasses 12 items with eight demographic variables: (a) teaching appointment, (b) school type, (c) grade level, (d) teaching areas, (e) teaching experiences, (f) gender, (g) race/ethnicity, and (h) education.

Teaching appointment includes full-time and part-time. School type includes Catholic, Christian, other religious school, public, public charter, and private school. A second question on school type includes urban/rural Title I school and urban/rural Non-Title I school. Grade level includes Pre-Kindergarten, Kindergarten, Grade 1, Grade 2, Grade 3, Grade 4, Grade 5, and Grade 6. Teaching areas include band, choir, orchestra, general music, and other. For teaching area, participants filled in a number indicating what percentage of their time they teach in different areas at their current school(s). Teaching experiences included two items about their total number of years of Pre-K 6 teaching experience and years of PreK-6 teaching experience at their current school. Teachers also self-reported gender, race/ethnicity, and education (i.e., the highest degree earned and primary focus area) (see the full survey instrument in Appendix A).

Research Questions and Hypotheses

The following research questions and hypotheses guided this study:

1. To what extent do the four sources of teacher efficacy, identified by Bandura (1997), affect reported composite teacher efficacy scores of PreK-6 music teachers?

$H1_0$: There is no statistically significant difference in reported composite teacher efficacy scores of PreK-6 music teachers by the four sources of teacher efficacy.

2. To what extent do various dimensions of professional development activities—(a) the total number of hours spent participating in professional workshops per year, (b) the total number of method certifications acquired, (c) the total number of hours spent watching teaching resources via YouTube per month, (d) the total number of hours spent listening to music educators' podcast per month, (e) the total number of music educators' journal articles read per month, (f) the total number of hours spent observing other teachers per year—relate to reported composite teacher efficacy scores of PreK-6 music teachers?

   $H2_0$: There is no statistically significant difference in reported composite teacher efficacy scores of PreK-6 music teachers by the five predictor variables related to professional development.

3. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by the main teaching area (i.e., general music, band, orchestra, choir, other, and mixed)?

   $H3_0$: There is no statistically significant difference in reported composite teacher efficacy scores of PreK-6 music teachers by the main teaching area (i.e., general music, band, orchestra, choir, other, and mixed).

4. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by years of teaching experience (i.e., 1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience)?

$H4_0$: There is no statistically significant difference in reported composite teacher efficacy scores of PreK-6 music teachers by years of teaching experiences (i.e., 1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience).

5. Is there a differential effect associated with the interaction of the main teaching area and years of teaching experiences?

   $H5_0$: There is no statistically significant difference in reported composite teacher efficacy scores of PreK-6 music teachers by the interaction of the main teaching area and years of teaching experiences.

6. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by school types (Urban/Rural Title I school, Urban/Rural Non-Title I school)?

   $H6_0$: There is no statistically significant difference in reported composite teacher efficacy scores of PreK-6 music teachers by school types (Urban/Rural Title I school, Urban/Rural Non-Title I school).

Pilot Test

Before administering the survey instrument for this study, I pilot tested the instrument to determine whether there were any potential issues, including the use of appropriate language, inappropriate jargon, errors and omissions, and the like (Cresswell & Cresswell, 2018). In the preliminary phases of instrument development, I created an online survey using *Qualtrics Survey Software*, an online survey program.

In December of 2021, I distributed the first version of the instrument to Music Learning and Teaching students ($N = 34$) at Arizona State University (ASU). Among

participants, 18 were doctoral students with prior teaching experience and 16 were undergraduate junior and senior students enrolled in Music Education (MUE) 413, The Art of Teaching Children Music. Regarding recommended sample sizes for this and pilot studies in general, researchers suggest that sample sizes vary from 10 to 30 (Hill, 1998; Isaac & Michael, 1995; van Belle, 2002). I expected that these 34 students could serve as an accurate representation of the population of interest in this study (Johanson & Brooks, 2010), since the doctoral students all had prior teaching experience and undergraduate students were asked to pretend that they are an elementary school music teacher when taking the survey.

I received 13 responses (N = 13), and these responses were used for a series of Cronbach's alpha analyses. To determine whether all of the items measure the same latent factor or concept that I included in the survey instrument, I conducted Cronbach's alpha analyses using the Statistical Package for the Social Sciences (SPSS) Version 28 (IBM Corporation, 2021).

As illustrated in Table 3, the overall alpha for the full set of Likert-scale items in the Pk6MTES scale was excellent (α =.98; see George & Mallery, 2003) Cronbach's alpha estimates for the subconstructs ranged from $.95 \leq \alpha \leq .97$. Even though a high value for Cronbach's alpha estimate may suggest that certain items are redundant (Tavakol & Dennick, 2011), no single item made a significant difference to the overall alpha when removed to explore or compensate for redundancy. Hence, I did not modify this instrument.

Table 3

Cronbach's Alpha Estimates in the Pk6MTES for Pilot Study (N = 13)

Construct	Item Number	Cronbach's Alpha
Teacher Efficacy for Instructional Strategies	Item 1-6	.97
Teacher Efficacy for Student Engagement	Item 7-11	.95
Overall Alpha	All Items	.98

As illustrated in Table 4, the overall Cronbach's alpha for the full set of Likert-scale items for the FS-PMTES was excellent (α = .92; see George & Mallery, 2003). Cronbach's alpha estimates for the subconstructs ranged from $.90 \leq \alpha \leq .96$. Given that the overall alpha (a = .92) was excellent, I did not modify the items in the FS-PMTES, and it also could be concluded that the items measuring the four sources of self-efficacy were reliable.

Table 4

Cronbach's Alpha Estimates in the FS-PMTES for Pilot Study (N=13)

Construct	Item Number	Cronbach's Alpha
Mastery Experience	Item 12-15	.95
Vicarious Experience	Item 16-19	.96
Verbal Persuasion	Item 20-23	.93
Physiological and Affective State	Item 24-27	.90
Overall Alpha	All Items	.92

I invited pilot study participants to provide written feedback about the survey. They offered suggestions about changing the wording of an item and adding options for a multiple-choice question (see more details in content validity section). By incorporating their written comments into final survey instrument revisions, I modified the survey instrument for the next content validity phase (see also content validity section).

Main Study Procedure

After the pilot and revision of the survey instrument and prior to administration for the main study, I confirmed both reliability using Cronbach alphas in terms of how consistently the survey instrument measure the concepts, and content validity to determine whether the instrument measures the concepts I developed it to measure (Edmondson et al., 2012; Suskie, 1996). I identified a target population and sampling strategy. Then, following IRB approval, I began distributing the survey instrument and started collecting data in January of 2022. These procedures are described below.

Participants received an email with a link to electronic informed consent listing all IRB information. If participants agreed to participate in this study, they took the survey via *Qualtrics*. The participant solicitation email and consent form used to invite participants, which also included information about opting out of the study, IRB information, and anonymity and confidentiality notes (Diem, 2002; Fowler, 2013; Nardi, 2018) are available in Appendix B and Appendix C.

Participants

Before obtaining a sample and administering this survey instrument, I identified a target population, which is "the group or the individuals to whom the survey applies" (Kitchenham & Pfleeger, 2002, p. 17). The target population in this study included current PreK-6 music teachers in schools in Arizona. Prior to the commencement of data collection, I obtained university Institutional Review Board (IRB) approval in December 2021 (see Appendix D).

This current study employed multiple sampling methods (Nardi, 2018): (a) a sampling frame of membership in the National Association for Music Education

(NAfME), (b) purposive sampling, and (c) snowball sampling technique. First, the NAfME provided me with a sampling frame of membership in the NAfME, from which I selected potential participants by choosing 2 criteria—Arizona (Geography) and PreK-12 (Teaching Level)—from the list criteria provided by the NAfME. Although PreK-6 music teachers in Arizona is the target population in this study, respondents were broadly selected as PreK-12 because PreK-6 criteria (i.e., target population) was not offered in the research assistance order form. The NAfME members who identified as PreK-12 music teachers in Arizona were invited to participate in this study. On 14th April, an assistant at NAfME sent an invitation email to 660 PreK-12 music teachers in Arizona with the description of the study, IRB information, and an electronic link to the survey. One week after the initial email invitation, a reminder email was sent to the potential participants.

Second, this study also adopted purposive sampling. This recruitment strategy as a nonprobability method is used when the researcher intends to select certain respondents, considering the purpose of the research and demographics of interest (Berndt, 2020; Campbell et al., 2020; Nardi, 2018). Two local music teacher associations—the Arizona chapters of the American Orff-Schulwerk Association and the Organization of American Kodály Educators—were chosen because their members are the representative of the target population in this study. These two associations sent invitation email messages to their members to participate in the survey.

Third, to further increase the survey response rate, snowball sampling technique as a form of convenience sampling also was employed in this study. Snowball sampling is a nonprobability method of survey sampling (Nardi, 2018). Snowball sampling, defined as chain-referral sampling, is a technique of selecting research subjects that is

commonly used when the characteristics of the sample are unusual (Dragan & Isaic-Maniu, 2013; Cohen & Arieli, 2011). The target population of this study remains marginalized (Cohen & Arieli, 2011), meaning that it is challenging to locate and access the research subjects, PreK-6 music teachers in Arizona. Therefore, the snowball sampling technique was appropriate for this study. Accordingly, I contacted friends and acquaintances who were music teachers in Arizona and sent invitation messages via Facebook as a means of soliciting their participation in the study. They were further asked to forward the invitation message to friends and fellow teachers who were also PreK-6 music teachers in Arizona.

To avoid potential duplicate responses, "Ballot Box Stuffing" was checked in *Qualtrics*. This option prevented participants from completing the survey more than once, considering that a member of one participating organization may also have been a member of another participating organization. Responses to all the items were anonymized and protected (Nardi, 2018) and participants were provided the option of discontinuing the study at any time (Fowler, 2013).

Data Analyses

Prior to conducting data analyses, I examined the data to determine the number of valid responses in relation to the overall response rate. Then, the main procedures used in this study produced frequency distributions and examined statistically significant differences in teacher efficacy based on the demographic data and data related to the four sources of self-efficacy for the participants.

I entered the quantitative survey data into SPSS Version 28 for analyses. Prior to answering each of the research questions, I employed percentages of participant

responses to analyze participant demographic information. Then, I explored central measures of tendency for each Likert-scale item, including mean responses, median responses, and standard deviations (*SD*s) of the responses to help illustrate degrees of homogeneity (or heterogeneity) per statement. I also combined item responses per subscale to generate a set of composite scores for descriptive purposes and also for more advanced analyses (e.g., multiple regression, one-way analyses of variance [ANOVA], two-way analyses of variance [ANOVA]). I set statistical significance at or below the p = .05 alpha level. I report the data analyses in table format in Chapter 4.

Data Cleaning

Data cleaning technique helps researchers identify low quality of data prior to running data analyses. Two data screening techniques—longstring and response time—were undertaken to examine ineligible responses in this study. First, the longstring or invariant responding refers to "the same option being selected repeatedly" (DeSimone et al., 2015, p. 174). Second, response time refers to "a minimum amount of time that respondents must spend on an item in order to answer accurately" (DeSimone et al., 2015, p.173). When the survey was closed on July 31th, 2022, the total number of PreK-6 music teachers who had responded to the survey was 132. By carefully examining the data, I reduced the 132 respondents to 116 as 16 teachers either indicated they were not currently working in Arizona as PreK-6 music teachers or did not answer that question. I then eliminated 21 teachers who responded using the same option (e.g., 5-point choice reported in all Likert-type scale), which reduced the sample size to 95. Finally, I removed the responses for 3 additional teachers who completed the survey within one or two minutes, reducing the sample size to 92. This careful data cleaning procedure reduced the

valid sample size to 92 PreK-6 music teachers in Arizona.

Response Rate

I began the data analyses by determining the total response rate for the survey. In total, 92 PreK-6 music teachers responded, and the response rate was 13.94% (N = 92). The NAfME initially invited 660 members who self-identified as *PreK-12 music teachers* in Arizona on April 14th, but 444 invitations remained unopened, leaving 216 that were opened and 10 that were clicked through. In a follow-up invitation one week later, 660 email invitations were sent to the same list of individuals as the initial mailing, of which 451 were not opened, leaving 209 that were opened and nine that were clicked through. Of 660 of the NAfME members, 19 respondents might have completed the survey. The rest of the participants in this study numbered 72, and these responses were likely collected from email invitations of two Arizona chapter members, emails to hosts of interns and student teachers, and snowball sampling. When calculating the response rate, the target population was 660, albeit the Arizona chapter members may or may not have the NAfME membership as PreK-6 music teachers.

Simultaneous Multiple Regression

Multiple regression analysis is commonly used to examine the causal relationship between a dependent variable and independent variables (Field, 2018). In particular, this study employed a simultaneous multiple regression analysis by entering the data associated with the predictor variables into the regression analyses at the same time (Russell, 2018), in order to examine the relationship between the predictor (independent) variables and dependent variables. The model is typically used when the researcher has no preconceived notions regarding how predictor variables affect the dependent variable

(Russell, 2018). In this study, two separate simultaneous multiple regression analyses were undertaken to test the hypothesis that the specific predictor variables could explain variation in PreK-6 music teachers' teacher efficacy as measured by the two subscales (instructional strategies and student engagement) of the Pk6MTES.

Checking Assumptions of Simultaneous Multiple Regression. Prior to conducting the simultaneous multiple regression statistical technique, researchers must check several assumptions about the collected data (Field, 2018). The following assumptions surrounding simultaneous multiple regression were: (a) linearity, (b) multicollinearity, (c) normality, (d) independence of errors, and (e) homoscedasticity (Field, 2018).

Linearity. Linearity refers to the linear relationship between dependent and independent variables (Field, 2018; Russell, 2018). Visual inspection of the normal probability plot (P-P plot) of the regression standardized residual enables researchers to simply determine whether nonlinearity exists in the relationship between dependent and independent variables (Field, 2018; Garson, 2012). I checked this assumption via a straight line in the normal probability.

Multicollinearity. Multicollinearity occurs when the independent variables are highly correlated with each other (Field, 2018; Russell, 2018). Tolerance below 0.1 and variance inflation factor (VIF) indices greater than 10 indicate that a predictor variable has a strong linear relationship with other predictor variables (Bowerman & O'Connell, 1990), which causes a multicollinearity issue. Researchers can reduce multicollinearity by dropping one or more of the correlated variables from the model if the data violated

the multicollinearity assumption (Midi et al., 2010). I addressed this assumption by assessing whether VIF indices are greater than 10.

Normality. Normality addresses the assumptions that the scores on the dependent variable are normally distributed (Field, 2018; Russell, 2018). The Shapiro-Wilk normality test helps researchers to check whether violation of the assumption of normality in the regression model exists (Garson, 2012). If the normality test indicates a statistically significant difference (p >.05), the dependent variable is not normally distributed. Thus, I checked the Shapiro-Wilk normality test to determine whether data are significantly different from normal distribution (p >.05).

Independence of Errors. Independence of errors occurs when the values of residuals are uncorrelated (i.e., independent) (Field, 2018). The Durbin-Watson test enable researchers to detect independent errors between a predicted value and the observed value. The Durbin-Watson statistic ranges from 0 to 4, and values between 1.0 to 3.0 indicate independence of errors (Field, 2018). Thus, I checked whether the Durbin-Watson statistic is between 1.0 to 3.0.

Homoscedasticity. Homoscedasticity means that the variance of residuals for scores of the dependent variables are equal at each level of the independent variables (Field, 2018; Osborne & Waters, 2002), If the variance of residuals differs across all levels of the independent variables, this indicates heteroscedasticity. This assumption can be tested by the Breusch-Pagan test (Breusch & Pagan, 1979). If the Breusch-Pagan test indicates a statistically significant difference (p >.05), this indicates heteroscedasticity. Thus, I checked whether the Breusch-Pagan test is not significantly different from homoscedasticity (p >.05).

For each regression analysis, I checked and assessed all variables in terms of VIF values as well as the assumptions of multiple regression (i.e., normality, linearity, independence of errors, and homoscedasticity) prior to a series of multiple regression analyses.

Conducting Simultaneous Multiple Regression. To answer Research Question 1, "*To what extent do the four sources of teacher efficacy identified by Bandura (1997) affect reported composite teacher efficacy scores of PreK-6 music teachers?*" I conducted two separate multiple linear regression analyses. To run the regression analyses, the mean item responses to each of the two subscales (i.e., teacher efficacy for instructional strategies and teacher efficacy for student engagement) of the Pk6MTES were used as the two dependent variables. I used the composite scores of the subscales (i.e., mastery experience, vicarious experience, verbal persuasion, and physiological and affective state) of the FS-PMTES as the four independent variables. To predict how each independent variable contributed to explaining the dependent variables (i.e., teacher efficacy for instructional strategies and student engagement), I entered all data related to the independent variables at the same time.

To answer Research Question 2, "*To what extent do various dimensions of* professional development activities—*(a) the total number of hours spent participating in professional workshops per year, (b) the total number of method certifications acquired, (c) the total number of hours spent watching teaching resources via YouTube per month, (d) the total number of hours spent listening to music educators' podcast per month, (e) the total number of music educators' academic journal articles read per month, (f) the total number of hours spent observing other teachers per year—relate to reported*

composite teacher efficacy scores of PreK-6 music teachers?", I conducted two separate multiple linear regression analyses. As with Research Question 1, I used the mean item responses to each of the two subscales (i.e., teacher efficacy for instructional strategies and teacher efficacy for student engagement) from the Pk6MTES as two dependent variables. I used data from the six types of professional development experience questions as six independent variables (continuous variables). I used the regression model to determine if the six types of professional development experiences significantly predict teacher efficacy for instructional strategies and student engagement. I entered all data related to independent variables simultaneously to explore how each independent variable contributed to explaining the dependent variables.

I calculated Cohen's f^2 as an index of effect size to examine measures of association between one dependent variable and all independent variables. In addition, I categorized effects as per Cohen's f^2 using the three categories of small (f^2=0.02), medium (f^2=0.15), and large effects (f^2=0.35) (Cohen, 1988).

Factorial Between-Subjects ANOVA

A factorial between-subjects ANOVA is used when a researcher determines whether two or more categorical variables representing an experimental independent variable account for variance in the outcome variable (continuous variable) (Field, 2018; Russell, 2018). In this study, two separate factorial ANOVAs were undertaken to examine the hypothesis that categorical variable A (main teaching area), B (years of teaching experiences), or the interaction of A/B could explain variance in PreK-6 music teachers' teacher efficacy as measured by Pk6MTES scores (continuous variable). Again,

the mean item responses to two subscales of the Pk6MTES were taken as the dependent variables.

Checking Assumptions of Factorial Between-Subjects ANOVA. Prior to conducting a factorial between-subjects ANOVA statistical technique, several assumptions about the collected data need to be fulfilled (Field, 2018). The following assumptions surrounding factorial ANOVA are: (a) independence, (b) normality, and (c) homogeneity of variance (Field, 2018; Shavelson, 2012).

Independence. Independence occurs when the dependent variable score of any subject is independent of all other subjects (Field, 2018; Russell, 2018; Shavelson, 2012). In this study, two categorial variables divided into separate groups as follows: main teaching area (general music, band, orchestra, or mixed area group) and years of teaching experience (1 to 5, 6 to 10, more than 10 years of teaching experience groups). Therefore, the data met the independence assumption because each participant belongs to one group per categorical variable resulting in independence of observations.

Normality. Again, normality occurs when the scores on the dependent variable are normally distributed (Field, 2018; Russell, 2018; Shavelson, 2012). Testing procedures for the normality assumption are the same as for the normality assumption test in simultaneous multiple regression. However, in ANOVA, independent variables are categorial and normality assumption test can be assessed for each factor level of independent variables (e.g., general music, band, orchestra, choir, and mixed in main teaching areas) (Maxwell et al., 2018; Shavelson, 2012). I checked the normality assumption using the Shapiro-Wilk test if the statistic for each factor level, and normality

is met if the data are not significantly different from normal distribution (p >.05) (Shavelson, 2012).

Homogeneity of Variance. Homogeneity of variance assumption occurs when the variances of scores on the dependent variable in each group are equal (Shavelson, 2012). Levene's test enables researchers to see if the variance of the mean dependent scores in each independent group are equal or similar. I checked this assumption using Levine's test to see if the data meet assumption of equal variances (p > .05) (Shavelson, 2012).

Factorial between-subjects ANOVA is robust to the violation of the assumption of normality and homogeneity of variance (Field, 2018; Shavelson, 2012). However, prior to running factorial ANOVAs, I verified assumptions of normality and homogeneity of variance.

Conducting Factorial Between-Subjects ANOVA. To answer Research Questions 3, 4 and 5, "*Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by the main teaching area (i.e., general music, band, orchestra, choir, other, and mixed)?*", "*Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by years of teaching experience (i.e., 1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience)?*", and "*Is there a differential effect associated with the interaction of the main teaching area and years of teaching experiences?*", I conducted two separate factorial between-subjects ANOVAs to compare the unique (i.e., main) effects of *the main teaching area* (general music, band, orchestra, band, other, and mixed) and *years of teaching experience* (1 to 5 years, 6 to 10 years, and more than 10 years of teaching

experience) and combinations of the independent factors (i.e., the interaction effect) between the main teaching area and years of teaching experience on the participants' levels of teacher efficacy as measured by the two subscales of the Pk6MTES—teacher efficacy for instructional strategies and teacher efficacy for student engagement.

The main teaching area served as five categorical independent variables (i.e., six factor levels)—general music, band, orchestra, choir, other, and mixed area while years of teaching experience included three categorical independent variables (i.e., three factor levels)—1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience. Accordingly, the factorial ANOVA in this study included two factors where the main teaching area had six factor levels and years of teaching experience had three factor levels (6 x 3 design). To estimate the degree of association between independent variables and dependent variables, I used and interpreted Partial eta squared (η^2) as an index of effect size: .010 (small effect); .059 (medium effect); and .138 (large effect) (Cohen, 1988).

One-Way Between-Subjects ANOVA

One-way between-subjects analyses of variance [ANOVA] is an inferential statistical test used when a researcher assesses differences between two or more group means (Field, 2018; Russell, 2018). In this study, I tested the hypothesis that PreK-6 music teachers' teacher efficacy levels differ by school types. That is, to answer Research Question 6, "*Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by school types (Urban/Rural Title I school versus Urban/Rural Non-Title I school)?*", separate ANOVA analyses were undertaken to assess differences between group means of teacher efficacy levels by school types. Again,

teacher efficacy for instructional strategies and student engagement as measured by the Pk6MTES were taken as the dependent variables.

Checking Assumptions of One-way Between-Subjects ANOVA. Prior to conducting one-way between-subjects ANOVA statistical technique, several assumptions must be checked. I verified assumptions of independence, normality, and homogeneity of variance (Field, 2018; Shavelson, 2012).

Independence. This assumption is the same as factorial ANOVA. In addition, the mean dependent scores in each group (e.g., Title I and Non-Title I) are equal or similar. Since participants were divided by school types (e.g., Title I or Non-Title I), it ensures independence of observation. Hence, the data confirmed independence assumption.

Normality. As with factorial ANOVA assumption, the Shapiro-Wilk test can check the data for normality assumption. I checked if the Shapiro-Wilk test for normality in each group is not statistically significant ($p > .05$) (Shavelson, 2012).

Homogeneity of Variance. Similar to factorial ANOVA, homogeneity of variance assumption for a one-way between subjects ANOVA also can be checked using Levine's test. I checked if the variance of the dependent variable scores in each group is equal or similar (i.e., school types). Again, if *p*-value is greater than .05, the data meet the assumption of equal variances (Shavelson, 2012).

ANOVA is also robust to the violation of the assumption of normality and homogeneity of variance (Field, 2018; Shavelson, 2012). However, prior to running a series of ANOVAs, I verified assumptions of normality and homogeneity of variance.

Conducting One-Way Between-Subjects ANOVA. Again, the mean scores of the item responses to the subscales in the Pk6MTES instrument was calculated as the two

dependent variables, and four groups per school types—Urban Title I school, Rural Title I school, Urban Non-Title I school, Rural Non-Title I school—served as the independent variables. Eta-squared (η^2) was interpreted as an index of effect size to examine the proportion of variation in the dependent variable accounted for by groups as the independent variable: .01 (small effect size), .06 (medium effect size), and .14 (large effect size) (Cohen, 1988).

Open-Ended Questions Analysis

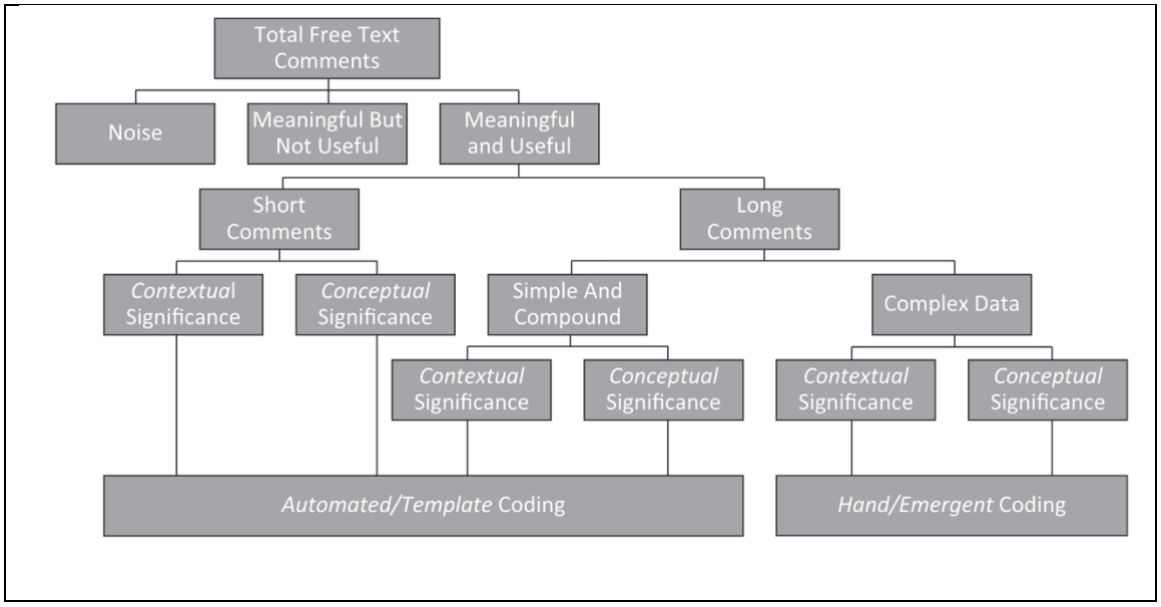
An analysis of open-ended data can contribute to contextually rich understandings of interest (Behar-Horenstein & Feng, 2018). Such analysis can not only explain and corroborate findings of statistical analyses from closed questions (O'Cathain & Thomas, 2004), but also may also help researchers better understand participants' thinking (Roberts et al., 2014). Various types of responses to open-ended questions may exist, including nonsense responses (e.g., "asdf"), nonresponsive comments (e.g., "n/a"), short comments (e.g., a few words), and long comments (e.g., more than 50 characters) (Brooks et al., 2017). Due to these characteristics, many survey researchers regard open-ended responses as difficult to analyze. Accordingly, it is imperative to choose an efficient method to analyze data generated from open-ended questions.

In this study, a rapid sensemaking (RSM) approach, developed by Etz et al. (2018), was undertaken to identify data patterns from open-ended comments. Respondents' open-ended comments were analyzed per five steps of the guideline from the RSM approach (see Figure 4). First, I identified and remove nonsense/non-responsive comments. Second, I organized remaining data as meaningful but not useful and meaningful and useful. Based on character length of participant comments, I determined

nonmeaningful and not useful comments (e.g., "$@%" or "..."). In addition, based on character length and key words related to the open-ended questions, I identified meaningful but not useful comments. Third, I divided remaining data into short and long responses. Then, I reclassified long responses as compound or complex responses. Fourth, I examined the data for conceptual and contextual significance. Conceptual significant responses indicate not directly responsive to the open-ended question, while contextual significant responses refer to directly responsive comments on the question (Etz et al., 2018). Lastly, to better understand findings and to shed light on apparent inconsistencies among them, I compared and contrasted quantitative and open-ended response findings. The open-ended responses were categorized into coding patterns consisting of meaningful comments, and then the frequency and percentage of each response was calculated.

Figure 4

Flow Diagram for RSM Approach Coding Method (Etz et al., 2018, p.3)



Survey Instrument Reliability

Reliability refers to the extent to which researchers can repeatedly obtain consistent results (Field, 2018; Tavakol & Dennick, 2011). Survey instrument reliability can be achieved by conducting a series of Cronbach alpha analyses, as I did in the pilot study. I performed Cronbach's alpha analyses for the final instrument using SPSS version 28 (IBM Corporation, 2021) to determine whether all the items measure the same concept. In general, an alpha of 0.7 or higher is adequate (Nunally, 1978).

Table 5 shows the Cronbach alpha estimates for the full set of Likert-scale items in the Pk6MTES. Cronbach alpha estimates for the two subscales in the Pk6MTES ranged from $.86 \leq \alpha \leq 91$. The overall Cronbach's alpha of the Pk6MTES was excellent (a = .93) (Vaske et al., 2017). Thus, the reliability of the Pk6MTES was satisfactory.

Table 5

Cronbach's Alpha Estimates in the Pk6MTES (N = 92)

Construct	Item Number	Cronbach's Alpha
Teacher Efficacy for Instructional Strategies	Items_1-6	.86
Teacher Efficacy for Student Engagement	Items_7-11	.91
Overall Alpha	All Items	.93

Table 6 shows that the overall alpha for the full set of Likert-scale items in the FS-PMTES was acceptable (α = .89) (Vaske et al., 2017). Cronbach's alpha estimates for the subconstructs within this construct ranged from $.87 \leq \alpha \leq .93$. Thus, the reliability of the FS-PMTES was satisfactory.

Table 6

Cronbach's Alpha Estimates in the FS-PMTES (N = 92)

Construct	Item Number	Cronbach's Alpha
Mastery Experience	Items 12-15	.87
Vicarious Experience	Items 16-19	.93
Verbal Persuasion	Items 20-23	.89
Physiological and Affective State	Items 24-27	.89
Overall Alpha	All Items	.89

Content Validity

Content validity refers to deliberately and systematically making sure "that the items make sense and comprehensively cover the issue" being studied (Slattery et al., 2011, p. 834). Establishing content validity usually requires the involvement of a panel of experts and several revisions (Slattery et al., 2011). Accordingly, university faculty members served as my content experts and reviewed the survey instrument once revised and prior to officially distributing it to participants.

I determined clarity based on feedback from the pilot study to see whether their responses were close to what I intended to capture. I made adjustments to the wording of some questions based on the suggestions from the pilot study participants and feedback from university experts. For example, I changed the wording of Q12 ("*I have done a good job planning for music experience*") from music experience to *music experiences for students*. I added the following options to Q32 ("*What music methods certifications do you have?*"): Conversational Solfege Level I, II, and III, First Steps in Music, and World Music Pedagogy. In addition, since questions from Q34 to Q39 ask about number of experiences related to professional development activities per year or per month, I bolded "year" and "month" in each item in order for participants to become quickly

aware of the wording and meaning of the question.

Generalizability

External validity refers to "the validity of the survey beyond the study: its generalizability, both to the population, and across contexts" (Wiersma, 2013, p. 2). One external threat to validity exists in this study, in that all PreK-music teachers in Arizona did not participate. The total number of respondents who completed the instrument was $N = 92$, which yielded a total response rate of 13.94%. Survey research study commonly produces 39.6% mean response rates (Fulton, 2018) and higher degrees of inferential validity results from high response rates (Cornesse & Bosnjak, 2018); therefore, the response rate in this study may not offer generalizable inferences. One possible explanation of the low response rate is due to survey fatigue during the COVID-19 pandemic. Thus, the results of this study have limited generalizability due to low response rates and may hamper the ability to draw valid inferences from the results of this study.

Wilkinson and Task Force on Statistical Inference (1999) suggested that researchers can examine whether participants represent the characteristics of the general population from which the sample came. Using the chi-square goodness of fit test, statistical tests for significant likenesses or differences among responding and non-responding PreK-6 music teachers in Arizona, readers might be informed and make naturalistic generalizations from the findings of this study within their own contexts and given their own experiences (Stake & Trumbull, 1982). Unfortunately, however, the datasets to which I had access did not include any demographic variables about PreK-6 music teacher who were invited to participate. The NAfME does not provide

demographic information (e.g., main teaching area and school types) of the 660 invited members that might allow me to identify sample representativeness. Additionally, two Arizona chapter members are primarily general music teachers, not band or orchestra teachers, but these organizations also did not provide specific demographic information regarding study variables, such as years of teaching experience, main teaching area, and school types, for the current study. Thus, it was impossible to conduct statistical tests to examine the sample of the general PreK-6 music teacher population characteristics using chi-square analyses.

Summary

Chapter 3 presented the methodology used in this study. The full survey instrument was explained, and reliability and validity were discussed. Survey distribution methods were explained. After data cleaning, 92 preK-6 music teachers in Arizona (N = 92) completed the survey. The statistical models of a simultaneous multiple regression, factorial between-subjects ANOVA analyses, one-way between-subjects ANOVA analyses, and RSM approach were presented. I present results of the data analysis and statistical findings in chapter 4.

CHAPTER 4

FINDINGS

Introduction

In this study, I examined PreK-6 music teachers' efficacious beliefs in teaching music and predictor variables measuring the four sources of self-efficacy in Bandura's model (1997). I also examined the impact of professional development activities and demographic information (main teaching areas, years of teaching experience, and school types) on teacher efficacy of PreK-6 music teachers. My primary research questions were:

1. To what extent do the four sources of teacher efficacy identified by Bandura (1997) affect reported composite teacher efficacy scores of PreK-6 music teachers?
2. To what extent do various dimensions of professional development activities—(a) the total number of hours spent participating in professional workshops per year, (b) the total number of method certifications acquired, (c) the total number of hours spent watching teaching resources via YouTube per month, (d) the total number of hours spent listening to music educators' podcasts per month, (e) the total number of music educators' academic journal articles read per month, (f) the total number of hours spent observing other teachers per year—affect reported composite teacher efficacy scores of PreK-6 music teachers?
3. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by the main teaching area (i.e., general music, band, orchestra, choir, other, and mixed)?

4. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by years of teaching experience (i.e., 1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience)?
5. Is there a differential effect associated with the interaction of the main teaching area and years of teaching experiences?
6. Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by school types (Urban/Rural Title I school, Urban/Rural Non-Title I school)?

In this chapter, I provide a detailed demographic description of survey participants and a summary of the study variables. Then, I address each research question through quantitative data analysis. Last, I provide an analysis of the open-ended comments from the survey using a rapid sensemaking (RSM) approach.

Descriptive Statistics

Sample Demographics

Data for this study included information for 92 PreK-6 music teachers. Table 7 shows that most participants were female (70.65%) and White (85.87%) in race. The majority of participants had a master's degree (54.35%) as the highest degree with the primary focus area in music education (65.22%).

Table 7

Frequency and Percentages for Participant Demographics

Variable	*Frequency (%)*	Variable	*Frequency (%)*
Gender		Primary Focus Area	
Female	65 (70.65)	*Music education*	60 (65.22)
Male	22 (23.91)	*Elementary education*	4 (4.35)
Other [a]	2 (2.17)	*Woodwinds*	3 (3.26)
No response	3 (3.26)	*Piano*	2 (2.17)
		Strings	2 (2.17)
Ethnicity		*Voice*	2 (2.17)
White	79 (85.87)	*Percussion*	2 (2.17)
Hispanic	4 (4.35)	*Brass*	1 (1.09)
Asian	3 (3.26)	*Conducting*	1 (1.09)
African	1 (1.09)	*Music theory*	1 (1.09)
American/Black		*Other* [b]	11 (11.96)
No response	5 (5.43)	*No response*	3 (3.26)
Highest Degree Earned			
Master's	50 (54.35)		
Undergraduate	31 (33.70)		
Doctoral	8 (8.70)		
No response	3 (3.26)		

Note. [a] non-gender and queer; [b] Christian education, curriculum and instruction, educational administration, educational administration, educational counseling, educational leadership, elementary curriculum, English, and instructional technology

Participants responded to several questions about their teaching appointments and to one question about teaching experience. The data summarized in Table 8 shows that approximately 95% participants had a full-time teaching appointment. A total of 73.74% worked in public schools. Few participants (7.61%) taught prekindergarten, while most participants (80.43%) taught grade 5. In addition, when asked how many years participants had been teaching at their current school, the years of teaching experience ranged from 0 to 30 (M = 6.92, SD = 6.27).

Table 8

Frequency and Percentages for Participant Demographics

Variable	*Frequency (%)*	Variable	*Frequency (%)*
Teaching Appointment		Grade Levels Taught	
Full-time	87 (94.57)	*Grade 5*	74 (80.43)
Part-time	2 (2.17)	*Grade 4*	73 (79.35)
No response	3 (3.26)	*Grade 6*	70 (76.09)
		Grade 2	69 (75.00)
School Type		*Grade 1*	67 (72.83)
Public school	79 (73.74)	*Grade 3*	67 (72.83)
Public charter school	4 (4.35)	*Kindergarten*	65 (70.65)
Private school	3 (3.26)	*Pre-kindergarten*	7 (7.61)
Cristian school	2 (2.17)	*Other* [a]	26 (28.26)
Catholic school	1 (1.09)		
No response	3 (3.26)		

Note. [a] Grade 5 autism classes, Grade 7-8, and Grade 7-9

Participants also reported types of specialized music teaching method certification. Table 9 shows that participants were certified in varied types of music teaching methods. Nearly 50% participants held Orff-Schulwerk Level I (n = 45), followed by 43.48% with Kodály Level I (n = 40) certifications. Table 9 displays a summary of types of method certifications.

Table 9

Frequency and Percentage for Participant Demographics

Types of Method Certification	*Frequency* (%)
Orff-Schulwerk Level I	45 (48.91)
Kodály Level I	40 (43.48)
Orff-Schulwerk Level II	27 (29.35)
Kodály Level II	14 (15.22)
Orff-Schulwerk Level III	10 (10.87)
Kodály Level III	5 (5.43)
Dalcroze Level I	4 (4.35)
Suzuki Teacher Certification	3 (3.26)
World Music Pedagogy	3 (3.26)
Conversational Solfege Level I	3 (3.26)
Dalcroze Level II	2 (2.17)
Dalcroze Level III	2 (2.17)
First Steps in Music	2 (2.17)
Conversational Solfege Level II	1 (1.09)
Gordon Elementary General Level I	1 (1.09)
Gordon Elementary General Level II	1 (1.09)
Other [a]	2 (2.17)
No Special Certifications	33 (35.87)

Note. [a] National Board Certified teacher and Teaching for Musical Understanding

Study Variables

In the next sections, I summarize descriptive data for the variables used to explore the research questions. Responses to the survey instrument generated data for the variables. The survey instrument included the Pk6MTES, demographic items, and open-ended questions. The descriptions below provide survey items.

Dependent Variables. I used participant responses to the Pk6MTES to create two subscale scores that measured teacher efficacy for instructional strategies (mean of items 1, 2, 3, 4, 5 and 6) and teacher efficacy for student engagement (mean of items 7, 8, 9,10 and 11). The two subscale scores represent the dependent variables. Table 10 shows a summary of the Pk6MTES subscale scores. Teacher efficacy for instructional strategies

scores ranged from 4.67 to 10.00 with a mean of 8.59 (*SD* = 1.06). Teacher efficacy for student engagement scores ranged from 2.80 to 10.00 with an average of 8.30 (*SD* = 1.28). Table 10 shows a summary of the Pk6MTES scores for the 92 participants.

Table 10

Summary of the Pk6MTES Subscale Scores

Dependent Variable	*M*	*SD*	*Min.*	*Max.*
Teacher Efficacy for Instructional Strategies	8.59	1.06	4.67	10.00
Teacher Efficacy for Student Engagement	8.30	1.28	2.80	10.00

Independent Variables. The independent variables for this study include continuous variables and categorical variables. I describe and summarize these variables in the next section.

First, I used participant responses to the FS-PMTES to create four subscale scores related to the four sources of teacher efficacy: (a) participants' mastery experience (mean of items 12, 13, 14, and 15), (b) vicarious experience (mean of items 16, 17, 18, and 19), (c) experiences of verbal persuasion (mean of items 20, 21, 22, and 23), and (d) physiological and affective state (mean of items, 24, 25, 26, and 27). These four subscales correspond to the four sources of self-efficacy in Bandura's theory (1997). Table 11 shows a summary of each of the FS-PMTES subscale scores.

Table 11

Summary of the FS-PMTES Subscale Scores

Independent Variable	*M*	*SD*	*Min.*	*Max.*
Mastery Experience	8.59	1.14	4.50	10.00
Vicarious Experience	8.45	1.50	4.00	10.00
Verbal Persuasion	8.82	1.57	2.50	10.00
Physiological and Affective State	5.38	2.57	0	9.50

Second, I used participant responses to professional development items to create continuous and independent variables that measured the total number of hours spent participating in professional workshops per year (sum of items 34 and 35), the total number of method certifications acquired (item 33), the total number of hours spent watching teaching resources via YouTube per month (item 36), the total number of hours spent listening to music educators' podcasts per month (item 37), the total number of music educators' academic journal articles read per month (item 38), and the total number of hours spent observing other teachers per year (item 39). Table 12 presents a summary of each of the professional development item scores for the 92 participants.

Table 12

Summary of the Professional Development Scores

Independent Variable	*M*	*SD*	*Min.*	*Max.*
Workshop Hours/Year	39.70	33.67	2	190
Method Certifications	1.78	1.91	0	9
YouTube Hours/Month	6.88	6.43	0	24
Podcasts Hours/Month	0.94	2.23	0	12
Journal Articles/Year	1.60	2.14	0	10
Observation Hours/Year	4.39	2.75	0	8

Third, participants' years of teaching experience, main teaching area, and school type represent categorical and independent variables (see Table 13). I designated three groups based on years of teaching experience reported: (a) 1-5 years (n = 21; 22.83%), (b) 6–10 years (n = 18; 19.57), and (c) more than 10 years (n = 53; 57.61%). I also collapsed main teaching areas into three categories—general music, instrumental, mixed areas—due to the small number of responses to some teaching areas (orchestra, n = 9; band, n = 7; and choir, n = 1) and considering the nature of subjects. I collapsed orchestra and band groups into the instrumental area, and integrated choir group into general

music. As explained in Chapter three, the "mixed" group indicates that participant responses to main teaching area represent more than two areas with equivalent percentages of time or multiple areas with less than 50% teaching time for any single teaching area. Table 13 shows that general music (n = 63; 68.48%) was the largest teaching area group, followed by the instrumental (n = 16; 17.39%) and (c) the mixed area (n = 13; 14.13%) groups. In addition, I collapsed school types into two categories: (a) Title I and (b) Non-Title I. This question was framed with four choices (Urban Title I, Urban Non-Title I, Rural Title I, Rural Non-Title I). Due to the small number of responses to the Rural choices (Rural Title I, n = 2; Rural Non-Title I, n = 4), I collapsed the responses into Title I and Non-Title I only. Table 13 also shows that the proportion of Title I school group (54.35%) was higher than Non-Title I group (45.65%).

Table 13

Summary of Frequencies and Percentages for Categorical Variables

Variable	*Frequency (%)*
Years of Teaching Experience	
More than 10	53 (57.61)
1-5	21 (22.83)
6-10	18 (19.57)
Main Teaching Area	
General Music	63 (68.48)
Instrumental	16 (17.39)
Mixed	13 (14.13)
School Type	
Title I	50 (54.35)
Non-Title I	42 (45.65)

Research Question One

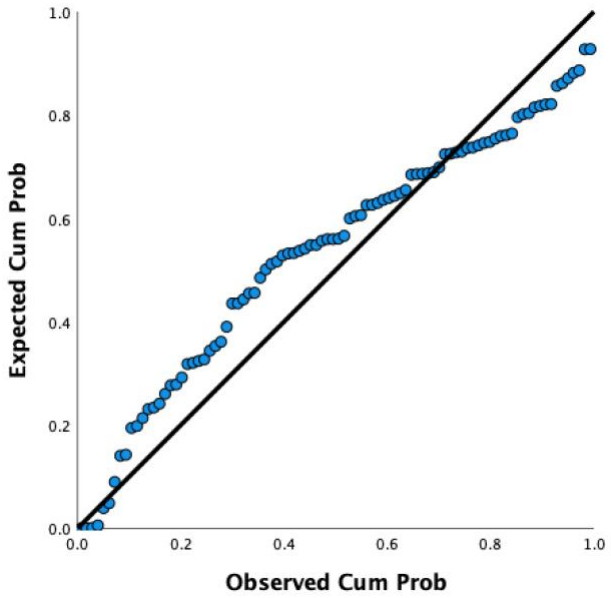
I conducted a series of simultaneous multiple regressions to address research question one: "To what extent do the four sources of teacher efficacy identified by Bandura (1997) affect reported composite teacher efficacy scores of PreK-6 music teachers?" Dependent variables were the participants' mean scores for the two subscales of the Pk6MTES: (a) teacher efficacy for instructional strategies and (b) teacher efficacy for student engagement. Predictor variables were the participants' mean scores for the four subscales of the FS-PMTES: (a) mastery experience, (b) vicarious experience, (c) verbal persuasion, and (d) physiological and affective state. Prior to running these analyses, I verified assumptions of multicollinearity, outliers, linearity, homoscedasticity, and independence of residuals. As explained in Chapter 3, I entered all predictor variables into the regression model simultaneously (Field, 2018). In the following sections, I explain the regression analysis for teacher efficacy scores for instructional strategies and the four sources of self-efficacy, and the regression analysis for teacher efficacy scores for student engagement the four sources of self-efficacy.

Simultaneous Multiple Regression Assumption Tests of Teacher Efficacy for Instructional Strategies and the Four Sources of Self-Efficacy

Linearity. The normal P-P plot displayed an even distribution of residuals with little deviation from the straight line (see Figure 5). This supports the assumption of linearity.

Figure 5

Normal P-P plot for Teacher Efficacy for Instructional Strategies and the Four Sources of Self-Efficacy



Multicollinearity. VIFs ranged from 1.11 to 2.84, which scored below 10. This supports the assumption that no strong correlations between predictor variables exist.

Normality. The result of the Shapiro-Wilk test for normality revealed that the data violated assumption of normality (p <.001). To address the violation of normality, bootstrapping—a computer-intensive resampling technique—needed to be performed in this study (Erceg-Hurn & Mirosevich, 2008). When observing the violation of normality, bootstrapping can estimate statistics on participants by resampling from the original data (Erceg-Hurn & Mirosevich, 2008). The bootstrap does not require making any assumption concerning the sampling distribution, and the recommended bootstrap samples are 1,000 or 5,000 (Pek et al., 2018). In this study, simultaneous multiple

regression used the bootstrapping method to construct 1,000 samples, each with a sample size of 92 participants.

Independence of Errors. The regression model predicting teacher efficacy for instructional strategies revealed that Durbin-Watson test statistic was 2.03. This fulfilled the assumption of independent errors.

Homoscedasticity. The result of the Breusch-Pagan test revealed that the data met the assumption of homoscedasticity ($p = .087$). This supports the assumption of homoscedasticity.

Results from Simultaneous Multiple Regression

To determine how much variance in scores of teacher efficacy for instructional strategies could be explained by the FS-PMTES, I performed a simultaneous multiple regression analysis. Table 14 summarizes these results. The coefficient of determination (adjusted $R^2 = .344$, $p < .001$) and effect size (Cohen's f^2 effect size estimate of 0.595) revealed that the four sources of teacher efficacy accounted for 34.4% of the variance in scores of teacher efficacy for instructional strategies with high effect sizes observed. The model was a significant predictor of teacher efficacy scores for instructional strategies, $F(4, 87) = 12.924$, $p < .001$. Results also revealed that a model that includes both mastery experience and vicarious experience scores shows statistical significance and contributed the greatest to the regression model, with mastery experience recording a higher standardized beta value ($\beta = .350$, $p = .016$) than vicarious experience ($\beta = .233$, $p = .029$). This suggests that mastery experience predicts more of the variance in scores of teacher efficacy for instructional strategies than vicarious experience. Meanwhile, verbal persuasion and physiological and affective state did not significantly predict teacher

efficacy scores for instructional strategies. The unstandardized coefficient for participants' mastery experience scores was .357, indicating that for every 1-point increase in mastery experience scores, teacher efficacy scores for instructional strategies increased by .357 points. The unstandardized coefficient for vicarious experience scores was .165, indicating that for every 1-point increase in vicarious experience scores, teacher efficacy scores for instructional strategies increased by .165 points.

Table 14

Multiple Regression Coefficients for Teacher Efficacy for Instructional Strategies

Predictor Variable	*b*	*SE* [a]	*β*	*p-value* [b]
Mastery Experience	.357	.166	.350	.016*
Vicarious Experience	.165	.144	.233	.029*
Verbal Persuasion	.030	.077	.034	.741
Physiological and Affective State	.056	.042	.136	.133

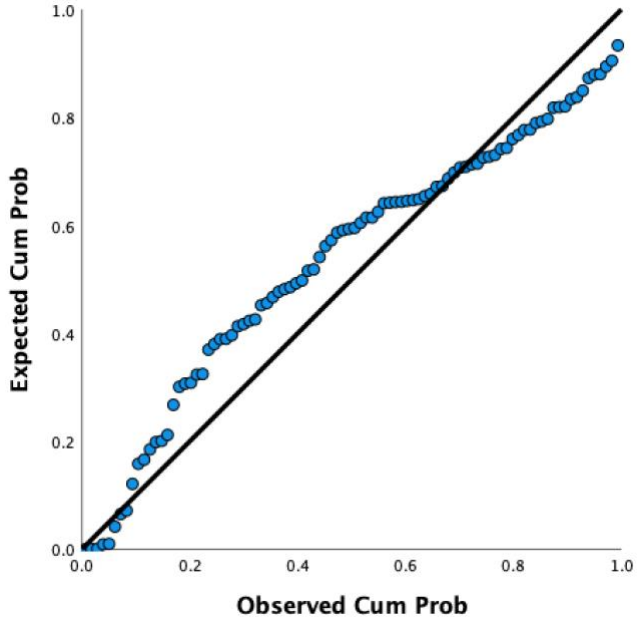
Note. *Adjusted* R^2 = .344; *F(4, 87)* = 12.924 ($p < .001$), Cohen's f^2 = 0.595
[a] Standard errors bootstrapped (BCa), [b] Significance tests bootstrapped (BCa). Bootstrap results are based on 1000 bootstrap samples.
* $p < .05$

Simultaneous Multiple Regression Assumption Tests of Teacher Efficacy for Student Engagement and the Four Sources of Self-Efficacy.

Linearity. The normal P-P plot shows an even distribution of residuals with little deviation from the linear line (see Figure 6). This supports the assumption of linearity.

Figure 6

Normal P-P Plot for Teacher Efficacy for Student Engagement and the Four Sources of Self-Efficacy



Normality. The result of the Shapiro-Wilk test for normality shows that the data violated assumption of normality (p <.001). Accordingly, I also employed bootstrapping to accommodate the violation of this assumption.

Independence of Errors. The regression model predicting teacher efficacy for student engagement indicated that Durbin-Watson test statistic was 1.84. This fulfilled the assumption of independent errors.

Homoscedasticity. The result of the Breusch-Pagan test revealed that the data met the assumption of homoscedasticity (p = .570) This supports the assumption of homoscedasticity.

Results from Simultaneous Multiple Regression

To determine how much variance in scores teacher efficacy for student engagement could be explained by the FS-PMTES, I performed a simultaneous multiple regression analysis. Table 15 summarizes these results. The coefficient of determination (adjusted $R^2 = .550$, $p < .001$) and effect size (Cohen's f^2 effect size estimate of 1.320) revealed that the four sources of teacher efficacy accounted for 55.0% of the variance in teacher efficacy scores for student engagement with high effect sizes observed. The model was a significant predictor of teacher efficacy scores for student engagement, $F(4, 87) = 28.759$, $p < .001$. Results also revealed that mastery experience was the strongest predictor and contributed the most to the regression model, with a standardized beta value ($\beta = .488$, $p = .006$). Meanwhile, vicarious experience, verbal persuasion and physiological and affective state did not significantly predict teacher efficacy scores for student engagement. The unstandardized coefficient for participants' mastery experience scores was .549, indicating that for every 1-point increase in mastery experience scores, teacher efficacy scores for student engagement increased by .549 points.

Table 15

Multiple Regression Coefficients for Teacher Efficacy for Student Engagement

Predictor Variable	*b*	*SE* [a]	*β*	*p-value* [b]
Mastery Experience	.549	.165	.488	.006*
Vicarious Experience	.137	.133	.161	.305
Verbal Persuasion	.141	.090	.172	.123
Physiological and Affective State	.026	.043	.053	.562

Note. *Adjusted* $R^2 = .550$; $F(4, 87) = 28.759$ ($p < .001$), Cohen's $f^2 = 1.320$
[a] Standard errors bootstrapped (BCa), [b] Significance tests bootstrapped (BCa). Bootstrap results are based on 1000 bootstrap samples.
* $p < .05$

Research Question Two

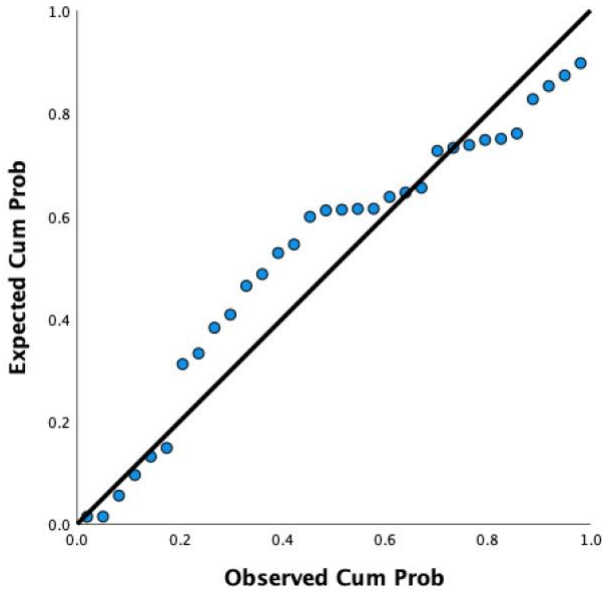
Research question two was "To what extent do various dimensions of professional development activities—(a) the total number of hours spent participating in professional workshops per year, (b) the total number of method certifications acquired, (c) the total number of hours spent watching teaching resources via YouTube per month, (d) the total number of hours spent listening to music educators' podcasts per month, (e) the total number of music educators' academic journal articles read per month, (f) the total number of hours spent observing other teachers per year—relate to reported composite teacher efficacy scores of PreK-6 music teachers?" To answer research question two, I also conducted a series of simultaneous multiple regression analyses. Outcome variables were participants' mean scores on the two subscales of the Pk6MTES: (a) teacher efficacy for instructional strategies and (b) teacher efficacy for student engagement. Predictor variables were each of the six types of professional development activities and participants responded to the following professional activities: (a) the total number of hours spent participating in professional workshops per year, (b) the total number of method certifications acquired, (c) the total number of hours spent watching teaching resources via YouTube per month, (d) the total number of hours spent listening to music educators' podcasts per month, (e) the total number of music educators' academic journal articles read per month, (f) the total number of hours spent observing other teachers per year. Prior to running these analyses, I verified assumptions of linearity, multicollinearity, normality, independence of errors, and homoscedasticity. As with the analyses of research question one, I entered all predictor variables into the regression model simultaneously (Field, 2018).

Simultaneous Multiple Regression Assumption Tests of Teacher Efficacy for Instructional Strategies and Types of Professional Development Activities

Linearity. The normal P-P plot displayed a distribution of residuals with some deviations from the straight line, which supports the assumption of linearity (Figure 7).

Figure 7

Normal P-P Plot for Teacher Efficacy for Instructional Strategies and the Types of Professional Development Activities



Multicollinearity. VIFs ranged from 1.42 to 2.69, which scored below 10. This supports the assumption of multicollinearity; no strong correlations between predictor variables exist.

Normality. The statistic result was the same as the result of normality test for the research question one. The data violated this assumption of normality with the Shapiro-

Wilk test statistic (p <.001). Accordingly, I also employed bootstrapping to accommodate this violation.

Independence of Errors. The regression model predicting teacher efficacy for instructional strategies revealed that the Durbin-Watson test statistic was 2.57. This fulfilled the assumption of independent errors.

Homoscedasticity. The result of the Breusch-Pagan test revealed that the data met the assumption of homoscedasticity (p = .436). This finding supports the assumption of homoscedasticity.

Results from Simultaneous Multiple Regression

I conducted a simultaneous multiple regression analysis to determine how much variance in teacher efficacy scores for instructional strategies could be explained by participation in the following types of professional development activities: (a) attending workshops, (b) certification acquisition, (c) watching YouTube, (d) listening to podcasts, (e) reading journal articles, and (f) observing other teachers' teaching performance. Table 16 summarizes these results. The coefficient of determination (adjusted R^2 = .613, p < .001) and effect size (Cohen's f^2 effect size estimate of 2.205) revealed that the professional development activities accounted for 61.3% of the variance in teacher efficacy scores for instructional strategies with high effect sizes observed. The model was a significant predictor of teacher efficacy scores for instructional strategies, $F(6, 25)$ = 9.167, p < .001. Results also revealed that a model in which both the number of certifications and the number of hours watching YouTube videos per month show statistical significance, with certification recording a higher standardized beta value (β = .467, p = .031) than watching YouTube videos (β = .360, p = .042). This suggests that the

number of certifications predicts more of the variance in teacher efficacy scores for instructional strategies than hours watching YouTube videos per month. Other professional development activities did not significantly predict teacher efficacy scores for instructional strategies.

The unstandardized coefficient for participants' total number of method certifications acquired was .263, indicating that for every 1-point increase in the number of certifications acquired, teacher efficacy scores for instructional strategies increased by .263 points. The unstandardized coefficient for watching YouTube videos was .073, indicating that for every 1-point increase in watching YouTube videos per month, teacher efficacy scores for instructional strategies increased by .073 points.

Table 16

Multiple Regression Coefficients for Teacher Efficacy for Instructional Strategies

Predictor Variable	*b*	*SE* [a]	*β*	*p-value* [b]
Workshops Hours/Year	-.004	.008	-.093	.586
Method Certifications	.263	.117	.467	.031*
YouTube Videos Hours/Month	.073	.032	.360	.042*
Podcasts Hours/Month	.143	.107	.255	.070
Journal Articles/Year	-.047	.093	-.089	.535
Observation Hours/Year	.090	.073	.185	.224

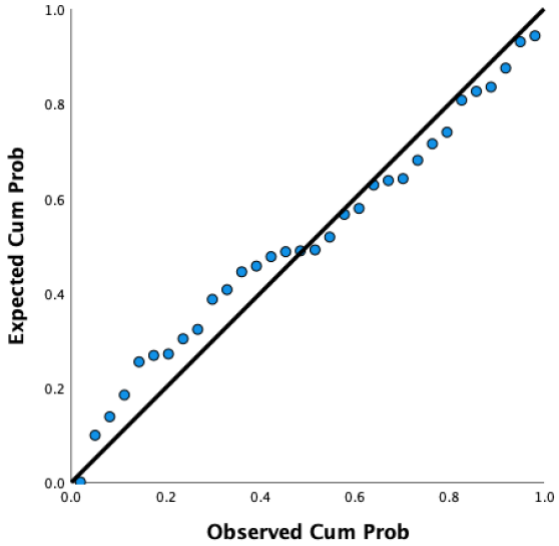
Note. *Adjusted* R^2 = .613; *F-test* = 9.167 ($p < .001$), Cohen's f^2 = 2.205
[a] Standard errors bootstrapped (BCa), [b] Significance tests bootstrapped (BCa).
Bootstrap results are based on 1000 bootstrap samples.
* $p < .05$

Simultaneous Multiple Regression Assumption Tests of Teacher Efficacy for Student Engagement and Types of Professional Development Activities

Linearity. The normal P-P plot shows a distribution of residuals with a few deviations from the straight line, which supports the assumption of linearity (Figure 8).

Figure 8

Normal P-P Plot for Teacher Efficacy for Student Engagement and Six Types of Professional Development Activities



Multicollinearity. VIFs ranging from 1.42 to 2.69 scored below 10. This supports the assumption of multicollinearity that no strong correlations between predictor variables exist.

Normality. The data violated the assumption of normality since the Shapiro-Wilk test was significant (p <.001). This is the same as the result of normality test in the research question one. Thus, I also employed bootstrapping.

Independence of Errors. The regression model predicting teacher efficacy for instructional strategies revealed that the Durbin-Watson test statistic was 2.60. This result fulfilled the assumption of independent errors.

Homoscedasticity. The result of the Breusch-Pagan test revealed that the data met the assumption of homoscedasticity (p = .725) This result supports the assumption of homoscedasticity.

Results from Simultaneous Multiple Regression

I conducted a simultaneous multiple regression analysis to determine how much variance in teacher efficacy scores for student engagement could be explained by the number of following types of professional development activities: (a) attending workshops, (b) certification acquisition, (c) watching YouTube videos, (d) listening to podcasts, (e) reading journal articles, and (f) observing other teachers' teaching performance.

Table 17 summarizes these results. The coefficient of determination (adjusted R^2 = .511, $p < .001$) and effect size (Cohen's f^2 effect size estimate of 1.538) revealed that the professional development activities accounted for 51.1% of the variance in teacher efficacy scores for student engagement with high effect sizes observed. The model was a significant predictor of teacher efficacy scores for instructional strategies, $F(6, 25) = 6.404$, $p < .001$.

Results also revealed that hours observing other teachers per year shows statistical significance, with a standardized beta value (β = .357, p = .031). This result suggests that the observing other teachers was the strongest predictor of teacher efficacy scores for student engagement. Other professional development activities did not significantly predict teacher efficacy scores for student engagement. The unstandardized coefficient for participants' total number of hours spent observing other teachers per year was .211, indicating that for every 1-point increase in the total number of hours spent

observing other teachers per year, teacher efficacy scores for student engagement increased by .211 points.

Table 17

Multiple Regression Coefficients for Teacher Efficacy for Student Engagement

Predictor Variable	*b*	*SE* [a]	*β*	*p-value* [b]
Workshops Hours/Year	.004	.010	.091	.606
Method Certifications	.199	.140	.290	.172
YouTube Videos Hours/Month	.071	.046	.289	.128
Podcasts Hours/Month	.085	.135	.125	.423
Journal Articles/Year	.000	.113	.001	.997
Observation Hours/Year	.211	.115	.357	.030*

Note. *Adjusted* R^2 = .511; *F-test* = 6.404 ($p < .001$), Cohen's f^2 = 1.538
[a] Standard errors bootstrapped (BCa), [b] Significance tests bootstrapped (BCa). Bootstrap results are based on 1000 bootstrap samples.
* $p < .05$

Research Question Three, Four, and Five

To determine the main and interactive effects of key demographic variables of interest on PreK-6 music teachers' teacher efficacy for instructional strategies and student engagement, I performed a 3 (main teaching area) X 3 (teaching experience) factorial between-subjects ANOVA. Again, dependent variables were participants' mean scores for the two subscales of the Pk6MTES: (a) teacher efficacy for instructional strategies and (b) teacher efficacy for student engagement. Independent variables included two factors with varied levels: (a) main teaching area (general music, instrumental, and mixed areas) and (b) years of teaching experience (1-5 years, 6-10 years, more than 10 years of teaching experience groups). Prior to conducting these analyses, I verified assumptions of normality and homogeneity of variance (Field, 2018).

Factorial ANOVA Assumption Tests of Teacher Efficacy for Instructional Strategies

I examined the data for normality with the Shapiro-Wilk test for each group per factor level. Regarding years of teaching experience, the Shapiro-Wilk test indicated that the data for group one (1 to 5 years of teaching experience) and group two (6 to 10 years of teaching experience) were normally distributed (p = .229 and .604, respectively). This confirms this assumption of normality. However, the data for group three (more than 10 years of teaching experience) shows non-normality (p < .001), violating this assumption of normality. Despite the violation of normality, group three (n = 53) included more than at least twenty number of participants. Accordingly, this number of participants ensures robustness to the violation of normality (Tabachnick & Fidell, 2007).

In terms of main teaching areas, the Shapiro-Wilk test also revealed that the data for three groups (i.e., general music, instrumental, and mixed area) were normally distributed (p = .116, .258, .and .094, respectively). Thus, the data met the assumption of normality.

Homogeneity of variance. Results from the Levine's test revealed that the data met the assumption of homogeneity of variance (p = .738).

Results from Factorial Between-Subjects ANOVAs

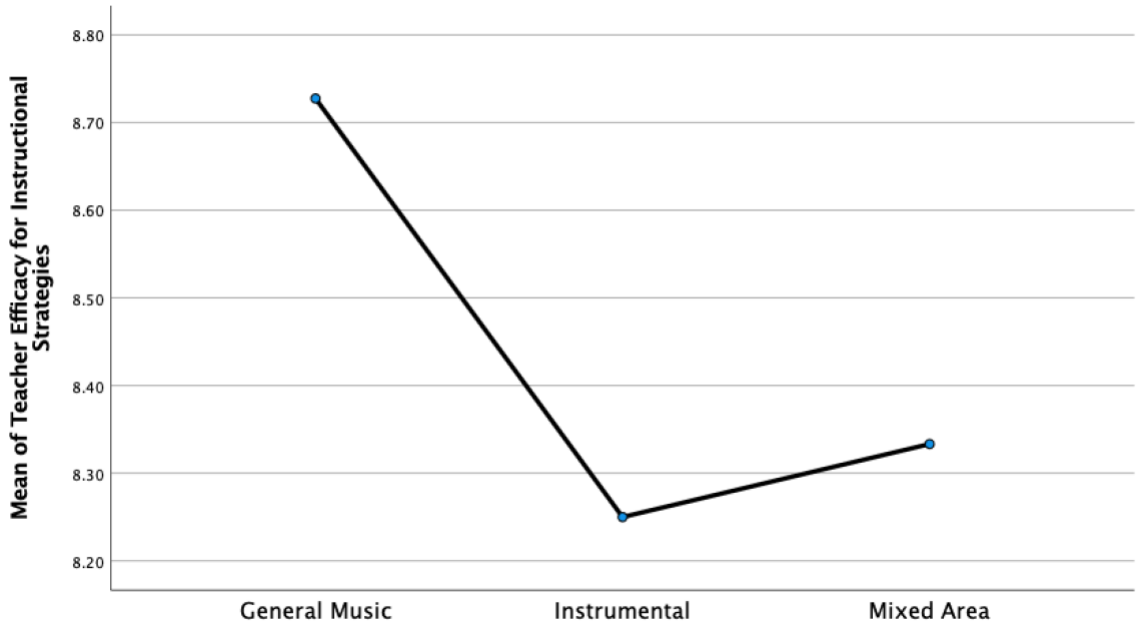
I performed factorial between-subjects ANOVAs to determine whether main teaching area and years of teaching experience interacted with respect to teacher efficacy for instructional strategies. I calculated two sets of 3 X 3 between-subjects ANOVAs, comparing the effects of main teaching area (i.e., general music, instrumental, and mixed area) and years of teaching experience (i.e., 1-5 years, 6-10 years, and more than 10 years

of teaching experience) on the dependent variable teacher efficacy for instructional strategies.

Main Effect of Main Teaching Area on Teacher Efficacy for Instructional Strategies. The main effect for main teaching area was not statistically significant with a small effect size observed, $F(2, 89) = 1.747$, $p = .180$. $\eta^2 = .038$. These results indicated that teacher efficacy scores for instructional strategies in general music group ($M = 8.73$, $SD = 1.01$) were similar to teacher efficacy scores for instructional strategies in both instrumental ($M = 8.25$, $SD = 1.11$) and mixed area group ($M = 8.33$, $SD = 1.20$), and that the magnitude of difference between group means was small (Cohen, 1988). Since there were no significant differences in all three groups, I did not perform the post hoc pairwise comparisons with a Bonferroni correction (see Figure 9).

Figure 9

Mean Scores of Teacher Efficacy for Instructional Strategies by Main Teaching Area

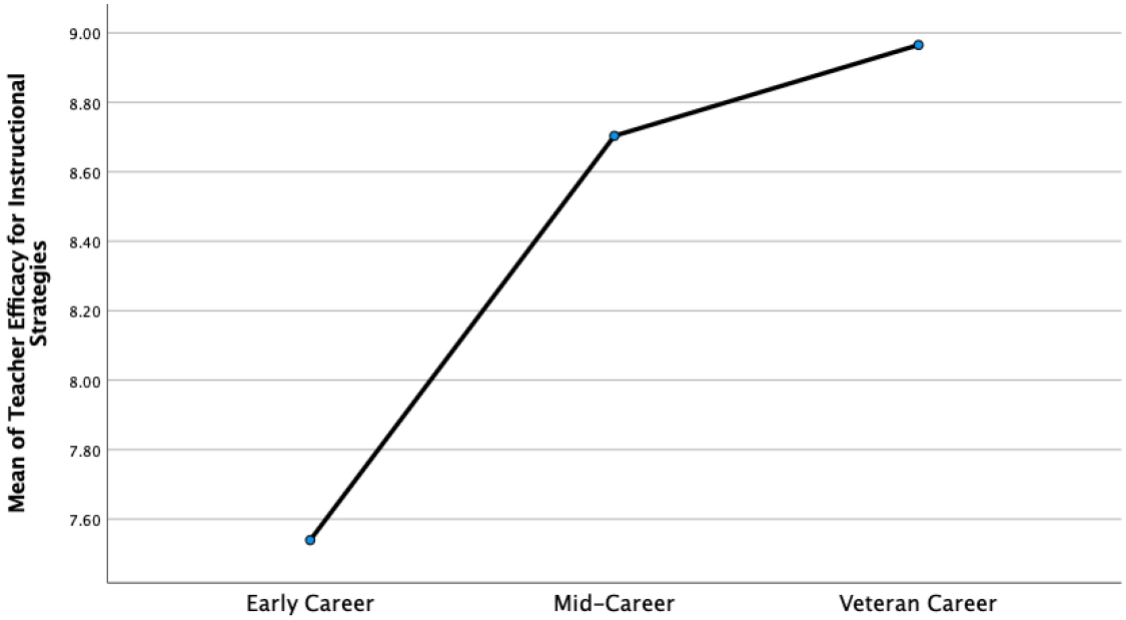


Main Effect of Years of Teaching Experience on Teacher Efficacy for Instructional Strategies. The main effect for years of teaching experience was statistically significant with a large effect size observed, $F(2, 89) = 18.993$, $p < .001$, $\eta^2 = .299$. These results indicated that at least one of the group mean scores was statistically significant from the other group mean scores, and that the magnitude of difference between group means was large (Cohen, 1988).

To evaluate pairwise differences among the teacher efficacy mean scores for instructional strategies, I performed the post hoc tests of pairwise comparisons using Bonferroni correction. Results indicated that the more than 10 years group ($M = 8.97$, $SD = 0.91$) had significantly higher teacher efficacy for instructional strategies than the 1-5 years group ($M = 7.54$, $SD = 0.97$). Additionally, the 6-10 years group ($M = 8.70$, $SD = 0.78$) had statistically higher teacher efficacy scores for instructional strategies than the 1-5 years group (see Figure 10).

Figure 10

Mean Scores of Teacher Efficacy for Instructional Strategies by Teaching Experience



Interaction Effect of Main Teaching Area and Years of Teaching Experience on Teacher Efficacy for Instructional Strategies. The interaction between main teaching area and years of teaching experience was not statistically significant with a medium effect size, $F(4, 89) = 1.157$, $p = .191$, $\eta^2 = .070$, indicating that the teacher efficacy similarities for instructional strategies among main teaching area groups remained consistent across years of teaching experience. Also, the magnitude of difference between group means was medium (Cohen, 1988).

Factorial ANOVA Assumption Tests of Teacher Efficacy for Student Engagement

Normality. I examined the data for normality with the Shapiro-Wilk test for each group. Regarding years of teaching experience, the results from the Shapiro-Wilk test were similar to the previous factorial ANOVA; the data for group one (1 to 5 years of

teaching experience) and group two (6 to 10 years of teaching experience) were normally distributed (p = .242 and .262, respectively), with non-normality in group three (more than 10 years of teaching experience; p <.001). Although the data violated the assumption of normality in group three, more than twenty participants in group three (n = 53) ensures the robustness to the violation of normality (Tabachnick & Fidell, 2007).

In terms of main teaching areas, the results from the Shapiro-Wilk test revealed that the data for three groups (i.e., general music, instrumental, and mixed area) were normally distributed (p = .244, 238, and .700, respectively). Thus, the data met this assumption of normality.

Homogeneity of variance. Results from the Levine's test revealed that the data met this assumption of homogeneity of variance (p = .102).

Results from Factorial Between-Subjects ANOVAs

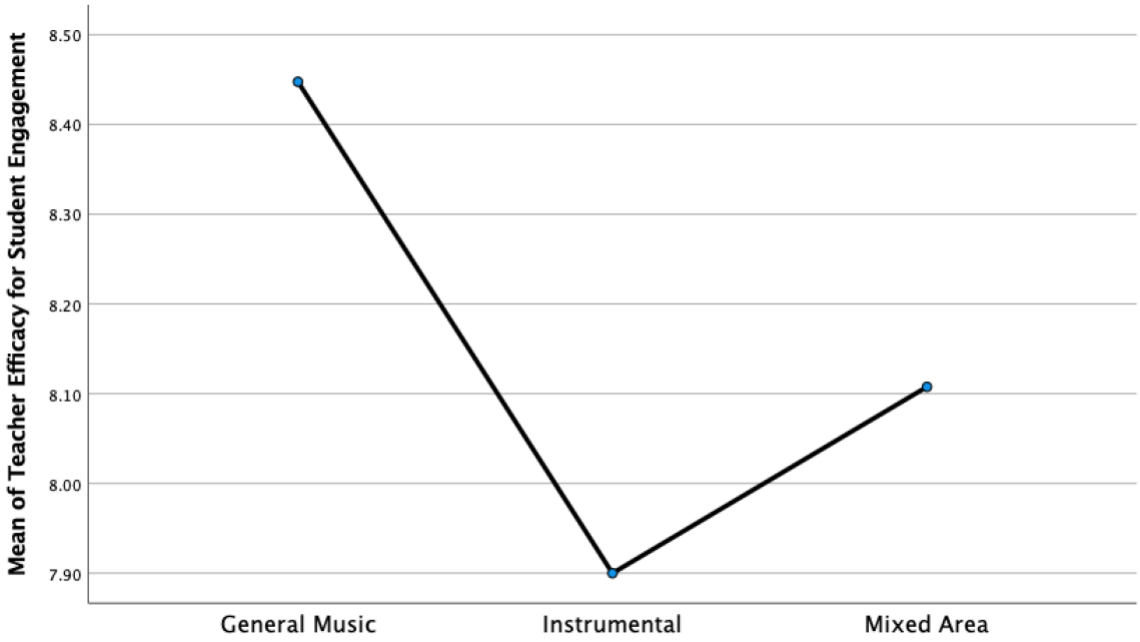
To determine whether main teaching area and years of teaching experience interacted with respect to teacher efficacy for student engagement, I conducted factorial between-subjects ANOVAs. I also calculated two sets of 3 X 3 between-subjects ANOVAs, comparing the effects of main teaching area (i.e., general music, instrumental, and mixed area) and years of teaching experience (i.e., 1-5 years, 6-10 years, and more than 10 years of teaching experience) on the dependent variable teacher efficacy for student engagement.

Main Effect of Main Teaching Area on Teacher Efficacy for Student Engagement. The main effect for main teaching area was not statistically significant with a small effect size observed, $F(2, 89) = 1.354$, p =.263, $\eta^2 = .030$. These results indicated that teacher efficacy scores for student engagement in the general music group

(M = 8.45, SD = 1.15) were similar to teacher efficacy scores for student engagement in both instrumental (M = 7.90, SD = 1.76) and mixed area group (M = 8.11, SD = 1.17), and that the magnitude of difference between group means was small (Cohen, 1988) (see Figure 11). Since there were no significant differences in all three groups, I did not perform the post hoc pairwise comparisons with a Bonferroni correction.

Figure 11

Mean Scores of Teacher Efficacy for Student Engagement by Main Teaching Area

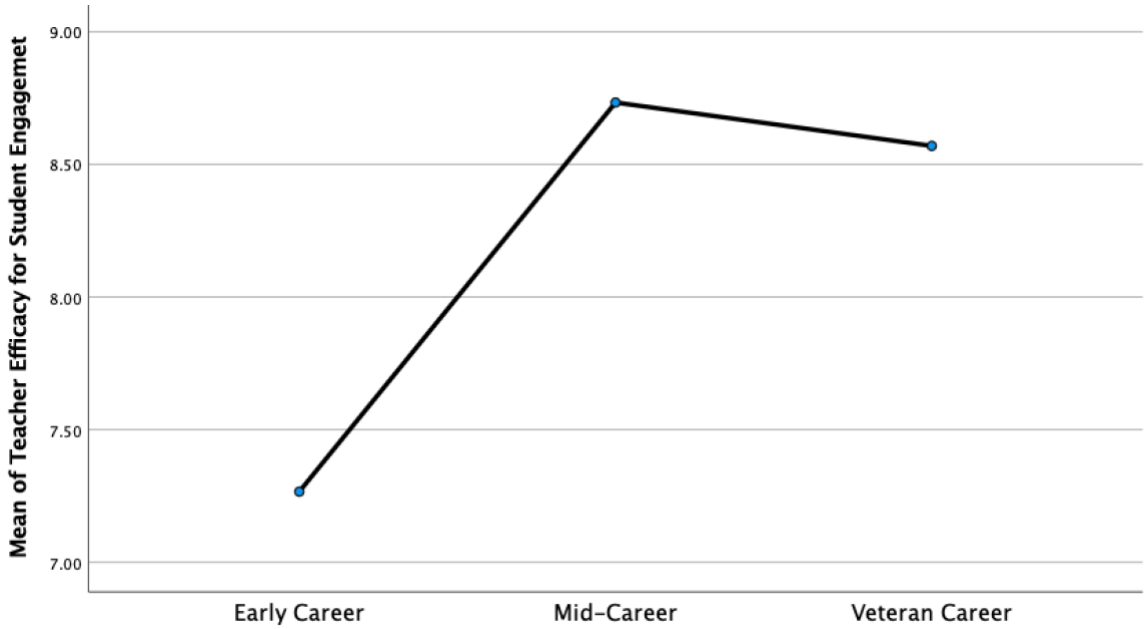


Main Effect of Years of Teaching Experience on Teacher Efficacy for Student Engagement. The main effect for years of teaching experience was statistically significant with a large effect size observed, $F(2, 89) = 11.023$, $p < .001$, $\eta^2 = .199$. These results revealed that at least one of the group mean scores was statistically significant from other group mean scores, and that the magnitude of difference between group means was large (Cohen, 1988).

To evaluate pairwise differences among the teacher efficacy mean scores for student engagement, I conducted the post hoc tests of pairwise comparisons using Bonferroni correction. Results indicated that the more than 10 years group (M = 8.57, SD = 1.28) had significantly higher teacher efficacy for student engagement than the 1-5 years group (M = 7.27, SD = 0.95). Additionally, the 6-10 years group (M = 8.73, SD = 0.98) had statistically higher teacher efficacy for student engagement than the 1-5 years group (see Figure 12).

Figure 12

Mean Scores of Teacher Efficacy for Student Engagement by Teaching Experience



Interaction Effect of Main Teaching Area and Years of Teaching Experience on Teacher Efficacy for Student Engagement. The interaction between main teaching area and years of teaching experience was not statistically significant with a small effect size observed, $F(4, 89) = 1.008$, $p = .408$, $\eta^2 = .046$. These results indicate that the teacher efficacy similarities for instructional strategies among main teaching area groups

remained consistent across years of teaching experience. Also, the magnitude of difference between group means was small (Cohen, 1988).

Research Question Six

To test the main effects of key demographic variables of interest on PreK-6 music teachers' teacher efficacy for instructional strategies and student engagement, the initial data analysis plan was to conduct a series of one-way between-subjects ANOVAs to compare four groups by school types: (a) Title I urban, (b) Title I rural, (c) Non-Title I urban, and (d) Non-Title I rural school. I collapsed school types, originally captured in four groups, into two ordered categories representing Title I (n = 50) and Non-Title I school (n = 42) due to low cell sizes for the rural groups. Accordingly, I used the independent-samples t test to determine whether there was a statistically significant difference between two groups (Field, 2018; Russell, 2018). Since one-way between-subjects ANOVA provides identical results as the independent-samples t test (Field, 2018), I conducted the same assumption tests as planned. To measure the effect size of the difference between means, I calculated a Cohen's d as an index of effect size, small (d = .20), medium (d = .50), and large (d = .80).

Again, outcome variables were participants' mean scores for the two subscales of the Pk6MTES: (a) teacher efficacy for instructional strategies and (b) teacher efficacy for student engagement. The independent variables were the following school types: (a) Title 1 and (b) Non-Title 1 school. Prior to conducting these analyses, I verified assumptions of normality and homogeneity of variance (Field, 2018).

Independent-Samples t test Assumption Tests of Teacher Efficacy for Instructional Strategies with School Types

Normality. Results from the Shapiro-Wilk test revealed that the data for school types (i.e., Title I and Non-Title I) were not normally distributed (p = .038 and .019). As shown in the descriptive statistics of the sample, a total of 50 and 42 participants reported their school type as Title I and Non-Title I school, respectively. Since the number of participants for each group included at least twenty, this ensures robustness to this assumption of normality.

Homogeneity of variance. A non-significant Levene's test indicated that the data met the assumption of homogeneity of variance (p = .697).

Results from Independent-Samples t test

Table 18 summarizes these results of the independent-sample t test. A non-significant t-test revealed that there was no difference in teacher efficacy mean scores for instructional strategies between the groups by school type, with a small effect size observed, $t(90) = -1.607$, p = .112, Cohen's d = .33. This suggests that Non-Title I group (M = 8.78, SD = 1.09) was not significantly different in scores of teacher efficacy for instructional strategies than Title I group (M = 8.43, SD = 1.03) and that that the magnitude of difference between group means was small (Cohen, 1988).

Table 18

Independent-Samples t test Comparing Groups on Teacher Efficacy for Instructional Strategies

Study Variable	Title I		Non-Title I		Independent-samples *t*-test	*p-value*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Teacher Efficacy for Instructional Strategies	8.43	1.03	8.78	1.09	-1.607	.112	.33

Independent-Samples t test Assumption Tests of Teacher Efficacy for Student Engagement with School Types

Normality. Results from the Shapiro-Wilk test revealed that the data for Non-Title I group ($n = 42$) were normally distributed ($p = .084$), while the data for Title I group ($n = 50$) were not normally distributed ($p < .001$). Given that the number of participants for Title I group included at least twenty, this ensures robustness to this assumption of normality.

Homogeneity of variance. Results from the Levine's test revealed that the data met the assumption of homogeneity of variance ($p = .309$).

Results from Independent-Samples t test

Table 19 summarizes the results of the independent-samples *t* test. Results revealed that there was a statistically difference in teacher efficacy mean scores for student engagement between the groups with a small effect size observed, $t(90) = -2.064$, $p = .042$, Cohen's $d = .44$. These results suggest that Non-Title I group ($M = 8.60$, $SD = 1.12$) had a significantly different mean score in teacher efficacy for student engagement

than Title I group (M = 8.06, SD = 1.37), and that the magnitude of difference between group means was small (Cohen, 1988)

Table 19

Independent-Samples t test Comparing Groups on Teacher Efficacy for Student Engagement

Study Variable	Title I		Non-Title I		Independent-samples *t*-test	*p-value*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Teacher Efficacy for Student Engagement	8.06	1.37	8.60	1.12	-2.064	.042*	.44

Note. * $p < .05$

In sum, two types of teacher efficacy in instructional strategies and student engagement result from dissimilar independent variables. Teacher efficacy of PreK-6 music teachers toward instructional strategies relies on mastery experience and vicarious experience, while teacher efficacy toward student engagement exclusively depends on mastery experience. Additionally, among professional development activities in this study, the number of music method certifications acquired and watching music teaching YouTube videos per month were key indicators of teacher efficacy for instructional strategies. In contrast, the observation of other teachers per year was an influential indicator of teacher efficacy for student engagement.

In addition, teacher efficacy for instructional strategies and student engagement either diverges or converges by grouping variables in this study. Years of teaching experience was a significant categorical variable affecting teacher efficacy toward instructional strategies and student engagement; teacher efficacy for instructional

strategies and student engagement in more than 10 years of teaching experience group were higher than those in 1 to 5 years of teaching experience group. Meanwhile, school types were a significant variable exclusively affecting teacher efficacy for student engagement; teacher efficacy levels for student engagement in Non-Title I school group were higher than those in Title I school group. In what follows, I analyzed participant comments regarding their perspectives on teacher efficacy and its related factors.

Analyses of Open-ended Comments

Participants self-reported factors that contributed to shaping participants' teacher efficacy in responses to two open-ended questions. Participants also responded to a question about whether the COVID-19 pandemic impacted their confidence in music teaching. Concerning the issue of professional development activities, participants responded to two questions in which they self-reported types of professional development engaged in during the year and which professional development activities contributed greatest to their teacher efficacy. Of the 92 PreK-6 music teachers who completed the survey instrument, varied numbers of participants responded to each of the open-ended questions because their participation was completely voluntary. Table 20 presents the total response rate and number of meaningful/useful comments. Again, I determined meaningful and/or useful comments based on a rapid sensemaking (RSM) approach (Etz et al., 2018). Meaningful and useful comments do not contain the non-analytical text, including "..." "@$^#*." In particular, meaningful comments include key words associated with the open-ended questions.

Table 20

Frequency and Percentages of Participants by Open-ended Questions

Open-ended Questions	*Frequency* (%)	Number of Meaningful and Useful Comments
Q28. What do you believe are the most important factors that contribute to your confidence in teaching music?	68 (73.91%)	84
Q29. What factors might lower your confidence in teaching music?	63 (68.48%)	64
Q30. Has the COVID-19 pandemic impacted your confidence in your teaching? If yes, please explain why.	51 (55.43%)	52
Q40. In what other kinds of professional development activities do you participate during the year?	43 (46.74%)	59
Q41. What professional development activities do you believe contribute to your confidence in teaching music?	49 (53.26%)	63

Factors Contributing to PreK-6 Music Teacher Efficacy

Of the 92 participants, 68 PreK-6 music teachers (73.91%) answered the following question: "What do you believe are the most important factors that contribute to your confidence in teaching music?" A total of 73.91% produced 84 useful comments. All comments were coded as contextually significant responses, indicating that the participants responded directly to the question. Data revealed that some comments contained more than two contextual significances, resulting in double or triple coding patterns. Participants' statements fell into 10 categories: (a) support from others (21.43%), (b) years of teaching experience (19.05%), (c) role model (16.67%), (d) professional development activities (15.48%), (e) student engagement (7.14%), (f) performance skill (7.14%), (g) student achievement (5.95%), (h) pedagogical content knowledge (3.57%), (i) accessibility to teaching resources (3.57%), and (j) instrument

repair technique (1.19%). Table 21 summarizes coding patterns with one example excerpt per coding pattern.

Table 21

Frequency and Percentages for Coding Pattern

Coding Pattern	*Frequency* (%)	Example Excerpt
Support from Others	18 (21.43)	"*Positive feedback from coworkers and students*"
Years of Teaching Experience	16 (19.05)	"*Experience. Each year, I get a little better.*"
Role Model	13 (15.48)	"*Excellent role models while in the field*"
Professional Development Activity	13 (15.48)	"*Belonging to local Orff chapter, attending many workshops*"
Student Engagement	6 (7.14)	"*Students eagerness to learn*"
Performance Skill	6 (7.14)	"*Every instrumental music teacher must be able to play and demonstrate all parts of the song s/he is teaching*"
Student Achievement	5 (5.95)	"*Seeing positive outcomes in my students*"
Pedagogical Content Knowledge	4 (4.76)	"*My knowledge about the particular lesson*"
Accessibility to Teaching Resources	2 (2.38)	"*Access to a variety of instruments, curriculum and technology*"
Instrument Repair Technique	1 (1.19)	"*How to do basic repairs quickly*"

Support from Others. Results revealed that support from others, which accounted for 21.43% of the total factors contributing to PreK-6 music teacher efficacy, was a critical aspect that enhances teachers' efficacious beliefs in teaching music. Participants reported that receiving positive feedback or praise from influential others, including principals, colleagues, parents, students, and administration, might impact their efficacious beliefs in teaching music. For instance, one respondent noted, "Support from colleagues and positive feedback from students," while another emphasized the importance of "affirmations from students, parents, and admin [sic]." Overall, these

comments suggest that supportive feedback or encouragement from others reinforced their confidence in music teaching practice, which contradicts non-significant effects of verbal persuasion on teacher efficacy for instructional strategies and student engagement. This curiosity needs further investigation.

Years of Teaching Experience. Sixteen respondents expressed that their years of teaching experience were crucial in building their confidence in teaching music. For example, one participant succinctly stated, "Knowledge and mastery of my subject area coupled with 30 years of classroom teaching" increased teacher efficacy. As noted by other participants, teaching experience for many years led not only to confidence "as a music teacher and also as a musician," but also to a confident teacher who is "not afraid to try new things." These comments suggest that the accumulation of knowledge and expertise over an extended period of time not only shaped individual teachers' identities as music teachers and musicians but also emboldened them to take risks and try new approaches to teaching. Conversely, early career teachers may be confused about their identities as musicians or educators, and be vulnerable to coping with problems in the music classrooms due to the lack of teaching experience. This finding matches a significant effect of years of teaching experience on teacher efficacy, indicating that the early career group reported statistically lower sense of teacher efficacy scores for instructional strategies and student engagement than the mid-career and veteran career group.

Role Model. Thirteen participants reported that having role models positively influenced their teacher efficacy levels. Through observing colleagues and mentor teachers, participants gained insight into successful teaching strategies and materials. One

participant wrote, “Borrowing ideas from other successful teachers.” This participant believed that their current teacher efficacy can reach the same teacher efficacy of the observed teachers because borrowed teaching ideas resulted in the same teaching performance. This observation is especially salient in cases where only one music teacher works at a school. In such situations, opportunities to visit other music classrooms and learn from other teachers can be invaluable, as noted by a participant who wrote, “I do not have any Music colleagues. I'm the only music teacher in our building. I'd love an opportunity to visit other music classrooms and learn from others.” These findings corroborate not only the effect of vicarious experience on teacher efficacy for instructional strategies but also the effect of the number of hours observing others per year on teacher efficacy for student engagement.

Professional Development Activity. Thirteen participants suggested that engagement in professional development activities, such as attending conferences and workshops, and earning music teaching method certificates (i.e., Orff-Schulwerk and Kodály), played a significant role in shaping their confidence in teacher efficacy. Additionally, some participants stressed the benefits of professional development activities as follows: (a) networking other teachers (“Opportunities for professional development and networking with other music educators”) and (b) borrowing teaching ideas (“I participate in Orff and Kodály workshops to continue to bring new ideas to my classroom”). These findings support the effect of teaching method certification on teacher efficacy for instructional strategies, while contradicting the non-significant effect of hours of attending workshops per year on teacher efficacy for instructional strategies and student engagement.

Student Engagement. Six respondents discussed that teacher efficacy levels are closely linked to the level of student engagement in the classroom. Similarly, three respondents mentioned: “Student eagerness to learn” and “Students' reactions to what happens in the classroom (enthusiasm, engagement, excitement, etc.) helps me feel more confident” and “students paying attention and doing what they should.” These comments suggest that if students show little interest in lesson plans, participants might lower their teacher efficacy levels. These findings are consistent with the impact of mastery experience on teacher efficacy for instructional strategies, suggesting that if students show an active engagement and intense curiosity in the classroom, this can have an impact on a teacher’s sense of mastery experience and contribute to the development of a strong sense of teacher efficacy.

Performance Skill. Six respondents emphasized the importance of possessing strong musicianship skills to enhance teacher efficacy. In the PreK-6 music teaching domain, educators who identify themselves as either musicians, educators, or both, regard musicianship as a crucial element that influences their confidence in teaching music. One participant noted, improving “[a]bility to perform the skills (singing, dancing, composing) that I am asking my students to perform” led to increased teacher efficacy. Another participant suggested, “Every instrumental music teacher must be able to play and demonstrate all parts of the song s/he is teaching.” These examples imply that music teachers should possess not only teaching abilities but also musical skills as both factors contribute to enhancing teacher efficacy. These findings confirm the effect of mastery experience on teacher efficacy for instructional strategies. The emphasis on possessing strong musicianship skills and the ability to perform the skills being taught suggest that

teachers' efficacious beliefs in their ability to teach music is influenced by their own mastery of the subject matter.

Student Achievement. Five respondents discussed student outcomes as one of the factors contributing to teacher efficacy. Indeed, the ability of students to acquire new skills and demonstrate a solid grasp of the subject matter reflects the quality of teaching, which ultimately affects the teacher's sense of efficacy. Concerning this issue, one participant mentioned, "When I see students master a new skill or reach the end of the year with a solid understanding of what we've been working on, I feel I have done my job well." The source of teacher efficacy related to these findings is mastery experience. The ability of students to acquire new skills and demonstrate a solid grasp of the subject matter is a direct result of the teacher's ability to facilitate learning and instruction effectively, leading to one's mastery experience. When teachers see their students mastering new skills and developing a solid understanding of the content, it reinforces their belief in their own teaching abilities and contributes to their sense of efficacy. Accordingly, these findings are consistent with the effect of mastery experience on teacher efficacy for instructional strategies.

Pedagogical Content Knowledge. Three respondents suggested the link between pedagogical content knowledge and teacher efficacy. The depth of understanding of the subject matter, along with the ability to effectively communicate it to students, may determine one's sense of self-efficacy. Conversely, a lack of understanding of the subject matter and pedagogical strategies may decrease teacher efficacy. One participant reflected, "My educational and pedagogical knowledge of the concepts required is a big one," suggesting that the possession of sound pedagogical

content knowledge is instrumental in enhancing teacher efficacy. These findings on pedagogical content knowledge corroborate the effect of mastery experience on teacher efficacy for instructional strategies.

Accessibility to Teaching Resources. Two participants believed that accessibility to teaching resources are a vital factor affecting their teacher efficacy beliefs. A scarcity of resources, such as a diverse range of instruments, curriculum materials, and technology, may restrict a teacher's ability to deliver quality instruction, ultimately resulting in reduced levels of teacher efficacy. As one participant aptly noted, "Access to a variety of instruments, curriculum and technology." This participant did not offer an exploration as to why access to those resources positively affect teacher efficacy levels, but a dearth of resources may constrain the teacher's confidence in their ability to teach music in the classroom effectively. Based on Bandura's triadic reciprocal determination model, the availability of teaching resources, such as a diverse range of instruments, curriculum materials, and technology, may shape the teacher's behavior and subsequently influence their self-efficacy beliefs.

Instrument Repair Technique. Fewer participants cited instrument repair techniques when considering factors that contribute to their teacher efficacy. Irrespective of the teaching areas or grade levels taught, every music teacher may encounter broken musical instruments that can disrupt their lesson plans and reduce their sense of self-efficacy. Concerning this issue, one participant acknowledged the significance of basic repair techniques ("how to do basic repairs quickly") in maintaining their teacher efficacy as a music teacher. As the participant stated, proficiency in instrument repair techniques can bolster a music teacher's sense of confidence and effectiveness in the classroom. The

source of self-efficacy related to this finding is mastery experience, supporting the effect of mastery experience on teacher efficacy. However, this participant's mastery experience may affect teacher efficacy related to instrument repair technique.

Factors Lowering PreK-6 Music Teacher Efficacy

Of this study's 92 participants, 63 PreK-6 music teachers (68.48%) answered the following questions: "What factors might lower your confidence in teaching music?" A total of 68.48% produced 64 useful comments. Ten categories emerged from participants' statements: (a) lack of support from others (34.38%), (b) classroom management skill (29.69%), (c) negative viewpoint of music in school (9.38%), (d) lack of specific music skills (6.25%), (e) insufficient time for lesson planning (4.69%), (f) lack of funding (4.69%), (g) ineffective lesson plans (4.69%), (h) unrelated teaching requirement (3.13%), (i) lack of opportunity observing other teachers (1.56%), and (j) observing other teachers (1.56%). Table 22 summarizes coding patterns with one example excerpt per coding pattern.

Table 22

Frequency and Percentages for Coding Pattern

Coding Pattern	*Frequency* (%)	Example Excerpt
Lack of Support from Others	22 (34.38)	"*Negative feedback from parents/students/administration*"
Classroom Management Skills	19 (29.69)	"*Classes that are challenging behaviorally can affect my confidence*"
Negative Viewpoints of Music in School	6 (9.38)	"*When students believe music is less valuable than other academics*"
Lack of Specific Music Skills	4 (6.25)	"*Lack of personal skill in music*"
Insufficient Time for Lesson Planning	3 (4.69)	"*Lack of planning time to create new resources*"
Lack of Funding	3 (4.69)	"*Lack of funds*"
Ineffective Lesson Plans	3 (4.69)	"*Performances not going as well as planned, students not "getting" it*"
Unrelated Teaching Requirement with Music	2 (3.13)	"*Other teaching requirements that have nothing to do with music*"
Lack of Opportunities to Observe Other Teachers	1 (1.56)	"*I teach in a smaller district and I don't get to observe others teach music. There often isn't anyone else to bounce ideas off of, especially when we went to standards based grading. I'm on my own to figure out how to do things*"
Observing Other Teachers	1 (1.56)	"*Seeing other teachers that have taught for over 10 years being waaaay better than me*"

Lack of Support from Others. As highlighted in the analyses of the factors contributing to teacher efficacy, support from others was the factor that participants reported the most. A similar result yielded that the majority of participants (34.38%) cited a lack of support from others as the most significant factor lowering teacher efficacy of PreK-6 music teachers. The participants' comments elucidated that "others" referred to parents, students, administrators, other teachers, and principals. Notably, administrative supports were found to enhance teacher efficacy, as expressed in comments such as

"Lack of admin support." In contrast, negative feedback from students was identified as a factor lowering teacher efficacy, with comments such as "When I have negative feedback from students," this decreases one's teacher efficacy. Interestingly, some participants acknowledged that lack of support from other music teachers or principals could have an unintended negative effect on teacher efficacy. For example, one participant wrote, I have "[n]o support from other music teachers. I find that some music teachers have such a negative attitude towards teaching general music that it is hard for me to keep my confidence up when I am around them." This sentiment was echoed by another participant, who added:

> Principals rarely praise me for my teaching. Some even come to my concerts, get on stage with the mic to introduce the event, but barely a word if any about "good job and here's why." Only one vice principal (I'm at two schools, used to be at 4) was very encouraging.

Classroom Management Skills. Nineteen respondents claimed that classroom management skills were an influential factor that might lower teacher efficacy. Participants reported difficulties in controlling negative student behaviors in terms of class discipline. For example, participants noted that, "Constant whining from students (their lethargy towards anything that involves putting forth effort)" lowered teacher efficacy, and "When students refuse to participate or state they hate music," this decreased teacher efficacy. One participant further highlighted this issue, emphasizing as follows:

> Poor classroom management can also lower confidence - you cannot effectively teach when [students] are messing around or are noisy. Also, no fun can happen

> when they are out of control. You cannot play games or movement when they cannot respect each other and the rules. When you do not feel in control of the room, then you quickly lose confidence in yourself.

Furthermore, other participants responsible for instructing students in grades five and six conveyed their concerns regarding the attitudes of their older students, which led to a decrease in their perceived teacher efficacy. One participant noted, "My confidence is sometimes adversely affected when students are distracted, disinterested, or unruly, especially older students." Another participant endorsed this sentiment, stating:

> I am not great at classroom management, especially with my older students (5th and 6th grade). Even though I know my students like me and like music class, it feels like disrespect. I can get very depressed about it and feel extremely ineffective. I feel like the things I have to teach are of little importance to these kids who are bombarded by things like tiktok [sic], Snapchat and YouTube. My biggest struggle is feeling irrelevant.

Negative Viewpoints of Music in School. Six participants argued that negative viewpoints of music in school may adversely affect teacher efficacy. To ensure a well-rounded education for children, music education should not be marginalized. One participant mentioned, "Other teachers tell their students to use music time as a restroom break." This perception of music as a non-academic subject may lead to negative attitudes among administrators, students, and parents. When these negative viewpoints are expressed, this can have a detrimental effect on teacher efficacy. Concerning this issue, one participant commented, "When leaders or other teachers make comments that make it seem as if they believe music and/or creative learning is unimportant in a

student's education," this negatively influenced teacher efficacy. Negative viewpoints of music in school from their students and administrators also contributed to declines in teacher efficacy, "When students believe music is less valuable than other academics" and "[When] administrators [who] do not value your work and believe music is not important part of the curriculum." Overall, the participants appeared to be sensitive to negative viewpoints towards music education in schools, as these may reduce teacher efficacy.

Lack of Specific Music Skills. Four participants underscored that a lack of specific music skills may also negatively affect teacher efficacy. It is unlikely that music teachers are proficient in playing every type of musical instrument. In general, music teachers exhibit mastery in at least one instrument. As such, some teachers may experience difficulties when they are unfamiliar with playing certain instruments. Regarding this issue, some participants stated, "Lack of personal skill in music" and "Being unfamiliar with the music or instrument" diminished teacher efficacy. Another participant expressed that inadequate musicianship skills may negatively affect confidence levels: "If you struggle as a musician (piano skills, sight reading, as a singer or instrumentalist) that would have an effect on your confidence. You must first be good at the skill of music in order to teach it." This implies that music teachers should possess the necessary performance skills and techniques to effectively teach how to play musical instruments. This issue also seems to particularly occur when music teachers were assigned to teach a specific unfamiliar instrument by principals, as noted in the following statement: "When I am asked to teach an instrument I am not fluent at playing, such as when my principal called me in and told me that I was going to start a guitar program."

Insufficient Time for Lesson Planning. Three respondents asserted that insufficient time for preparing lesson plans may affect teacher efficacy. As is likely with other academic teachers, it is essential to ensure that PreK-6 music teachers are afforded sufficient time to organize their lesson plans. Some participants reported experiencing reduced teacher efficacy due to the stress of not having ample time to plan. For example, “[l]ack of planning time to create new resources" and “[n]ot enough time to plan creative lessons” were reported factors decreasing teacher efficacy. Additionally, if music teachers are responsible for multiple subject areas, they may require additional time to cover a broad range of topics. One participant highlighted this issue by noting:

> Being expected to teach general music, band, orchestra, and piano while going to different classrooms and having lesson plans for all those classes, but also told not to work outside of school and that I should have enough time to plan all those classes with 40 minutes of prep time each day.

Lack of Funding. Three respondents argued that lack of funding may also affect teacher efficacy. Adequate financial support for music education in schools may enhance the efficacious beliefs of PreK-6 music teachers. However, participants only cited "the lack of funding” and “district funding” as contributing factors to decreased teacher efficacy. Their comments did not contain any references to links between funding and resources, but a lack of funding is likely related to resources, including facilities, equipment, or staffing reductions.

Ineffective Lesson Plans. Three respondents acknowledged that ineffective lesson plans may negatively affect teacher efficacy. In general, music teachers aspire for their lesson plans to enhance student musical understanding and engagement. When

lesson plans prove to be unsuccessful, or less successful than they expected, or teachers did not finish what they planned, teacher efficacy was reported to decrease. One participant wrote, for example: “Lesson planning-if your lessons and songs are not interesting or fun for the students, they will mis-behave more and be bored and then you as a teacher wonder what am I doing wrong?” This suggests that suboptimal lesson plans may undermine teacher efficacy.

Unrelated Teaching Requirement with Music. Two participants argued that unrelated teaching requirement with music may cause lowered teacher efficacy. This appeared to occur when teaching responsibilities included other academic subjects in school. Two participants articulated this issue in similar terms, stating that: “Other teaching requirements that have nothing to do with music” and “Added responsibility that are not about teaching music (i.e., Covering classes because there are no subs)” failed to raise teacher efficacy.

Lack of Opportunities to Observe Other Teachers. One participant argued that a dearth of opportunities to observe other teachers may potentially diminish teacher efficacy. It seemed to be rare that participants were able to observe other teachers teaching music, especially if only one music teacher worked at a school. Consequently, uncertainties surrounding teaching practices, pedagogies, grading systems, and the like may also have a detrimental effect on teacher efficacy. One participant substantiated this claim by stating the following:

> I teach in a smaller district and I don't get to observe others teach music. There often isn't anyone else to bounce ideas off of, especially when we went to standards-based grading. I'm on my own to figure out how to do things.

Observing Other Teachers. Interestingly, in contrast to the aforementioned category concerning a lack of opportunities to observe other teachers, observing other teachers may also reportedly negatively affect teacher efficacy. In other words, some participants may experience decreased teacher efficacy when they perceive other teachers as much better than their teaching performance. Particularly, early career music teachers may experience a decline in their sense of teacher efficacy when they compare their performance to that of more skilled or experienced teachers. As one participant affirmed, for example, their teacher efficacy decreased when "[s]eeing other teachers that have taught for over 10 years being waaaay better than me."

Impact of the COVID-19 Pandemic on PreK-6 Music Teacher Efficacy

Of the 92 participants, 51 PreK-6 music teachers answered the following question: "Has the COVID-19 pandemic impacted your confidence in your teaching? If yes, please explain why." A total of 55.43% produced 52 meaningful and useful comments. All the responses corresponded to one coding pattern, except for one response producing two coding patterns. Six coding patterns emerged from participants' responses: (a) nothing impacted (38.46%), (b) lack of knowledge on how to remotely teach music (21.15%), (c) COVID-19 prevention guidance for music classroom (13.46%), (d) reduction in orchestra/band (11.54%), (e) low attendance (11.54%), (f) successful experience (3.85%). Except for the nothing impacted category, other categories represented negative or positive impacts of the COVID-19 on PreK-6 music teacher efficacy. Table 23 summarizes coding patterns with one example excerpt per coding pattern.

Table 23

Frequency and Percentages for Coding Pattern

Coding Pattern	*Frequency* (%)	Example Excerpt
Nothing Impacted	20 (38.46)	"*No*"
Lack of Knowledge on Remote or Hybrid Teaching	11 (21.15)	"*Yes. Online teaching was almost impossible for music*"
COVID-19 Prevention Guidance for Music Classroom	7 (13.46)	"*Yes, wearing masks, not being able to sing, stress, fear, having to wash hands and wipe everything down often, exhausting*"
Reduction in Orchestra/Band	6 (11.54)	"*Some of my after school music ensembles are much smaller than they used to be, which doesn't help in the confidence category*"
Low Attendance	6 (11.54)	"*Being online really destroyed the participation in my program*"
Successful Experience	2 (3.85)	"*My teaching has changed, but I feel more confident now that I can handle these problems after teaching through COVID-19 pandemic*"

Nothing Impacted. Twenty respondents answered "No" to the aforementioned question, suggesting that COVID-19 pandemic did not influence their efficacious beliefs in teaching music. For example, one participant noted:

> No. Kids are kids and music is music. It doesn't change. My expectations for respectful behavior are no different in the classroom than they are online. Creating lessons and activities is what I do as a teacher and that doesn't change. I can learn and connect to the students regardless of being virtual or in person.

Several participants asserted that the COVID-19 pandemic served to affirm their existing levels of teacher efficacy in positive ways. Remote teaching during the COVID-19 pandemic appeared to foster creative thinking skills among some participants, even

though this may have caused physical or emotional exhaustion. One participant wrote about this issue, for example:

> No. I'm certainly more drained, but not any less confident. Online offered a unique challenge that forced me to grow; I actually think that I learned and have implemented some new things into my normal classroom as a result.

Furthermore, participants indicated that the COVID-19 pandemic spurred them to enhance their teaching abilities and attempt innovative approaches to teaching music. Several participants who taught remotely or in hybrid settings during the pandemic reported that they attempted novel teaching techniques to maintain their teacher efficacy. As one participant expressed, "COVID-19 actually made me a better teacher because I had to think outside the box. I needed to create new approaches to teach the same material which I have now adapted to 'live' teaching." These comments suggest that teacher efficacy remained viable despite remote or hybrid learning challenges.

Moreover, the challenges of online music learning and teaching during the COVID-19 pandemic also served to confirm teacher efficacy. Remote teaching may have presented a challenge to some music teachers, as they were more accustomed to traditional face-to-face teaching prior to the lockdown. Nevertheless, those who were proficient in online teaching maintained their levels of teacher efficacy, indicating that the shift to remote or hybrid learning during the pandemic did not affect their abilities to deliver content. Concerning this issue, one participant explained: "Not really. I think since I feel pretty confident with technology, it was not too difficult to adjust and my school tried to stay as open as possible." This statement suggests that the participant's teacher efficacy remained unchanged because they had no difficulty in delivering

instruction to students in the distance-learning format. Another participant concurred: "No, quite the opposite! I was very skilled in online teaching and creating accessible and fun content for my students." This comment implies that this participant's teacher efficacy remained constant since they were able to identify the most effective resources for instruction even in the online learning-teaching mode.

Lack of Knowledge on Remote or Hybrid Teaching. Eleven respondents claimed that the COVID-19 pandemic negatively affected their teacher efficacy due to a lack of knowledge on remote or hybrid teaching methods. The sudden shift to online or hybrid teaching exacerbated uncertainties about how to teach music effectively, resulting in a perceived restriction on their teaching methods and a mismatch with their students' learning styles. For example, one participant wrote about this issue, "I felt like my teaching was restricted and I ha[d] to use methods that didn't fit with my teaching style or my students' learning styles," meaning that the COVID-19 pandemic had a negative impact on teacher efficacy. Moreover, it seemed that the COVID-19 pandemic collapsed differences in teacher efficacy levels among teachers by years of teaching experience. In relation to this issue, one participant noted:

> The pandemic stopped our ability to teach instrumental music. We were trying to teach but it wasn't something that we had previously taught. Kind of like being a first-year teacher again only teaching in a way (online) that we had never taught before. It shatters your confidence that you know what you're doing.

This comment suggests that teacher efficacy may not be attributable to how many years participants had taught prior to the COVID-19 pandemic.

COVID-19 Prevention Guidance for Music Classroom. Seven respondents argued that following COVID-19 prevention guidance for music classroom may have negatively impacted their teacher efficacy. For example, wearing a mask could have hindered the clear delivery of instruction, ultimately decreasing teacher efficacy. One participant expressed this concern, stating:

> "Yes, masking and singing is HARD. Some of my littles [got] words wrong. We've had many teachers out sick and I am first to be pulled to sub and music is often cancelled. Earlier this year we did zero singing. Because it wasn't safe.

To maintain teacher efficacy levels, one participant used a microphone to handle the above-mentioned problem:

> COVID made teaching very challenging: I became the mask police. I wore a personal microphone so that students could hear me through my mask, and I didn't damage my voice. I am very thankful to be back in my music room this year and we have had so much fun making music with real instruments again.

Physical distancing may have also put restrictions on lesson plans for general music teachers, including singing games and movement, and participants' sense of teacher efficacy may have plummeted. One participant teaching general music wrote, in response to the same issue:

> Absolutely! There were so many adjustments with social distancing and covid procedures, I felt like my hands were tied in many ways. We couldn't do so much of what we always had done in the past—games, dancing, movement, and even singing. EVERYTHING changed, and in the midst of that, my confidence

took a nosedive. I was afraid to do anything that might put my students at risk, and they didn't always understand. It was REALLY hard.

Another participant complained about instrument cleaning during the COVID-19 pandemic, "having to wash hands and wipe everything down often, [was] exhausting." While these measures may have been effective in maximizing safety in the music classroom, participants struggled with teaching music and their sense of teacher efficacy started to decrease.

Reduction in Orchestra/Band. Six respondents argued that reductions of large ensemble music programs may have negatively impacted their sense of teacher efficacy during the COVID-19 pandemic. Given the high risk of COVID-19 transmission during in-person instruction, instrumental music teachers expressed difficulties in maintaining their teacher efficacy. In regard to this issue, two participants explicitly acknowledged the link between the loss of their music ensemble program and a low sense of teacher efficacy. One participant expressed, "I didn't get to teach band for a year because of COVID," while another answered "Yes!" to the same issue "because I was unable to teach orchestra during the shutdown, so I felt very out of practice and struggled to recall skills or techniques I used previously in my teaching." Also, one participant discussed the dropout issue noting, "Yes, most of my students stayed in the Orchestra during the pandemic. Of course, some moved away, went online [for] school, but [the] majority of the students stayed in the Orchestra." Overall, participant comments suggest that low enrollment rates in instrumental programs and lack of class time during the COVID-19 may have led to a decrease in the participant's sense of teacher efficacy.

Low Attendance. Six respondents emphasized that low attendance may have also negatively affected their senses of teacher efficacy during the pandemic. Specifically, one participant stated, “Being online really destroyed the participation in my program,” highlighting the negative influence of remote learning on student engagement and, in turn, teacher efficacy. Other participants provided more detailed perspectives on this issue, pointing out that quarantine policies imposed as a result of the pandemic had a direct impact on student attendance, thereby necessitating reorganization of lesson plans and curricula. As part of this issue, one participant wrote:

> It is frustrating to see students' attendance so sporadic [sic]. COVID-exposure quarantining or actual COVID illness related absences muddle up the short term, and online learning for a year…created deep school career disruptions. Learning loss is large, growth is slow; re-teaching is *every* day.

Another participant supported this issue, noting the impact of the COVID-19 pandemic on teaching practice and the sense of teacher efficacy in a positive manner:

> Lots of thinking outside the box. Attendance is not consistent anymore, and it can be hard to build on lessons from previous classes due to attendance. I feel like the pandemic has made me completely shift my attitude with going with the flow. I must be flexible and understand that challenges are bound to pop up.

In brief, participant comments imply that low attendance during the pandemic may have weakened their sense of teacher efficacy, but this has also spurred them to develop greater flexibility and adaptability in their teaching practices.

Successful Experience. Two respondents stressed that successful teaching experience during COVID-19 pandemic may have boosted their teacher efficacy,

Specifically, they expressed a newfound confidence in their abilities to handle unexpected problems in the classroom. Regarding this issue, one participant stated, “My teaching has changed, but I feel more confident now that I can handle these problems after teaching through COVID-19 pandemic,” while another noted, “I definitely gained confidence as I learned how to do it better, but it was a lot of trial and error initially!” These participants may have possessed greater resilience and perseverance in the face of adversity during the COVID-19 pandemic.

Types of Professional Development Activities

Of the study’s 92 participants, 43 PreK-6 music teachers (46.74%) responded to the following question: “In what other kinds of professional development activities do you participate during the year?” The vast majority (73.91%) reported engaging in more than one professional development activity, yielding 59 direct comments that were grouped into five coding patterns: (a) national/local workshop (62.71%), (b) national/local conference (15.25%), (c) informal collegial learning (11.86%), (d) formal learning (5.08%), and (e) self-directed learning (5.08%). Each coding pattern presents varied professional development activities where study participants engaged in during the year.

Table 24 provides additional details for each subcategory within these coding pattern. Most of the participants (n = 37) attended national and local workshop as professional development activities. Notably, the categories identified appear to correspond with some of the questions posed in the survey, but also include some non-equivalent items. For example, the keywords “national/local workshop” (n = 37; 62.71%) and “conference” (n = 9; 15.25%) may be related to responses from Q34 and 35, which

asked participants to report the number of professional development hours they attended both within and outside of their school/district. “Self-directed learning” (*n* = 3; 5.08%) includes subcategories: (a) reading books/journals and (b) personal practice, which partially mirrored question 38, asking participants to report the number of music education journal articles they read per month. The cording patterns of “informal collegial learning” (*n* = 7; 11.86%) and “formal learning” (*n* = 3; 5.08%), on the other hand, appear to be distinct types of professional development activities. These two coding patterns indicate that participants meet with colleagues or enroll in college/universities courses for professional development purposes. In the follow-up analyses of open-ended questions, participants reported which professional development activities contribute to their efficacious beliefs in teaching music.

Table 24

Frequency and Percentages for Coding Pattern and Subcategory

Coding Pattern	*Frequency* (%)	Subcategory	*Frequency* (%)
National/Local Workshop	37 (62.71)	Orff-Schulwerk workshop	11 (18.64)
		Mandatory PD provided by school district	6 (10.17)
		Social-emotional learning workshop	4 (6.78)
		Online workshop	4 (6.78)
		Kodály workshop	3 (5.08)
		Arizona String Teachers Association workshop	3 (5.08)
		Conn-Selmer institute connect webinar	2 (3.39)
		Phoenix boys choir workshop	1 (1.69)
		Denise Garne workshop	1 (1.69)
		Artie Almeda's summer workshop	1 (1.69)
		Instrument repair workshop	1 (1.69)
National/Local Conference	9 (15.25)	Arizona Music Educators Association conference	7 (11.86)
		American Choral Directors Association conference	2 (3.39)
Informal Collegial Learning	7 (11.86)	Meeting with colleagues	7 (11.86)
Formal Learning	3 (5.08)	College/university courses	3 (5.08)
Self-Directed Learning	3 (5.08)	Reading books/articles	2 (3.39)
		Personal practice	1 (1.69)

Professional Development Activities Contributing to Teacher Efficacy

Of the same 92 participants, 49 PreK-6 music teachers responded to the following question: "What professional development activities do you believe contribute to your confidence in teaching music?" A total of 53.26% produced 63 direct comments with nine coding patterns: (a) attending workshops (52.38%), (b) attending conferences (19.05%), (c) observing other teachers (9.52%), (d) watching YouTube (6.35%), (e) taking music method certification courses (4.76%), (f) reading method books (3.17%),

(g) casual conversation with colleagues and mentors (1.59%), (h) listening to podcasts (1.59%), and (i) any type related to music teaching practice (1.59%).

Table 25

Frequency and Percentages for Coding Pattern

Coding pattern	*Frequency* (%)	Example excerpt
Attending Workshops	33 (52.38)	"*Orff and Kodály Workshops*"
Attending Conferences	12 (19.05)	"*AMEA Conference, ASTA Conference*"
Observing Other Teachers	6 (9.52)	"*Observing other teachers and having them observe me and provide feedback on a regular basis*"
Watching YouTube	4 (6.35)	"*Watching YouTube teachers do same thing I am*"
Taking Music Method Certification Courses	3 (4.76)	"*Orff and Kodály levels*"
Reading Method Books	2 (3.17)	"*Finding a good method book*"
Casual Conversation with Colleagues and Mentors	1 (1.59)	"*Oftentimes, just getting together with my colleagues and having casual conversations. Sharing stories and random info that comes up in these conversations. It really is an exercise in spreading/receiving wisdom*"
Listening to Podcasts	1 (1.59)	"*Listening [sic] podcasts*"
Any Type Related to Music Teaching Practice	1 (1.59)	"*Any type, but must include actual practicum experiences*"

Attending Workshops. Thirty-three respondents believed that attending workshops for professional development activities had a positive impact on their sense of teacher efficacy. Responses centered around attending Orff and Kodály workshops, which appeared to provide participants with successful lesson plans and applicable teaching strategies in the classroom. One participant emphasized the benefits of attending these workshops:

> I pick my favorite activities from workshops and incorporate them into my lessons. I learn so much by learning hands-on activities and when I can

> experience something, I have much more confidence teaching it than I would from a lesson in a book or online.

Another participant also underscored the value of attending workshops, noting: "I am more likely to try something new if I see if successfully implemented first, either in a classroom or workshop with other teachers." Overall, these comments suggest that workshops offer PreK-6 music teacher with the chance to learn successful teaching strategies from experts through direct observation, ultimately boosting their efficacious beliefs in teaching music. Also, these findings suggest that Orff and Kodály workshops are the most helpful in constructing participants' efficacious beliefs in teaching music, which contradicts the non-significant effect of attending workshops on teacher efficacy related to both instructional strategies and student engagement.

Attending Conferences. Twelve respondents argued that attending conferences for professional development activities positively affected their teacher efficacy. Specifically, three of these participants named specific conferences, namely those sponsored by the Arizona Music Educators Association (AMEA), Arizona String Teachers Association (ASTA), and Orff. These conferences are most often a series of one-hour workshops on different topics and participants choose topics of interest. One participant further provided the reason of attending one of these conferences noting that the "Orff National Conference is a great way to talk and brainstorm with educators across the country." These comments suggest that each national or local conference may be a source of fostering professional learning communities and facilitating the exchange of subject-matter knowledge. These findings also contradict the non-significant effect of

attending workshops (i.e., music association workshops or conferences) on teacher efficacy related to both instructional strategies and student engagement.

Observing Other Teachers. Six respondents highlighted the importance of observing other teachers as a means of increasing their teacher efficacy. These participants simply noted "learning from others," "observing peers," and "seeing lesson demos from other teachers." One participant highlighted that a bi-directional observation between other teachers and oneself contribute to increasing a sense of teacher efficacy: "Observing other teachers and having them observe me and provide feedback on a regular basis." This suggests that direct peer observation and co-observation facilitate ongoing learning of effective teaching skills, resulting in improvement in the feeling of teacher efficacy for PreK-6 music teachers. These findings support the effect of observing others per year on teacher efficacy for student engagement.

Watching YouTube. Four respondents argued that watching YouTube videos on music teaching contributed to their senses of teacher efficacy. Searching online resourses for instructional purposes provided participants with practical and useful teaching ideas for their classroom activities. As part of this issue, one participant wrote: "Sometimes when we share lessons, I find a lot of fun new lessons online." These findings confirm the impact of watching teaching resources via YouTube on teacher efficacy for instructional strategies.

Taking Music Method Certification Courses. Three respondents claimed that obtaining certification in music method courses positively impacted their teacher efficacy. Their remarks imply that the Orff-Schulwerk and Kodály levels impart general music instructional techniques and promote the expansion of teaching practice.

Consequently, the completion of music method certification courses is conducive to strengthening their sense of teacher efficacy. These findings are consistent with the effect of music method certification on teacher efficacy for instructional strategies.

Reading Method Books. Two participants believed that reading music method books positively contributed to their senses of teacher efficacy. One participant provided the author of the book enhancing their teacher efficacy: “from books I order (like Artie Almeida, etc)." Without writing the exact name of a music method book, the other participant simply noted that reading a music method book positively affected a sense of teacher efficacy. This current study did not include reading method books as study variables within professional development activities, but these findings suggest that reading method books may be an influential and potential indicator of teacher efficacy for instructional strategies and student engagement.

Casual Conversation with Colleagues and Mentors. One respondent argued that casual conversation with colleagues and mentors positively contributed to their senses of teacher efficacy. Discussion with other teachers can make it possible for teachers to self-reflect on best practices in music teaching and learning. Regarding this issue, one participant added: “Oftentimes, just getting together with my colleagues and having casual conversations or sharing stories and random info that comes up in these conversations” had a positive impact on a sense of teacher efficacy. Casual conversation with colleagues and mentors appears to be an informal professional development activity affecting teacher efficacy levels, which was not included in study variables of this current study.

Listening to Podcasts. One participant claimed that listening to podcasts may have also contributed to a sense of teacher efficacy and specifically mentioned that "listening [sic] podcasts" fostered efficacious beliefs in teaching music. The comment did not indicate whether what podcasts positively influenced a sense of teacher efficacy, but it seems that podcasts may be a valuable resource for music teachers in promoting their sense of teacher efficacy. Even though the effect of listening to podcasts per month on teacher efficacy for instructional strategies and student engagement was not statistically significant, fewer participants believed that listening to podcasts contributes to their confidence in teaching music.

Any Type Related to Music Teaching Practice. One final respondent believed that certain professional development activities related to music teaching practice contributed to teacher efficacy and stated, "[a]ny type, but must include actual practicum experiences." This comment implies that exposure to hands-on teaching experiences through professional development can lead to an increase in teacher efficacy. Furthermore, this finding suggests that professional development activities, whether formal or informal, could serve as a meaningful source of self-efficacy for music teachers.

Summary

This chapter addressed the results from the main research questions and open-ended questions in the survey instrument. Such findings from this study provided a comprehensive understanding of PreK-6 music teacher efficacy beliefs in instructional strategies and student engagement. The quantitative and qualitative data are aligned to present the same construct of teacher efficacy, but two types of data appear to be either

directly confirmed or contradicted. In the next chapter, I present results of this study with the quantitative and qualitative data based on the same research questions.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

Introduction

The purpose of this study was to examine teacher efficacy of PreK-6 music teachers toward instructional strategies and student engagement. This study also examined whether the four sources of self-efficacy, theorized by Bandura (1997), and professional development activities affected PreK-6 music teacher efficacy beliefs. Further, this study investigated whether there were significant differences in teacher efficacy by main teaching areas, years of teaching experience, and school types.

To examine the research questions, I designed a survey instrument comprised of four sections—the Pk6MTES, FS-PMTES, professional development questionnaire, and demographic questionnaire—to collect data from PreK-6 music teachers in the state of Arizona. A total of 132 teachers responded to the survey, and 92 participants ($N = 92$) provided responses that could be used. Analysis of the data revealed several key indicators affecting PreK-6 music teacher efficacy levels and participant perceptions of teacher efficacy during COVID-19 pandemic, which respondents addressed in an open-ended question. In this chapter, I provide a detailed discussion for each research question, including a comparison of quantitative data results with qualitative findings from open-ended questions in the survey instrument. I also connect findings to related literature to seek possible explanations and implications.

Research Question 1: To what extent do the four sources of teacher efficacy identified by Bandura (1997) affect reported composite teacher efficacy scores of PreK-6 music teachers?

Results from this study provide evidence that teacher efficacy for instructional strategies is most influenced by mastery experience followed by vicarious experience, whereas teacher efficacy for student engagement was solely predicted by mastery experience. These results are consistent with Bandura's (1997) argument that mastery experience is the most powerful indicator of self-efficacy. More specifically, in line with previous research (Bucura, 2019), it can be inferred that if one believes that they have succeeded in their prior teaching performance associated with instructional strategies or student engagement, this perceived success may invigorate teacher efficacy beliefs. The findings from this study confirm previous findings among generalist primary school teachers (de Vries, 2013), high school instrumental teachers (Regier, 2019b), and high school concert band directors (Regier, 2021b); prior successful teaching performance is an important source of teacher efficacy across all teaching areas and grade levels.

Comparatively, it is important to note that in this study I examined teacher efficacy as two dimensions of efficacious beliefs—instructional strategies and student engagement, whereas previous researchers did not make this distinction (de Vries, 2013; Regier, 2019b, 2021b). While mastery experience was the most significant determinant of teacher efficacy for both instructional strategies and student engagement, results of this study indicate that vicarious experience was the second most influential source of teacher efficacy for student engagement only. A social model or indirect (vicarious) experience can fulfill the same function as personal experience, allowing for one's expectation of

similar results from the future performance (Bandura, 1997). Participants' sense of self-efficacy for student engagement may be increased when they see others succeeding in student engagement and envision that their own success is also attainable. Analyses of open-ended questions partially support this finding that some participants believed that a role model (15.48%; n = 13) may serve as vicarious experience contributing to enhancing teacher efficacy beliefs. Notwithstanding, perhaps having referential comparisons with others as vicarious experience might not occur easily in the context of music teaching in schools. In general, music teachers have few opportunities for peer observation since only one music teacher may work at a school or even in a small district.

Open-ended comments, conversely, revealed that a relatively large number of participants (21.43%; n = 18) argued that support from others, such as positive feedback from colleagues and students, led to increasing teacher efficacy beliefs. This finding aligns somewhat with Regier (2019b), who discovered that verbal persuasion appears to be another salient source of instrumental music teacher sense of self-efficacy in the early career group (1 to 7 years) of Regier's study. The findings of my study, though not significant, are also congruent with previous research (Hoy & Spero, 2005), suggesting that social persuasion from significant others, such as colleague teachers, principals, parents, and students, may increase music teachers' efficacious beliefs. It is also possible that early career music teachers' confidence in teaching music may be sensitive to varied types of verbal persuasion (encouragement versus critical feedback).

Research Question 2: To what extent do various dimensions of professional development activities—(a) the total number of hours spent participating in professional workshops per year, (b) the total number of method certifications acquired, (c) the total number of hours spent watching teaching resources via YouTube per month, (d) the total number of hours spent listening to music educators' podcasts per month, (e) the total number of music educators' academic journal articles read per month, (f) the total number of hours spent observing other teachers per year—affect reported composite teacher efficacy scores of PreK-6 music teachers?

One of the more intriguing discoveries to emerge from this study was that certification acquisition and hours of watching YouTube videos per month were contributors to teacher efficacy for instructional strategies. Specifically, number of method certifications (M = 1.78) and YouTube viewing hours per month (M = 6.88) were significant predictors of efficacious beliefs in instructional strategies for teachers in this study. These findings reinforce the notion that increased acquisition of music method certifications (Kikoler, 2022) and frequent exposure to online teaching resources (Abidin & Jamaludin, 2022) play a beneficial role in boosting teacher efficacy for instructional strategies. These findings also partially highlight the importance of online teaching resources for supporting teacher efficacy (Chua & Welch, 2019; de Vries, 2013).

Open-ended responses revealed that most participants (n = 33) identified Orff and Kodály workshops as a primary contributor to teacher efficacy. One possible explanation for these findings is that this high percentage may be due to the distribution of general music teachers among participation in the PreK-6 music teaching settings. Orff

and Kodály workshops are primarily for general music teaching and there are not workshops quite comparable to Orff and Kodály for band and orchestra teachers. Music method certification programs and workshops may provide general music teachers with both repeated exposure to role models and clear instructional information, which may lead to strengthening one's sense of self-efficacy (Bandura, 1997). Also, repeated observation of successful music teaching models and obtaining successful instructional ideas from experienced general music teachers increases the opportunities to refine one's teaching practice (Bauer, 2007; Stark, 2021). Given that a key principle of social cognitive theory is the social context of learning (Bandura, 1997), both mastery experience and vicarious learning opportunities as part of social interaction may naturally occur at certification courses and workshops by observing or modeling other colleagues or experience teachers' teaching performance.

One prominent finding from this study highlighted the importance of peer observation in enhancing teacher efficacy for student engagement. Increased hours of observing other teachers appear to increase teacher efficacy for student engagement. This is probably because direct observational learning allows for gaining knowledge about how colleagues cope with challenges in relation to student engagement. Bond (2020) defined student engagement as "the energy and effort that students employ within their learning community, observable via any number of behavioral, cognitive or affective indicators across a continuum" (p. 3). Efficacious teachers are more likely to pay attention to how students are feeling physically and emotionally, and then are more likely to respond thoughtfully to those feelings.

Research Question 3: Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by the main teaching area (i.e., general music, instrumental, and mixed)?

Two separate factorial ANOVA test results, surprisingly, yielded non-significant differences among the three groups—general music, instrumental, and mixed—in terms of teacher efficacy scores for instructional strategies and student engagement. These non-significant results may have been affected by insufficient sample size (Rusticus & Lovato, 2014): (a) general music (n = 63), instrumental (n = 16), (c) mixed area group (n = 13). However, it is still reasonable to note that the general music group (M = 8.73) reported higher sense of self-efficacy for instructional strategies, followed by the mixed area group (M = 8.33) and instrumental group (M = 8.25). Likewise, the mean of teacher efficacy scores for student engagement was higher for the general music group (M = 8.45) than the mixed area group (M = 8.11) and instrumental group (M = 7.90). These findings suggest perceived differences in self-efficacy between general music and instrumental music teachers. Overall, one possible explanation for these findings is that general music teachers may have diverse instructional skills, such as singing, dancing, and playing musical instruments, which could enhance a greater sense of self-efficacy in their teaching abilities. Conversely, instrumental music teachers may primarily but narrowly focus on how to play a specific musical instrument and expectations of their students may go beyond the actual teaching and performance skills, which could lead to a lower sense of teacher efficacy. Likewise, music teachers in mixed teaching areas may struggle with teaching multiple subjects within a limited amount of time, which may lead to a lower sense of teacher efficacy. Another possible explanation is that general music

teachers have more flexibility in lesson planning and that general music settings allow for child-centered music curricula, whereas instrumental music teachers have more performance-centered instruction where students focus on reading the musical staff (Kuebel, 2019; Niland, 2009). Other possible explanation is that especially in early years, instrumental majors who are not well prepared to teach general music, or band teachers assigned to teach orchestra, may struggle if they lack adequate pedagogical content knowledge for that assigned music area. Such contrasting teaching environments may affect the difference in teacher efficacy scores between general music and instrumental teachers.

Research Question 4: Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by years of teaching experience (i.e., 1 to 5 years, 6 to 10 years, and more than 10 years of teaching experience)?

Results from this study indicated that early career teachers (1 to 5 years) assessed their teacher efficacy for instructional strategies and student engagement lower than middle career and veteran career teachers, underscoring the importance of years of teaching experience in relation to PreK-6 music teachers' sense of self-efficacy. These findings confirmed Bandura's (1997) assertion that self-efficacy beliefs tend to remain relatively stable once developed, suggesting that the first five years for teaching are the most critical period to mold initial teacher efficacy levels prior to the stable levels of teacher efficacy among mid- and veteran career groups. The evidence from this study underpinned the notion that teacher efficacy appears to be pliable and changes by years of teaching experience because years of teaching experience is directly associated with

mastery experiences, which encompasses one's previous successes or failures in their teaching practice.

It is important to note that non-significant differences existed between middle career and veteran career teachers' self-efficacy for instructional strategies and student engagement, but middle career teachers remarkably reported a relatively higher level of teacher efficacy for instructional strategies and student engagement (M = 8.70, M = 8.73) than veteran career teachers (M = 8.58. M = 8.57). These results differ from the previous findings (Regier, 2019b; West & Frey-Clark, 2019), which have suggested that veteran career teachers are more likely to feel confident in teaching than middle career and early career teachers. The findings of this study may reflect the impact of COVID-19 on teacher efficacy. Some of the participant comments shed light on unprecedented challenges—a lack of information on remote teaching and reduction in orchestra/band—weakening their sense of self-efficacy. This reflects findings of Miksza et al. (2022), who found that PreK-12 music teachers discerned a rapid decline in teacher efficacy in the era of the COVID-19 pandemic. Ultimately, the results from this study may be explained by the fact that a lack of direction for remote teaching during the COVID-19 led to a rollercoaster of emotions, which ultimately resulted in undermining self-efficacy despite years of teaching experience (Knapp, 2022).

Research Question 5: Is there a differential effect associated with the interaction of the main teaching area and years of teaching experiences?

Two sets of factorial ANOVA results revealed that the interaction effect between main teaching area and years of teaching experience was non-significant for both teacher efficacy toward instructional strategies and student engagement. These findings suggest

that the teacher efficacy similarities in general music, instrumental, and mixed area groups remained consistent across levels of teaching experience. Previous music education researchers (West & Frey-Clark, 2019) have focused primarily on interaction effects between teaching experience and a teacher's route to certification. West and Frey-Clark found that self-efficacy levels between the undergraduate teacher certification program group and the post-baccalaureate certification group were similar regardless of whether each group had less than or more than 10 years of teaching experience. Particularly worthy of note is that this current study extended prior research while investigating a topic that has been seldom studied: whether main teaching area impacts years of teaching experience in relation to PreK-6 music teacher sense of self-efficacy. The strength or direction of main teaching area on teacher efficacy may depend on how many years of teaching experience participants have. In other words, the relationship between main teaching area and teacher efficacy may be weaker for music teachers with fewer years of teaching experience than for those with more years of teaching experience. This would be an interaction effect. The fact that no interaction effect was found in this study may be due to the low sample sizes for the instrumental and mixed area groups.

Research Question 6: Are there significant differences in reported composite teacher efficacy scores of PreK-6 music teachers by school types (Title I school and Non-Title I school)?

The mean differences by group indicated that PreK-6 music teachers in Title I schools had a significantly lower sense of teacher efficacy for student engagement than their Non-Title I school counterparts. This difference might imply that music teachers in the Title I group struggle with addressing student engagement issues. According to U.S.

Department of Education (2015), schools labeled as Title I are eligible to receive financial support from local educational agencies (LEAs) to meet the special needs of students from low-income families. Title I schools tend to have lower academic achievement than Non-Title I counterparts. Matsudaira et al. (2012) found that student academic performance of Title I schools is substantially worse than that of Non-Title I schools; further, they found that school funds allocated to Title I had no significant impact on improving academic achievement. Findings of this study may be further explained by the fact that Title I schools in Arizona have over 25% of their teachers with less than two years of teaching experience, who are generally less effective compared to experienced teachers (Sutcher et al., 2016), suggesting that beginning teachers need more time to acclimate themselves to Title I school environment to overcome challenges associated with students from lower socioeconomic backgrounds.

Limitations

Limitations of this study include the limited sample size and the difficulty of generalizing the study findings from this specific sample of PreK-6 music teachers in Arizona to the wider population of PreK-6 music teachers across the US. The small number of instrumental (n = 16) and mixed area group (n = 13) and restricted sampling frame (i.e., PreK-6 music teachers in the state of Arizona) represent potential limitations to this study. Although the results of this study revealed that non-significant differences for teacher efficacy scores existed among main teaching areas, the limited number of PreK-6 music teachers within the current study sample (N = 92) may have weakened the statistical power of this study to determine such differences. PreK-6 general music teachers dominate PreK-6 music teaching settings. Recruiting a larger sample size with a

broader sample framework (e.g., PreK-12 music teachers) may have led to different results. Another limitation of this study is related to the use of the Pk6MTES, which measures only two subscales: (a) teacher efficacy for instructional strategies and (b) teacher efficacy for student engagement. While these two subscales are distinctive dimensions of teacher efficacy, a third subscale related to teacher efficacy for classroom management could have considered the multidimensional nature of teacher efficacy and provided a more comprehensive understanding of teacher efficacy in this field of music education.

Implications for Music Teacher Education

Despite the study limitations, the results of this current study yield theoretical and practical implications for principals, school administrators, policy makers, PreK-6 music teachers, and music teacher educators. The role of school principals, especially their support of the music program and music teachers, may serve as a catalyst for the feeling of teachers' self-efficacy (Miller-Thompson, 2022). Considering that the interpretation of the four sources of efficacy may vary from teacher to teacher, principals can not only increase the likelihood of mastery experience by providing new and varied standards for the judgment of success in their teaching practice but also invigorate educators' teacher efficacy beliefs through inspirational messages as forms of verbal persuasion. In addition, principals might provide specific lists of YouTube teaching resources with music teachers to meet educational needs related to instructional strategies and student engagement. Unless principals are familiar with resources to offer, they may request specialized teachers in their district to obtain specific lists of online teaching videos that are most useful to in-service music teachers. Last but not least, principals

should carefully evaluate teacher performance to decide what types of professional development activities PreK-6 music teachers need to attend, and principals could also offer release time and substitute teachers so that teachers can attend state and national conferences in their teaching area.

School administrators might initiate a one-on-one mentoring program to promote professional growth, which may enhance teacher efficacy. However, it is noteworthy that seeking advice from mentors who operate in dissimilar teaching environment may not always result in success for mentees. It might be paramount that school administrators should match music teacher mentor and mentee by considering the clearly defined criteria such as (Weimer, 2017): (a) the uniqueness of one's teaching area (e.g., general music, band, orchestra) and (b) grade levels (e.g., elementary, middle, high school). Another potential criterion could be the geographic location (i.e., urban and rural) and school types (Title and Non-Title schools). Similar working environment may be conducive to comprehending a homogeneous group of their students. These pairing criteria might also ensure relevant and context-specific feedback based on music teachers' self-reflection on their teaching performance. Additionally, some state and national organizations now offer mentoring programs. For example, Arizona String Teachers Association (ASTA) and Arizona Music Educators Association (AMEA) offer mentoring matches for teachers who request them, and these online programs can match teachers with others in their specialization. School administrators could inform music teachers of these resources for professional development.

Beyond principals' and school administrators' support, PreK-6 music teachers can benefit from the variety of online professional development workshops offered by

organizations like the National Association for Music Education (NAfME) Academy. These online professional development webinars allow teachers to enhance their teaching practices and promote their own professional development by suggesting and offering workshops on topics they have mastered. However, it is important to note that some professional development activities may require workshops, conferences, music method certification, or college courses. Participants might strongly desire to strengthen their teaching practices while pursuing a variety of professional development activities. Lack of school funding may constrain teachers' opportunities for professional growth and development. Therefore, the federal government might allocate more budget to schools for the purpose of encouraging music teachers to engage in the quality of professional development activities. All stakeholders in professional development associations might benefit from the results of this study when designing their programs. In such programs, PreK-6 music teachers might take more opportunities to directly demonstrate successful teaching performance as a form of mastery experience and to fulfill observational learning from more experienced music educators as a form of vicarious experience.

Music teachers might utilize self-assessment to improve their sense of self-efficacy levels. Participant comments suggest that a paucity may exist between what teachers intend to teach and what their students actually learned. Results from this study indicated that ineffective lesson plans diminished participant confidence in their ability to instruct effectively. To mitigate this issue, music teachers should engage in self-assessment of their lesson planning and instructional delivery, which has the potential to bolster their sense of self-efficacy (Awkard, 2017). However, to promote a robust sense of self-efficacy, it is important to note that a broad range of reflective foci should include

inward components (e.g., instructional effectiveness, instructional adaptation, and instructional goals) and outward components (e.g., student behaviors, student needs, student achievement) during the self-reflective process (Schmidt, 2022).

More importantly, music teacher educators might facilitate the development of self-efficacy in pre-service music teachers based on the findings of this study. First, music teacher preparation program should be designed to incorporate small or large-group instruction and peer observation into each method courses to provide successful teaching experience and opportunities for observational learning from peers. Music teacher educators should remind pre-service music teachers of their successful moments, which can be an entry point for constructing initial self-efficacy as future music teachers. Second, music teacher educators might consider video-based self-reflection as a useful instructional tool for pre-service music teachers to improve their self-efficacy. During video reflection, pre-service music teachers can broaden other's viewpoints on their own teaching with the following suggested areas of focus (Snyder, 2011): (a) voice level, (b) posture, (c) eye contact, (d) lesson plan sequence, (e) pacing, (f) classroom management, (g) teaching methods, and (h) student playing errors. However, it is important note that engaging in both immediate reflection following peer teaching and video reflection can be a wide range of source of pre-service music teachers' concerns for music teacher educators to address their challenges (Powell, 2016). Third, music teacher educators should regularly provide information about local teacher-led workshops, such as Orff-Schulwerk and Kodaly workshops. Such workshops offer successful teaching ideas and teaching techniques from experience in-service music teachers. Music teacher educators may also motivate pre-service music teachers to attend workshops by offering extra

credits as an incentive. Fourth, music teacher educators might improve the training of pre-service music teachers by designing collaborative mentoring programs that pair undergraduate students with graduate students. This arrangement enables pre-service music teachers to benefit from the varied experiences of graduate students, who may range from novice to veteran career teachers. Through these programs, pre-service music teachers can learn to address real concerns in the music classroom, such as student behavior and classroom management, and develop efficient strategies for these challenges. These suggestions may serve as a wide range of potential sources of self-efficacy for pre-service music teachers, who typically have limited time and experience to teach prior to becoming in-service music teachers.

Recommendations for Future Study

In the present study, the reliability of the survey instrument—Pk6MTES and FS-PMTES—provides solid evidence for predictor variables related to the four sources of self-efficacy, professional development activities, participant demographics (i.e., teaching areas, years of teaching experience, and school types) affecting teacher efficacy.

In this study, I found that professional development activities, such as methods certification courses and watching YouTube videos, were related to teacher self-efficacy. The analyses of open-ended questions further highlight the importance of informal professional development activities, including watching YouTube, reading method books, casual conversation with colleagues and mentors. More research into possible factors related to formal and informal professional development activities, such as graduate courses, the NAfME workshops, Facebook teacher groups, or music mentor programs, may be warranted, given the significant effect on PreK-6 music teachers found

in this study. By further identifying such activities, music teacher educators, music supervisors, and other administrators can provide better quality programs and support for in-service music teachers.

Researchers might also undertake a longitudinal mixed-method study to track music teachers' sense of self-efficacy. Changes in teacher efficacy over time may have fluctuated during and after the COVID-19 pandemic. This trend might occur again. Accordingly, a longitudinal study is also warranted to promote a deeper understanding of teacher efficacy over time.

In addition, more information is needed on teacher efficacy for classroom management (Potter, 2021), albeit this was not a focus of this study. Notwithstanding, this topic could also be paramount to examining teacher efficacy and developing an enhanced understanding of how music teachers under similar or different teaching contexts deal with student behavior issues depending on their personal efficacy beliefs for classroom management, especially after the COVID-19 pandemic.

To further broaden the scope of the current study, future research could also examine the moderating effect of teacher efficacy on burnout and resilience. Self-efficacy might act a mediator affecting burnout and resilience. Thus, it is reasonable to posit a hypothesis that music teachers with a strong sense of self-efficacy are better able to withstand the negative effect of burnout and promote resilience.

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APPENDIX A

SURVEY INSTRUMENT

Screening question

1. Are you currently working as a music teacher in a school that includes one or more Pre-Kindergarten through Grade 6 grade levels?

- Yes
- No [END SURVEY]

Section 1-Teacher Efficacy 1

This section includes questions about teacher self-efficacy. Teacher efficacy is defined as one's perceived ability to perform specific teaching tasks in order to achieve desired outcomes. Think about your sense of self-efficacy in teaching music in your primary teaching area (e.g., band, choir, general music, orchestra) in the last month. Then, please rate each of the following statements based on how confident you are using the following scale: 10 = *I am certain I can do this*, through, 0 = *I cannot do this at all*. Slide the dot to indicate your answer.

	I am certain I can do this (10)	*I cannot do this at all (0)*
Q1. I can create a positive learning environment for students.		
Q2. I can choose appropriate materials for music classes.		
Q3. I can create effective lessons for students' varying ability levels.		
Q4. I can modify lessons for students with special needs.		
Q5. I can effectively communicate with students.		
Q6. I can create effective lessons for classes of various sizes.		
Q7. I can keep students on task during classes.		
Q8. I can motivate students to participate in music activities.		
Q9. I can encourage students' creativity.		
Q10. I can use multiple teaching strategies to keep students engaged.		
Q11. I can positively impact students' attitudes toward music.		

Section 2- Teacher Efficacy 2

This section includes questions about experiences that might be related to teacher efficacy. Please rate each of the following statements based on your level of agreement using the following scale: 10 = *I strongly agree*, through 0 = *I do not agree with this statement whatsoever*. Slide the dot to indicate your answer.

	I strongly agree (10)	*I do not agree with this statement whatsoever (0)*
Q12. I have done a good job planning for music experiences for students.		
Q13. I have helped individual students improve their ability to make music.		
Q14. I have made the music sound better when working with groups of students.		
Q15. I have kept my students' learning about music on track even when something unexpected happens in the classroom.		
Q16. Observing my music colleagues teaching effectively allows me to imagine myself teaching music effectively too.		
Q17. Observing other music teachers do well in teaching music motivates me to do better.		
Q18. Other good music teachers are role models for me.		
Q19. When I see other music teachers teaching successfully, I imagine myself working through challenging teaching tasks successfully.		
Q20. I have been praised for my music teaching by principals.		
Q21. Other teachers have told me that I'm good at teaching music.		
Q22. Parents have told me that I am a good music teacher for their child.		
Q23. My students give me positive feedback because they think I'm good at teaching music.		
Q24. I never get depressed when I think about teaching music.		
Q25. I never get stressed out when I think about teaching music.		
Q26. Teaching music never makes me feel nervous.		
Q27. I never feel physically exhausted while I am teaching music.		

Open-ended question:
Q28. What do you believe are the most important factors that contribute to your confidence in teaching music?
Q29. What factors might lower your confidence in teaching music?
Q30. Has the COVID-19 pandemic impacted your confidence in your teaching? If yes, please explain why.
Q31. If there is anything else you would like to add, please do so here:

Section 3-Professional Development
This section includes questions about your certifications and professional development activities.

Q32. What method certification do you have [Choose all that apply]?

- Conversational Solfege Level I
- Conversational Solfege Level II
- Conversational Solfege Level III
- Dalcroze Level I
- Dalcroze Level II
- Dalcroze Level III
- First Steps in Music
- Gordon Early Childhood Level I
- Gordon Early Childhood Level II
- Gordon Elementary General Level I
- Gordon Elementary General Level II
- Gordon Instrumental Level I
- Gordon Instrumental Level II
- Gordon Piano Level I
- Gordon Piano Level II
- Kodály Level I
- Kodály Level II
- Kodály Level III
- Orff-Schulwerk Level I
- Orff-Schulwerk Level II
- Orff-Schulwerk Level III
- Suzuki Teacher Certification
- World Music Pedagogy
- Other_____
- I have no special certifications

Q33. Approximately how many music methods certifications (e.g., Dalcroze, Gordon, Kodály, Orff-Schulwerk) do you have? Please type in a number.
Q34. Approximately how many hours of professional development workshops provided by your school/district do you attend per **year**? Please type in a number.

Q35. Approximately how many hours of professional development workshops outside of your school/district (e.g., music association workshops, classes, or conferences) do you attend per **year**? Please type in a number.
Q36. Approximately how many hours do you watch music teaching videos via YouTube or other media sources per **month**? Please type in a number.
Q37. Approximately how many hours do you listen to music educators' podcasts per **month**? Please type in a number.
Q38. Approximately how many music education journal articles do you read per **month**? Please type in a number.
Q39. Does your school/district allow professional development time for you to observe other teachers? If yes, how many hours do you observe other teachers per **year**? Please type in a number.

- Yes _____
- No

Open-ended question:
Q40. In what other kinds of professional development activities do you participate during the year?
Q41. What professional development activities do you believe contribute to your confidence in teaching music?

Section4-Demographics
This is the last section. This section includes questions about your teaching appointment, school type, teaching areas, teaching experiences, and other personal information (gender, race/ethnicity, education).

Q42. Which of the following describes your teaching appointment?

- Full-time
- Part-time
- Other_____

Q43. In what type of school do you currently teach? (If you teach in more than one school, please choose the option that best describes your home or main school.)

- Catholic school
- Christian school
- Other religious school
- Public school
- Public charter school
- Private school (i.e., Non-governmental/Non-sectarian school)
- Other_____

Q44. Which of these options best describes your school? (If you teach more than one school, please choose the option that best describe your home or main school.)

- Urban Title I school
- Rural Title I school
- Urban Non-Title I school
- Rural Non-Title I school
- Other_____

Q45. What grade levels do you teach? (Choose all that apply)

- Pre-Kindergarten
- Kindergarten
- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Grade 6
- Other_____

Q46. What percentage of your time do you teach each of the following at your current school(s)? (Please fill in a number for each.)

- Band ____
- Choir ____
- Orchestra ____
- General Music ____
- Other_____(please enter a number.)

Q47. If you entered a number of 1 or greater for "Other" above, please describe what "Other" means.

Q48. Which of the following describes your gender?

- Female
- Male
- Other _____
- Prefer not to answer

Q49. Which of the following describes your ethnicity? (Check all that apply)

- African American/Black
- Asian
- Hispanic
- Native American
- Pacific Islander
- White
- Other _____
- Prefer not to answer

Q50. What is your highest degree earned?

- Doctorate degree
- Master's degree
- Undergraduate degree
- Other ____

Q51. Which of the following is the primary focus area of your highest degree?

- Brass
- Conducting
- Music Education
- Music History

- Music Theory
- Music Therapy
- Piano
- Strings
- Voice
- Woodwinds
- Other _____

Q52. Approximately how many years of PreK-6 music teaching experience do you have? Please type in a number.
Q53. Approximately how many years of PreK-6 music teaching experience do you have at your current main or home school? Please type in a number.

Thank you for your participation in this survey. Your experience and opinions matter and will benefit this research and the music education community.

If you would like me to share the results of this study with you once the study is completed, please email me at dcha3@asu.edu or Dr. Sandra Stauffer at Sandra.Stauffer@asu.edu. Please email me separately from this survey in order to keep your identify completely anonymous,

If you have any other questions about this study or your participation in this survey, you can also contact me at dcha3@asu.edu or Dr. Sandra Stauffer at Sandra.Stauffer@asu.edu at any time. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at 480-965-6788.

APPENDIX B

RECRUITMENT EMAIL

Dear Participant:
My name is Dongju Cha, and I am a doctoral student in Music Learning and Teaching at Arizona State University (ASU). I am doing a research study in which I am investigating the self-efficacy of PreK-6 music teachers in Arizona. Self-efficacy has to do with one's beliefs about their ability to do something well. I also aim to explore the relationship between levels of teacher efficacy and sources of teacher efficacy, such as experiences and environmental factors, among Arizona PreK-6 music teachers.
I am inviting you to participate in this study because you fit the following eligibility criteria:

(1) Individuals teaching in a school in Arizona.
(2) Individuals teaching at least one music class in Pre-Kindergarten through Grade 6

If you choose to participate, you will take a survey that will take approximately 10 minutes to complete. You may complete the survey instrument on your computer, tablet, or mobile device, though I recommend completing it on a computer or tablet with a keyboard, as the survey does contain some open-ended questions. Please note, though, that participation in this study is completely voluntary. You are free to withdraw at any time. You may decide to skip any question or discontinue participation at any time without penalty. While there is no direct benefit to study participants, as well as no foreseeable risks, participants who request it will be sent study results that should be relevant to them as current PreK-6 music teachers in Arizona.

If this sounds like an exciting opportunity, please follow the link below:
https://asu.co1.qualtrics.com/jfe/form/SV_6Xz1YaqWEyOqUpo
Please take the survey by April 30th, 2022.

Thank you in advance for your participation.

Sincerely,

Dongju Cha
PhD Student – Music Learning and Teaching
Arizona State University
dcha3@asu.edu
ASU IRB Study 00015124

Supervisor: Sandra Stauffer

s.stauffer@asu.edu

APPENDIX C

CONSENT FORM

You are being invited to participate in a survey research study about music teachers' self-efficacy. Participating in this survey should take no longer than 10 minutes. Your responses will be anonymous, and your participation is completely voluntary. The results of this study may be used in my dissertation, presentations, and articles, but because your responses are anonymous, your identity will not be identified in any way. The anonymous data collected as a part of current study will not be shared with other investigators for future research purposes. Data from this survey will be stored in an ASU secure server. Data will be destroyed at the completion of the project. Please complete this survey by April 30th, 2022, with many thanks for your participation in advance.

You can read more information about this study here.

Are you willing to participate in this study?
Please choose one of the following options, then click the arrow (>>) button to begin this survey.

- I consent. I am ready to begin the study.
- I do not consent. I do not wish to participate in this study.

APPENDIX D

IRB APPROVAL LETTER

Dong-Ju Cha <dcha3@asu.edu>

STUDY00015124 has been approved

1 message

research.integrity@asu.edu <research.integrity@asu.edu> Fri, Jan 7, 2022 at 6:08 AM
Reply-To: research.integrity@asu.edu
To: dcha3@asu.edu

Template:IRB_T_Post-Review_Approved

Notification of Approval

To:	Dongju Cha
Link:	STUDY00015124
P.I.:	Sandra Stauffer
Title:	Exploring PreK-6 Music Teacher Self-Efficacy
Description:	This submission has been approved. You can access the correspondence letter using the following link: Correspondence.pdf(0.01) To review additional details, click the link above to access the project workspace.