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EVALUATING IMPROVISATION AS A TECHNIQUE FOR TRAINING PRE-  
SERVICE TEACHERS FOR INCLUSIVE CLASSROOMS

by

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A dissertation submitted in partial fulfillment of the requirements  
for the degree of Doctor of Education  
in the Department of Educational Research, Technology and Leadership  
in the College of Education  
at the University of Central Florida  
Orlando, Florida

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## ABSTRACT

Improvisation is a construct that uses a set of minimal heuristic guidelines to create a highly flexible scaffold that fosters extemporaneous communication. Scholars from diverse domains: such as psychology, business, negotiation, and education have suggested its use as a method for preparing professionals to manage complexity and think on their feet. A review of the literature revealed that while there is substantial theoretical scholarship on using improvisation in diverse domains, little research has verified these assertions. This dissertation evaluated whether improvisation, a specific type of dramatic technique, was effective for training pre-service teachers in specific characteristics of teacher-child classroom interaction, communication and affective skills development. It measured the strength and direction of any potential changes such training might effect on pre-service teacher's self-efficacy for teaching and for implementing the communication skills common to improvisation and teaching while interacting with student in an inclusive classroom setting. A review of the literature on teacher self-efficacy and improvisation clarified and defined key terms, and illustrated relevant studies. This study utilized a mixed-method research design based on instructional design and development research. Matched pairs t-tests were used to analyze the self-efficacy and training skills survey data and pre-service teacher reflections and interview transcripts were used to triangulate the qualitative data. Results of the t-tests showed a significant difference in participants' self-efficacy for teaching measured before and after the improvisation training. A significant difference in means was also measured in participants' aptitude for improvisation strategies and for self-efficacy for their implementation pre-/post- training. Qualitative results from pre-service teacher class

artifacts and interviews showed participants reported beneficial personal outcomes as well as confirmed using skills from the training while interacting with students. Many of the qualitative themes parallel individual question items on the teacher self-efficacy TSES scale as well as the improvisation self-efficacy scale CSAI. The self-reported changes in affective behavior such as increased self-confidence and ability to foster positive interaction with students are illustrative of changes in teacher agency. Self-reports of being able to better understand student perspectives demonstrate a change in participant ability to empathize with students. Participants who worked with both typically developing students as well as with students with disabilities reported utilizing improvisation strategies such as *Yes, and...*, mirroring emotions and body language, vocal prosody and establishing a narrative relationship to put the students at ease, establish a positive learning environment, encourage student contributions and foster teachable moments. The improvisation strategies showed specific benefit for participants working with nonverbal students or who had communication difficulties, by providing the pre-service teachers with strategies for using body language, emotional mirroring, vocal prosody and acceptance to foster interaction and communication with the student.

Results from this investigation appear to substantiate the benefit of using improvisation training as part of a pre-service teacher methods course for preparing teachers for inclusive elementary classrooms. Replication of the study is encouraged with teachers of differing populations to confirm and extend results.

To my mother, Madeline Patricia,  
who lifted me up with her endless support,  
And for my daughter, Madeline Maretta Xiomara,  
who stands on my shoulders (literally) to touch the sky;  
And to all women and girls everywhere who struggle  
for education

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## CHAPTER 1 INTRODUCTION

### Overview

The short exchange below between teacher, Deborah Lowenberg Ball and her student Sean, was overheard in a classroom.

*I was just thinking about six,' Sean began. 'I'm just thinking, it can be an odd number, too.'*

*[Mrs.] Ball, did not shake her head no.*

*Sean went on, speaking faster. 'Cause there could be two, four, six, and two — three twos, that'd make six!'*

*'Uh-huh,' Ball said.*

*'And two threes,' Sean said, gaining steam. 'It could be an odd and an even number. Both!'*...

*...She continued not to contradict him, and he went on not making sense. Then Ball looked to the class.*

*'Other people's comments?' she asked calmly. (Green, 2010, p.10).*

Green (2010) explains the scene above stating:

Ball had a goal for that day's lesson, and it was not to investigate the special properties of the number six. Yet by entertaining Sean's odd idea, Ball was able to teach the class far more than if she had stuck to her lesson plan. By the end of the day, a girl from Nigeria had led the class in deriving precise definitions of even and odd; everyone — even Sean — had agreed that a number could not be both odd and even; and the class had coined a new, special type of number, one that happens to be the product of an odd number and two. They called them Sean numbers... Dropping a lesson plan and fruitfully improvising requires a certain kind of knowledge... (Green, 2010, p.10-11).

The above vignette and explanation taken from Green's (2010) article for the New York Times, Building a Better Teacher, illustrates a key concept common to both effective teaching and Improvisational Theater. Known in improvisation circles as the unbreakable rule of agreement, "Yes, and..." (p. 94) (Halpern, Close & Johnson, 1994), and in education by a number of names

like “positive framing” (Lemov, 2010, p.157), “feeling connected,” (Goleman, 2007, p.282) or positive teacher-child interaction (Conroy, Sutherland, Snyder, Al-Hendawi, & Vo, 2009; Gershenson, Lyon and Budd, 2010; Lobman, 2006), among others; the technique is one of many communication skills shared by the two domains.

In this case the teacher, Deborah Loewenberg Ball, did not immediately discount the second grader’s seemingly offbeat contribution to the class. Instead, she accepted his contribution right or wrong, and used it as a jumping off point for a deeper exploration of number theory using dialogue and the collective understanding of the rest of the class to develop the concept. She recognized a *teachable moment* and felt confident she had the skills to act on it to help Sean construct his understanding (Erickson, 2011).

This technique, called *Yes, and...*, is the foundation of improvisation. Improvisation is most well known in the creation of jazz music, and in theater to promote the emergence of comedy. The *Yes, and...* technique is a way to foster agreement among diverse players. Vera and Crossan (2005) characterize this as “agree, accept, and add” (p. 207). In *Improvised Theater*, an initial player makes an offer to start a scene. The additional players agree to accept that offer, (the *Yes*, part of the technique) and then they in turn build on that contribution adding their own offers which other players accept (the *and...* part of the technique). Over time the scene evolves naturally. Clever players may recognize patterns in the offers and incongruities that often generate humor. When used in a classroom, the technique of *Yes, and...*, or “agree, accept, and add” (Vera & Crossan, 2005, p. 207) becomes a way to create a positive learning environment and promote student contributions to the lesson fostering *teachable moments*.

This research study examined the use of *Yes, and...* agreement and other communication and interaction skills thought to be common to both effective teaching and improvisation. The research



examined whether training in improvisational acting (improv) could be used as an effective component of a pre-service teacher-training course. It measured the strength and direction of the changes improvisation training effected on teacher's self-efficacy for teaching and for implementing the communication and interaction skills theorized to be common to improvisation and teaching. It also examined whether the pre-service teachers felt the improvisation training was beneficial and whether they reported using skills from the training in their interaction with children during a service-learning project.

### Problem Statement and Research Summary

This research investigated whether training in improvisation could foster communication and interaction expertise in pre-service teachers. Improvisation is typically associated with the theater. However improvisation shares much in common with teaching in terms of communications and interaction strategies. Examples of these include: heightened environmental awareness, being present in the moment, welcoming student contributions, and establishing a positive framework. This research tested whether improvisation training was beneficial for fostering self-efficacy and in developing the most salient of these shared communication and interaction skills in teachers working with students in an inclusive classroom.

### Rationale for the Study

Teaching, like other highly complex, unstable and furiously interactive tasks, poses... 'wicked problems,' problems whose solutions are not inherent in the problem space itself and thus which need to be progressively transformed into simpler problems for which the solutions are likely to be appropriate (Huberman, 1993, p. 16)

Teachers today are facing an ever-changing, diverse population and reaching all types of learners is expected. McLeskey, Rosenberg and Westling (2010) cite US Census Bureau statistics from 2006 and 2007 showing that while 67% of the US population identifies itself as European

American, minority populations are rising. In addition, they note that, as of 2006, “nearly 13 million children, 17% lived in families with incomes below the federal poverty level” (p. 54). In 2006, 510,000 children were in foster care in the U.S; and “in 2005-2006 school year 6,796,274 students with disabilities aged 3-21 were served” (p. 54) in public schools (McLeskey et al., 2010). These changing demographics represent both challenges and opportunities for communication in the classroom.

At the same time that teachers are expected to reach a more diverse audience, Berliner (2011) describes how increased standardization has taken place. He uses the term “narrowing” (pp. xiv-xv) to describe current educational movements. Sawyer (2004b) cited scripted curriculums and uniformity as an example of what he calls the trend towards “teacher-proofing” (p.12) classrooms.

He states:

Underperforming schools are faced with two very different visions for reform. Scripted approaches attempt to teacher proof the curriculum by rigidly specifying teacher actions, and essentially removing all creativity and professional judgment from the classroom. Creative teaching suggests a very different vision: teachers are knowledgeable and expert professionals, and are granted creative autonomy in their classrooms. Our economy is increasingly based on knowledge workers and a ‘creative class,’ and these economic trends seem to require creative teaching that emphasizes learning for deeper understanding, rather than mastery of lower-order facts and skills (Sawyer, 2004b, p. 12).

Berliner (2011) suggests that these approaches towards down-skilling the teaching profession take the joy out of teaching and Sawyer (2004b, 2011) and Berliner (2011) see them as counter-productive for educating competent critical and creative thinkers. What is needed instead is a way to up-skill the teaching profession, to produce expert teachers who can diffuse difficult classroom management situations, who can foster lively discussions, who can harness their content area knowledge to respond on the fly to teachable moments, who can interact with and engage students (Borko & Livingston, 1989; DeZutter, 2011; Lobman, 2006, Sawyer, 1999, 2004a, 2004b, 2011). Pre-service and novice teachers do not often have this skill set going into the profession (Borko &

Livingston, 1989; DeZutter, 2011; Le Maistre & Pare, 2010). This can cause stress and attrition (Glickman & Tamashiro, 1982; Schwarzer & Hallum, 2008; Skaalvik and Skaalvik, 2007; 2010). With increased accountability, diminishing room for creativity, and a diverse and changing student population, the profession of teaching is often challenging for novice teachers (Berliner, 2011; Le Maistre & Paré, 2010; McLeskey et al., 2010). Le Maistre and Paré (2010) cite statistics indicating that beginning teacher loss in some US districts is “as high as 50% within the first five years” (p.560). Their research compared novice teachers to other professions and found that new teachers are often unprepared to cope with the complexity of classrooms (Le Maistre & Paré, 2010). Other researchers cite similar difficulties for novice teachers with student interaction (Borko & Livingston, 1989; Pane, 2010; Yoon, 2002). Classroom management of difficult students is one challenge for novice teachers and is an issue in retention (de la Torre-Cruz & Cassanova Arias, 2007; Lambert, McCarthy, O’Donnell, & Wang, 2009; Ng et al, 2010; Pane, 2010). However, Hanuschek’s (1971, 2005) research has established the important role good teachers play in the classroom for fostering student academic gains. Goleman (2007) and Di Fabio and Palazzeschi (2008) suggest that good teachers show evidence of social and emotional intelligence and can foster positive learning environments. Lobman (2006) describes characteristics of responsive teaching and it’s influence on preschool students’ development. Gordon (1997) suggests that teachers need “social insight” (p. 56) and presents a good example of the type of communication and interaction gap that exists between novice teachers and their students. These communication gaps can cause classroom management and stress issues for teachers. Gordon (1997) describes a student teacher struggling to gain control of her tenth grade math class, who in frustration pleaded with her students:

’Can’t we all just get along?’ She could not understand why the students laughed when she used this phrase. The students, of course, immediately recognized it as Rodney King’s plea during the 1992 Los Angeles uprising. The line was later incorporated into a song, displayed on T-shirts, and chanted by students. One of her students remarked to this confused

teacher, 'It just cracks me up when you say that!' Nevertheless she did not comprehend the impact of what she was saying until her university observer explained (Gordon, 1997, p.56).

This student teacher responded with a sincere personal plea instead of responding in the persona of the teacher-self. This coupled with her lack of awareness of student culture positioned her as the "outsider" in her classroom; a vantage point from which it is difficult to establish respect and authority. Without this credibility it is difficult to take the next step and teach content area material. Pianta & Hamre (2009) suggest, "youth routinely describe experiences in classrooms that fail to capitalize on their interests, goals, and motivation and instead promote disengagement and alienation" (p. 40). Pianta and Hamre (2009) assert that the educational system is often "disconnected from youths' developmental needs" (p. 40). They use this as a justification for much of their research developing a commercial program for measuring teacher-child interaction. Borko and Livingston (1989) suggest that teachers develop this type of expertise over time; DeZutter (2011), Sawyer (2004a, 2004b, 2011), and Beghetto and Kaufman (2011) assert that these are improvisational skills that can be and should be taught to pre-service teachers.

### Conceptual Framework

The evolution of teachers' communication and interaction as they acquire expertise was the lens used to focus the data collected in this study. Good communication skills, both verbal and non-verbal, are crucial aspects of good teaching. Good and Brophy (1987) cite research showing that on any given day a teacher may exchange more than a thousand interpersonal communications with students; and at the secondary level may interact with more than 150 total students. They characterize classroom communication as "fast and complex" (p.26).

Research on the role of communication in teaching finds that teachers' verbal ability is consistently related to student performance (Stronge, 2002). Communications designed to impart

information can be thought of as cognitive communications. Erickson (1982) provides examples of this type of communication in his analysis of the Academic Task Structure of the classroom; and Borko and Livingston (1989) call this “pedagogical reasoning” (p.473). Stronge’s (2002) summary of effective teaching backgrounds shows that research on teacher verbal ability finds:

Teacher scores on verbal ability tests were the only input found to have a direct positive relationship with student achievement. Students taught by teachers with high verbal skills perform better on standardized tests than those students taught by teachers with lower verbal ability. A positive relationship exists between teachers with high verbal ability and student achievement (Stronge, 2002, p.4).

Affective communication plays a complimentary role in the delivery of information. The research conducted by Albert Mehrabian in the late sixties found that 55% of people’s response to affective communication takes place visually, through body language –in this case facial features; 38% is auditory, such as the prosody of a person’s voice; and only 7% is the actual words used in the communication (Merabian, 1971). Moe, Pazzaglia & Ronconi (2010) note research that has examined the role of positive affect in teacher-child interaction and its effect on learning: “The Fredrickson ‘broaden and build’ theory suggests that positive affect broadens many cognitive functions, such as attention, creativity, memory and over time enlarges (builds) action repertoires, resources motivation, expectations and resiliency in the face of adversity” (p. 1146). Pane (2010) reviews relevant literature on the use of culturally sensitive disciplinary strategies, and advocates for supportive teacher-child relationships and culturally appropriate communications. Siwatu (2007) also advocates for the creation of positive teacher-child relationships in culturally and linguistically diverse classrooms. Krashen (1987) advocates for establishing a positive classroom climate to reduce the affective-filter for English language learners. O’Conner and McCartney (2007) found a correlation between positive teacher-child relationships in early childhood classrooms and later student achievement.

Eric Hanushek's long-term research on the economics of education has consistently found that the quality of the teacher is one of the few factors that is able to impact student academic progress and close learning gaps (Hanushek, 1971; 2005; Hanushek, Kain & Rivkin 2001). Stronge (2002) states: "a growing body of research concerned with teacher effectiveness has reinforced the notion that specific characteristics and behaviors matter in teaching, in terms of student achievement as well as other desirable outcomes" (p.viii). Downer, Sabol and Hamre (2010) and Pianta and Hamre (2009) report similar evidence in teacher-child interaction research. Downer et al.'s (2010) review of the literature shows that effective teacher behavior can help close performance gaps for low-performing and at-risk students. Birch and Ladd's (1997, 1998) and O'Conner's (2010) research establish the effect that teacher-child relationships have on student outcomes.

Teacher preparation programs, which typically focus on content area knowledge, and broad learning theories in methods classes, may miss specific communication and delivery strategies that teachers need on their journeys to becoming experts (Lemov, 2010; DeZutter, 2010; Borko & Livingston, 1989). Teachers may not effectively garner the attention of students to impart their content area knowledge (Naftulin, Ware & Donnelly, 1973). Teachers with lower verbal ability may not be as apt to rephrase instructions or alter communications based on student needs (Stronge, 2002).

Many research studies have identified positive classroom interaction as an indicator of good teaching (Conroy, et al., 2008; Gershenson et al., 2010; Good & Brophy, 1987; Kotcher, Doremus & Great Neck, P. S., 1972; Lobman, 2006; Rathel, Drasgow & Christle, 2008; O'Conner, 2010; O'Conner & McCartney, 2007; Mashburn, Hamre, Downer, & Pianta, 2006; Pianta & Hamre, 2009; Downer, et al., 2010). To positively interact with students, teachers must establish rapport with students (Frisby & Martin, 2010; Goleman, 2007; Gordon, 1997; Ng, Nicholas, & Williams, 2010);

use effective verbal and non-verbal communication strategies (Gershenson et al., 2010; Good & Brophy, 1987; Kachur, Goodall, Abrell, Rich, & Yoder, 1977; Merahbian, 1971; Stanulis & Manning, 2002) be aware of classroom dynamics; and both identify potential problems in the classroom and know how to successfully respond (Beaty-O’Ferrall, Green & Hanna, 2010; Borko & Livingston, 1989; Rathel et al., 2008; Hayes, Hindle & Witherington, 2007; Pianta & Hamre, 2009; O’Conner, 2010; Anguiano, 2001; Johnston, 1995; Good & Brophy, 1987; Conroy et. al., 2008).

Reigeluth (1999) cites David Jonassen’s Support for Learning matrix as an example of how cognitive and emotional support systems interact to provide optimal learning environments for constructivist classrooms. In Jonassen’s matrix, the square intersection of the cognitive support and the emotional support axis represents the ideal constructivist-learning environment. Pre-service Teacher preparation texts, district teacher evaluation protocols and recent research trends all suggest that quality teachers are ones who can effectively demonstrate both cognitive (content-area knowledge) and affective (positive teacher-child interaction) skills to adequately meet students’ needs (Borko & Livingston, 1989; Good & Brophy, 1987; Goleman, 2007; Jefferson County Public Schools, 2009; Orange County Public Schools, PCPS1013; Osceola Public Schools 2006; Seminole County Public Schools, 2003; Pianta & Hamre, 2009; O’Conner, 2010; O’Conner & McCartney, 2007; Downer et. al., 2010; ).

While strong communication and interaction skills are crucial, novice teachers often struggle with these in their classrooms (Borko & Livingston, 1989). Prior research has examined whether good teaching traits are inborn or whether they can be cultivated (Schepens, Aelterman & Vlerick, 2009). Current research indicates that professional development programs are effective for in-service and pre-service teachers (Cawthon & Dawson, 2009; Conroy et. al., 2008; Dawson, Cawthon, &

Baker, 2011; Hagen, Gutkin et al., 1998; Hayes et al. 2007; Lemov, 2010; Parise & Spillane, 2010; Rathel et al., 2008; Smylie, 1988).

Reflection on these studies informed the focus for this research which examined whether improvisation training, such as that used in improv comedy and acting, provides a framework for teaching these communication and interaction skills to teachers to foster expertise with affective interpersonal skills. In their research, Naftulin, et al. (1973) go so far as to suggest training actors as teachers. This researcher suggests instead that teachers be trained to use some of the effective verbal and non-verbal communication techniques improvisational actors use to garner attention and motivate audiences and promote positive social interaction. A handful of professional development programs already offer this such as the Drama for Schools program from the University of Texas in Austin (Cawthon & Dawson, 2009; Cawthon & Dawson, in review; Dawson et. al, 2010); the Creative Partnerships Program in the UK (Burnard, 2011); the Developing Teacher Fellowship Program (Lobman, 2011); and Hines and Hines' (2010) *Improvisation for Collaborative Teaching* DVD. Sawyer (1997, 2004a, 2004b) has been a long-term advocate for using improvisation in educational contexts. Sawyer's (2010) recently edited volume, *Structure and Improvisation in Creative Teaching*, examines this emerging research area from multiple angles. A review of prior literature such as this highlighted the need to examine improvisation training for pre-service teachers, and guided the focus of this study, which contributed to the emerging body of knowledge on improvisation and teaching.

To successfully interact in such environments, teachers must be able to think on their feet. This point is clearly articulated by Sassi and Goldsmith (1995) who propose using improvisation for math instruction:

While there are no recipes for creating these new forms of teaching, [constructivist, inquiry-based] neither is it a matter of teaching solely by intuition or 'feel.' There are pedagogical and



epistemological issues to which teachers must learn to attend closely: for instance, how to recognize an opportunity for a rich discussion that wasn't planned; how to determine if a child's mathematical argument is rich enough to explore more deeply; how to anticipate the kinds of questions that will get students engaged in a substantive mathematical inquiry. It is crucial to help teachers develop a deep sense of what this teaching is all about so that they do not feel as if they've abandoned certainty in favor of a free fall into a pedagogical abyss. To succeed at this task we need conceptual frameworks that preserve rather than collapse the complexity of attending to the particularities of individual classrooms (p. 3)

Borko and Livingston (1989) suggest that teaching is a "complex cognitive skill" (p474).

While Beghetto and Kaufman (2011); DeZutter (2011); Lobman (2003b, 2006); Ross (2010) and Sawyer (2004a, 2004b, 1999, 2011) do not specifically use the terms ill-defined, or open-ended problem to describe teaching; they all theorize that teaching involves confronting indeterminacy. They suggest that teaching is the act of improvising and acting in the moment. Le Maistre and Pare (2010) refer to Miles Huberman's (1993) description of the teacher as a "*bricoleur*... a sort of tinkerer who creates and repairs learning activities on the run" (Huberman, 1993; Le Maistre and Pare, 2010, p.561). Beghetto and Kaufman, (2011); Lobman, (2003b, 2011); Ross (2010) Sassi and Goldsmith (1995); and Sawyer (2004a, 2004b, 2011) theorize that improvisation can be used as a theoretical framework for classroom organization, curriculum design, collaboration, and teacher-child interaction. Although the idea of using improvisation as a framework for managing complex dynamic organizations holds promise (Barrett, 1998; Weick, 1998), the challenge is to identify the heuristic guidelines within Improvised Performance and translate them into successful practice.

Barrett (1998) suggests that a better understanding of how jazz bands and jazz musicians manage complexity can help all types of organizations adapt to and thrive in dynamic environments. He states, "given the unprecedented scope of changes that organizations face and the need for members at all levels to be able to think, plan, innovate, and process information, new models and metaphors are needed for organizing" (Barrett, 1998, p.605). Sawyer (2004a) agrees believing schools should aspire to creating environments where students and teachers can both achieve this level of

expertise, especially given the current focus of educating “knowledge workers” (p.12). Barrett also touches on how the improvisation model can inform this synergy between action and learning:

To help us understand the relationship between action and learning, we need a model of a group of diverse specialists living in a chaotic, turbulent environment; making fast, irreversible decisions; highly interdependent on one another to interpret equivocal information; dedicated to innovation and the creation of novelty (Barrett, 1998, p. 605). Improvisation is theorized to afford multiple benefits to teamwork and social interactions.

Although applied often in the realm of music, comedy and theater, it is theorized to be a domain independent construct that holds potential as a training technique for other disciplines, especially those where social interactions are ambiguous and it is important to be able to think quickly on one’s feet to establish a context for social interaction and to “comp” or support team members, creating a positive emotional environment. Improvisation has also been shown to be a useful analogy for thinking about the organization of complex dynamic environments, such as mediation, innovative performance in teams, and negotiations (Balachandra, Barrett, Bellman, Fisher, & Susskind, 2005; Balachandra, Crossan, Devin, Leary, & Patton, 2005; Crossan, 1998; Lewis, 2007; Vera & Crossan, 2005). Educational theorists such as Sawyer (1999, 2004a, 2004b, 2011) suggest it provides a useful framework for fostering constructivist classrooms.

This study on pre-service teachers examined the use of improvisation in the teaching domain by focusing not on the system as a whole or the curricula as some theorists such as Sawyer (1999, 2004a, 2004b, 2011) and others propose, but on using improvisation as a delivery strategy for teacher training as proposed by DeZutter (2010). The study examined global changes in teacher self-efficacy as well as self-efficacy for improvisation skills. Additionally the role of the teacher and the part he/she plays in the complex system of teaching was considered in this study through collection of personal reflections, final exam data and classroom artifacts to triangulate the quantitative results.

If improvisation is an effective organizational strategy, therapy and method for teaching communication and interpersonal skills as many of the above authors claim, then how can theory be translated into practice? Grounding the question in the domain of this research, how can educators become better improvisers? Barrett (1998) asks: “are there ways to socialize a mindset that nurtures spontaneity, creativity, experimentation, and dynamic synchronization in organizations? What practices and structures can we implement that might emulate what happens when jazz bands improvise?” (pp. 617-618). Balachandra, Crossan, et al. (2005) agree stating, “The challenge is to get students to go beyond mere conceptual understanding. It is one thing to recognize after the fact, how effective negotiators improvise their strategies, it is quite another to understand what the process requires *prospectively*” [emphasis in original] (p. 437). How to get from here to there is the challenge. As Anderson (2008) says “research done in the area of improvisation is still primarily foundational in nature” (p.5). Much more needs to be done to clarify and establish a workable construct for the practice of improvisation and then to develop research methods to measure and evaluate its effectiveness in domain specific applications. Completion of this investigation with pre-service teacher participants allowed a few of these questions to be tested and contributed to the rather sparse empirical research into the effectiveness of improvisation training on communication and practice in the field of education. This section of chapter one elaborated on the conceptual framework of communication and interaction for the research. Chapter two examines how the quality and difficulty of teacher-child interactions and communication has a role in teacher retention and the role that teacher training can play in mitigating this loss and fostering expertise. Chapter two also examines the constructs of self-efficacy and improvisation and prior research on both.

### Purpose of the Study

As a teacher, being able to communicate with the *audience* or students is crucial, not only as a means of understanding how they are thinking to foster critical thinking or correct mistakes (Beghetto & Kaufman, 2011; Borko & Livingston, 1989; Hadjioannou, 2007; Rathel et al., 2008; Sassi & Goldsmith, 1995), but to maintain order and facilitate instruction (Anguiano, 2001; Evertson, Emmer, Sanford, & Clements, 1983; Good & Brophy, 1987; Gordon, 1997; Lemov, 2010; Pane 2010) and to ensure their emotional well-being (Barker & Borko, 2011; Newman, 1999; Stanulis & Manning, 2002; Wiseman, 2002).

The choice to be effective in the classroom involves stepping outside of the personal self and recognizing the need to create a teacher-self, a teacher *persona* (Barker & Borko, 2011; Phillips, 2008). Or as Deborah Loewenberg Ball, the teacher from the classroom vignette in the introduction and designer of the Mathematical Knowledge for Teaching program, puts it: “Teaching depends on what other people think... not what you think” (Green, 2010, p.12). This duality of self-identity and professional identity, *persona*, is something that improvisational actors cultivate in their training (Halpern et al., 1994). Both Mauer (2010) and Philips (2008) examine this in the context of teaching. Good and Brophy (1987) cite a crucial need for this type of self-awareness in teachers.

Improvisation, also known as improv, is theorized to be an independent construct that can be used as a framework for organizing complex dynamic environments, such as classrooms (Barrett, 1998; Berliner, 2011; Crossan, 1998; Ross, 2010; Sawyer 2004a, 2004b; Vera & Crossan, 2005; Weick, 1998). This study examined whether communications techniques from improvisation could be taught to pre-service teachers as a means of changing the pre-service teacher’s self-efficacy for communication and interaction skills presented in the training; and for changing their self-efficacy

for teaching. Pre-service teacher attitudes about the training were reviewed, as were self-reported reflections on how teachers used the training in interaction with students.

Albert Bandura (1997) posits that one means by which self-efficacy may be generalized from one situation to another is through “*similar subskills*” [emphasis in the original] (p.51). Although seemingly quite different, both improvisation and the act of successful teaching use tools from the same underlying communication *toolbox*; for example, heightened environmental awareness, being present in the moment, welcoming contributions, establishing a positive framework, etc. To facilitate the research goal, the researcher designed the improvisation training program for this study. The training program presented some common communication *subskills* (i.e. resources or *tools*). Backwards Design (Wiggins & McTighe, 2005), was used to create the pre-service teacher training in improvisation that targeted development of these communication *subskills*. To measure the effectiveness of the improvisation training for imparting these targeted skills common to improvisation and teaching, the researcher designed a self-report survey instrument, the Communication Skills Assessment Inventory (CSAI). That instrument and participant’s personal reflections were used to measure the strength and direction of any significant relationship existing between pre-service teachers exposed to the improvisation training and personal self-efficacy for the execution of the skills presented in the training. The CSAI survey was used to evaluate the effectiveness of the training. For the purpose of clarity, the term “*subskills*” (p.51) that Bandura (1997) used is replaced with the simpler term *improvisation skills* for the duration of this study.

The novice teachers in Borko and Livingston’s (1989) study cited the interaction with students that occurred in the normal course of teaching through student questions and discussions as a factor that caused stress and added to the complexity of learning to teach. Interaction with difficult students as a part of classroom management is one of the reasons often cited as

contributing to teacher burnout and stress and can contribute to teacher attrition (Le Maistre and Paré, 2010; O’Conner, 2010; Pane, 2010; Stevenson, Dantley, & Holcomb, 1999). As such, an additional goal of this research was to determine if the benefits of improvisation training could be generalized to show that a relationship exists between pre-service teachers’ self-efficacy for teaching and improvisation training.

Finally, to triangulate the data, qualitative information from pre-service teacher interviews, self-reflections, final exam questions and final service-learning narrated PowerPoint presentations, was collected from the pre-service teacher participating in the study. This data helped to evaluate whether the participants felt the training was beneficial and whether and how they used the skills presented in the training during their service-learning interactions with students in an inclusive classroom.

As such, three research questions were addressed:

### Research Questions

1) Do pre-service teachers who participated in improvisation training show a change in perception of self-efficacy for improvisation skills (i.e. communication and interaction skills identified as common to both improvisation and teaching) as measured by the Communication Skills Assessment Inventory, (CSAI). This self-report measure was researcher generated to evaluate the effectiveness of the training. It includes:

- a) Self-efficacy Questions for training topics
- b) Knowledge Questions about the training topics

2. Do pre-service teachers who participated in improvisation training show a change in perceived self-efficacy for teaching as measured by the Tschannen-Moran and Hoy’s (2001) Teacher Sense of Efficacy Scale (TSES) long form?

3. How did the pre-service teacher participants evaluate the improvisation training, to the extent that they used the improvisation skills in their interaction with students during their service-learning project?

### Significance of the Study

Research suggesting the application and use of improvisation for teaching, negotiator training, business and psychotherapy over the last twenty years has revealed that it can be used as an organizational structure and practice that is domain independent; that it is not limited to theater or music. Theoretically, improvisation has the potential to act as an organizing structure or framework for dynamic environments and interactions that may involve ambiguous relationships and ill-defined problems like those described by Huberman (1993). There is evidence of agreement as to the theoretical benefit of improvisation in multiple disciplines (Balachandra, Barrett, et. al., 2005; Balachandra, Crossan, et. al., 2005; Barrett, 1998; Crossan, 1998; Hines, 2008; Hines & Hines, 2010; Lipsker, 2005; Lobman, 2003a, 2003b, 2006; Patterson, 2004; Ross, 2010 Salas, 2005; Sassi & Goldsmith, 1995; Sawyer, 2004a, 2004b, 1999, 2011; Vera & Crossan, 2005; Weick, 1998; to name but a few). Additional research is needed to determine whether improvisation techniques from the field of acting can be applied to change performance in other domains, such as education, and if so, how and over what duration. Findings from this study may contribute to increased performance of pre-service teachers during field-based hours (i.e. service-learning), as well as increased teacher performance during their first years' in a classroom.

### Definition of Terms

*ADDIE* – An instructional design method. The acronym stands for Analysis, Design, Development, Implementation and Evaluation.

*Backwards Design* – An instructional design method proposed by Wiggins and McTighe (2005) in which the goals for the curriculum are established first.

*Communications Skills Assessment Inventory (CSAI)* – A researcher developed survey instrument designed to evaluate the improvisation training. It consists of seventeen questions on self-efficacy for communication and interaction skills common to improvisation and teaching; and thirteen questions about knowledge and application of the skills from the improvisation training.

*Improvisation* - Halpern et al. (1994) say that “Improvisation is getting on-stage and performing without any preparation or planning” (p.13), “...making it up as you go along” (p.14) For the purpose of this research, improvisation is defined as a construct that uses a set of minimal heuristic guidelines to create a highly flexible scaffold that fosters high quality extemporaneous communication, decision making and democratic collaboration.

*Improvisation Skills*- The *common subskills* identified between improvisation and teaching presented in the improvisation training. These include: listening, fostering agreement (i.e. “Yes, and”), persona, with-it-ness (i.e. awareness, soft focus), power and social status, decisiveness (i.e. *in-flight* decision making, thinking on one’s feet), mantra, narrative relationships, body language and vocal prosody, social and emotional awareness. Additional information can be found in Appendix D.

*Inclusive Classrooms* – Inclusive classrooms are generally thought of as classrooms that include children with and without disabilities in the same educational setting. For the purpose of this study, “inclusive classroom” refers to the specific multi-grade 2<sup>nd</sup>/3<sup>rd</sup> classroom at a charter school that specializes in including students with disabilities into a high quality enriched learning environment based on constructivist methods. Students in this mixed second and third grade classroom included a mix of:



- Students who were typically developing both cognitively and physically;
- Students, who were typically developing cognitively, but had physical impairments;
- Students, who were typically developing physically, but had cognitive impairments;
- Students with both cognitive and physical impairments; and
- Students classified as gifted/high-achievers.
- Genders, races, cultures and first language backgrounds.

*In-service Teacher* - An in-service Teacher is a teacher who is actively employed by a school and who is in charge of a classroom or is providing services to students.

*Instructional Design* – A structured approach to producing instruction that usually uses some form of the ADDIE model.

*Interactive Theater* – A specific type of theater designed for maximum audience involvement. It uses a variety of techniques to foster and afford audience interaction and participation including improvisation, techniques from dance, and other theater techniques.

*Playback Theater* – A type of improvisation in which players re-enact specific moments or events from real-life that are significant. Typically the audience presents suggestions for the life events and provides the details, but these can be player generated.

*Pre-service Teacher* - A pre-service teacher is a person who is training to be a teacher, but has not yet finished his/her program of studies. Typically most pre-service teachers have minimal applied experience in classrooms, although this depends in large part on the teacher preparation program in which they are participating

*Self-Efficacy* - Perceived Self-Efficacy as defined by Bandura (1997) “refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments...

Influence may entail regulating one's own motivation, thought processes, affective states, and actions, or it may involve changing environmental conditions, depending on what one seeks to manage" (p.3) Self-efficacy is thought to be a strong indicator of potential future performance (Bandura 1997; Tschannen-Moran & Hoy 2001). Bandura (1997) recommended measuring self-efficacy with the verb *can* or the phrase *am able to*, so as to focus on the perceived capability for action. The measure is linked to Bandura's (1997) Social Cognitive Theory.

*Teacher-child Interaction* - For the purpose of this research teacher-child interaction/interaction will refer to a wide range of verbal and non-verbal communication behaviors taking place between the teacher and the child. The definition of teacher-child interaction will remain neutral as far as the value of the exchange. Teacher-child interaction includes the following generic categories of: teacher-child proximity, feedback (use and type of praise, acknowledgement or criticism), classroom hierarchy (democratic/authoritarian), teacher/child talk time and its context (Conroy et. al., 2009). Additional behaviors considered here are non-verbal communications of facial features, mirroring, gesture and vocal prosody (Merabian, 1971).

*Teacher Self-Efficacy* –Teacher self-efficacy is a personal assessment of ability to perform the skills linked to the teaching profession (Redmon, 2007). Tschannen-Moran and Hoy (2001) define it as: “A teacher's efficacy belief is a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (p.783).

*Vocal Prosody* – The tone and pitch and volume of the voice independent of intelligible vocalizations (i.e. words).

“*Yes, and...*” - Halpern et al. (1994) describe the rule of “Yes, and” (p. 47) in improvisation. They characterize this as agreement. “Agreement,” they state, “is the one rule that can never be broken: the players must be in agreement to forward the action of the scene. When actors meet on stage, they agree to accept each other’s initiations” (p. 47).

### Summary

Chapter one established the problem statement and examined the rationale and significance of the study. It also reviewed the theoretical foundations of the research grounding it in educational communications and interaction and reviewed operational definitions. Chapter two reviews the problem of teacher retention and provides an overview of important influences in teacher attrition. It also examines the role that teacher training can play in mitigating this loss and fostering expertise. Finally it examines the constructs of self-efficacy and improvisation and prior research on both. Chapter three discusses the proposed methodology for the research study.

## CHAPTER 2 REVIEW OF THE LITERATURE

The best teacher will be he who has at his tongue's end the explanation of what it is that is bothering the pupil. These explanations give the teacher the knowledge of the greatest possible number of methods, the ability of inventing new methods, and, above all, not a blind adherence to one method, but the conviction that all methods are one-sided and that the best method is the one that would answer best to all the possible difficulties incurred by a pupil, that is, not a method, but an art and a talent. (Tolstoy & Wiener, 1904, p. 58)

### Introduction

The purpose of this dissertation was to examine the outcomes of including improvisational acting training in a pre-service teacher methods course. Due to the somewhat ephemeral nature of the principal construct, improvisation, this study used a mixed-methods design to triangulate the data to establish consensus. Self-efficacy as a well established educational construct is presented first. Chapter two presents current practices in teacher retention and training with linkages to self-efficacy and student outcomes to establish the context of the research. Training in improvisation as the proposed catalyst for change in self-efficacy is discussed. Prior research on improvisation as a training technique or in the context of education is collected, categorized and evaluated for its contributions to this study. Inter-relations between the constructs of self-efficacy and improvisation are identified and considered.

### Background

Since this research was conducted in the setting of an inclusive charter school, this section defines inclusive classrooms and examines the challenges of teaching in inclusive classrooms with limited resources. Self-efficacy as a self-protective personal factor and predictor of student outcomes will also be considered. Research on mediating factors in teacher attrition and retention are also evaluated.

## Inclusive Classrooms

Olson, Platt and Dieker (2008); and McLeskey et al. (2010), provided a comprehensive definition of inclusive schools/classrooms that included the following characteristics: inclusion of and welcoming environment for diverse student populations including students with physical, mental and emotional disabilities and children whose first language may be other than English. Inclusive schools are typically neighborhood schools or schools where the student voluntarily chooses to attend. The school does not reject students. In typical inclusion settings students with disabilities are proportionally represented and placed into age and grade appropriate settings. Multi-age classrooms may also be used to provide the most positive environment. Instructional strategies that promote cooperation and collaboration are often used, and special education support resources are structured as part of the general education classroom. Student diversity and differences are welcomed and celebrated (Olson et al., 2008; McLeskey et al., 2010). The reauthorized Federal IDEA law of 2004 and Section 504 of the Rehabilitation Act of 1973 provided guidelines for the identification and rights of children with disabilities in American schools (Olson et al., 2008; McLeskey et al., 2010). One of these rights is to be educated in the least restrictive environment possible, which is the goal of inclusion (Villa & Thousand, 2003). Federal, state and local guidelines establish the type of resources available to schools to help educate children with disabilities and make this least restrictive environment possible (Olson et al., 2008; McLeskey et al., 2010; Villa & Thousand, 2003). The resources include special education teachers, who might co-teach in a general education classroom; specially trained teacher's aides; reduced class sizes; speech and language pathologists; physical therapists and access to special technology or accommodations; among others (Olson et al., 2008). Villa and Thousand (2003) described an ideal inclusion environment that is based on a systems approach and includes research-based best practices, collaboration from stake-

holders, vision and redefined classroom roles. However they admitted that implementation of effective inclusive classrooms varies widely by state and district as reported in annual IDEA reports to the US Department of Education (Villa & Thousand, 2003). They cited ongoing training for teachers and others involved in the inclusion process as crucial for helping create a positive climate, for providing modifications and for differentiating learning (Villa & Thousand, 2003).

Olsen et al. (2008) described the following “characteristics that students with special needs or mild disabilities may display:”

*Inadequate academic achievement* – Often, students are two or more years behind their grade-level peers in reading, mathematics, spelling, written expression, and/or oral language skills.

*Inappropriate school behaviors* – Students may be physically or verbally aggressive. They may be easily frustrated or unable to cope with the demands of the school environment. Other signs of inappropriate school behavior include noncompliance with teacher directions and instructions and lack of teacher-pleasing behaviors, such as being prepared for class, maintaining eye contact, and raising hands (Olson et al., 2008, pp. 4-5).

Other characteristics included: “poor attending behaviors... poor memory... poor metacognitive skills... poor self-concept... [and] inadequate social skills” (Olson et al., 2008, p. 5).

For teachers in schools where support resources are limited or planning and implementation of positive inclusion settings is poor, these characteristics associated with difficult teacher-child interactions can be challenging and a source of stress (de la Torre-Cruz & Cassanova Arias, 2007; Lambert et al., 2009; Rathel et al., 2008; Smylie, 1988). Gunter, Denny et al. (1994) analyzed teacher behaviors and interaction in classrooms with students with severe behavior disorders and reported findings showing that children with severe behavioral disorders can be some of the most challenging populations for special education teachers to interact with and that long-term stress from such challenging interactions is one of the reasons special education teachers leave the profession or move to general education classrooms. While the population Gunter et al. (1994) evaluated

represents an extreme; the teacher behavioral interactions their research examined were typical of most classrooms.

Teachers today are working in increasingly inclusive settings and face a new array of student challenges (Olson et. al., 2008; McLeskey et al., 2010). Many novice teachers leave the field due to feeling ill-prepared to meet the demanding needs in contemporary classrooms (Glickman & Tamashiro, 1982; Lambert et. al, 2009; Le Maistre & Pare, 2010; O'Neill & Stephenson, 2010).

### Factors Affecting Teacher Retention

While classroom management-type communications and interactions are not the sole focus of this research, they do represent a significant type of communication and interaction challenge for teachers and are often cited as stressors (Gunter et al., 1994; Lambert et al., 2009; Moss, Glenn & Schwab, 2005; O'Neill & Stephenson, 2010; Pane, 2010; Siwatu, 2007; Stevenson et al., 1999). Pane (2010), who approached classroom discipline from an anthropological framework as, “negotiable social interaction” stated that “classroom discipline is a major concern of American teachers and why many leave teaching” (p.87). O'Neill and Stephenson (2010) conducted a meta-analysis of twenty-five peer-reviewed articles reporting on self-efficacy for classroom management. Their goal in reviewing the self-efficacy for classroom management instruments was to help researchers identify quality tools to evaluate teacher self-efficacy for classroom management and discipline because as they stated: “effective classroom management continues to be a major concern and challenge to many teachers, with difficulties in managing student behavior cited as one of the leading causes of teacher attrition” (O'Neill & Stephenson, 2010, p. 261). They presented findings examining how teacher-efficacy for classroom management differs between measurement instruments.

Lambert et al (2009) examined the self-appraisals of 521 elementary school teachers in sixteen schools within a large urban area in the southeastern US to validate an instrument for

measuring teacher stress versus resources. Self-efficacy, self-critical attitudes, general health, burnout and stress were also measured (Lambert et al., 2009). Lambert et al. (2009) used Yoon's (2002) six-item self-efficacy measure to evaluate:

...self-efficacy in establishing a positive relationship with a behaviorally challenging student and in managing disruptive and oppositional behaviors. Items ask teachers about such factors as their ability to build relationships with difficult students and their capacity to handle problematic student behavior when it occurs (Lambert et al., 2009, p.979).

Lambert et al. (2009) found that teachers who indicate classroom demands from challenging students as greater than available resources had “on average 2.020 more children with problem behaviors and 1.370 more children with learning disabilities in their classrooms than teachers who reported that classroom resources were at least equal to demands” (p.977-978). Correlations in the self-efficacy, self-critical attitude and the difficult behavior measures of the instrument “suggest that behavior problems in the classroom could both undermine a teacher’s sense of efficacy and lead him or her to have a more critical attitude toward their teaching ability”(pp 985-986). The concern that Lambert et al. (2009) voiced is that high rates of stress and burnout among teachers could in turn result in a vicious circle:

Elementary classrooms are important contexts for children’s social development. These results suggest that teachers experiencing high rates of stress and burnout may be less capable of creating positive social environments for children and may even become role models for negative social behaviors, particularly as they experience emotional exhaustion and a tendency to see the children as objects rather than as developing individuals (Lambert et al., 2009, p. 986).

Lambert et al.’s (2009) study also reported that administrative tasks, paperwork and high stakes testing were sources of stress for teachers.

De la Torre-Cruz and Cassanova Arias (2007) surveyed 339 pre-service and in-service teachers about self-efficacy factors. They found a significant difference ( $F(2,141)= 5.11, p<01$ ) in the control and management of the classroom between the two groups. A Tukey test showed pre-



service teachers indicating less efficacy for classroom management tasks ( $t(77)=-3.234, p=.002$  and  $t(90)=-2.336, p=.02$ ) than in-service teachers (de la Torre-Cruz & Cassanova Arias, 2007, p. 649).

Schwarzer and Hallum (2008) examined potential relationships between self-efficacy, job stress and burnout in teachers to see if self-efficacy is a protective factor. They conducted two studies; part one used a total teacher sample drawn from Syria and Germany ( $N=1,203$ ) to evaluate self-efficacy's role in teacher stress and burnout; part two repeated the results over a year and used structural equation modeling to examine directionality. Results showed “teachers with low general self-efficacy might be more vulnerable for a chain of events, that is, the translation of their low self-efficacy into job stress experience (and subsequent burnout)” (Schwarzer & Hallum, 2008, p.163). Results from part two using only German teachers showed a moderate fit for the structural equation model showing self-efficacy as a mediating factor between teacher stress and teacher burnout. They stated “the path from earlier self-efficacy to later burnout (.26) was superior to the opposite path, leading from earlier burnout to later self-efficacy (.00)” (p.165). This model showed support for other research models on stress and burnout (Moe et al., 2010; Schwerdtfeger, Konermann, and Schönhofen, 2008; Skaalvik and Skaalvik, 2007; 2010) and showed how the resources teachers have such as self-efficacy and teacher responses to stress could influence burnout and attrition (Schwarzer & Hallum, 2008).

Research has also shown the role that affect plays in self-efficacy for teaching and other teacher outcomes. Yoon (2002) conducted a study ( $N=113$ ) to examine the role that negative affect played in teacher self-efficacy, teacher-student relationships and stress. Results of two hierarchical regression analyses showed teacher stress to be the main predictor of negative teacher-child relationships, but this did not predict positive teacher-child relationships. For correlations Yoon (2002) reported, “Negative affect was also significantly related to lower self-efficacy and negative

relationships” (p. 487). Moe et al. (2010) examined the role that positive affect and self-efficacy played in predicting job satisfaction for teachers using effective instructional strategies. They state: “Many people possess the right strategies and tools for working optimally, but nevertheless experience dissatisfaction, burnout or anxiety” (p. 1145). They surveyed Italian teachers (N=399), measuring job satisfaction, self-efficacy (using the long form TSES), affect, strategies and praxis (Moe et al., 2010, p. 1147). All variables showed correlation between job satisfaction except for years of teaching and strategies (Moe et al, 2010). Structural equation modeling was used to evaluate the relationship between the variables and showed that “the relationship between efficient teaching and job satisfaction is mediated by the emotional and motivational variables considered. Good teaching did not affect job satisfaction directly: affect and self-efficacy were necessary” (Moe et al., 2010, pp1149-1150). They continued explaining the importance of considering the mediating factors:

If the role of self-efficacy and positive affect is removed, using good teaching practices (i.e., applying effective strategies and adopting adequate praxes) can even be detrimental to job satisfaction. The better one teaches the less one is satisfied if the teaching is not accompanied by positive affect and the perception of being able to handle difficulties, i.e. to experience self-efficacy (Moe et al., 2010, p.1150).

These results have important implications for training teachers. Prior research has shown the importance of strong content area knowledge for classroom effectiveness (Beghetto & Kaufman, 2011; Borko & Livingston, 1989; Sassi & Goldsmith, 1995). Moe et al., (2010) add the importance of strong knowledge of teaching strategies and praxis to the definition of good teaching mediated by positive affect and high self-efficacy.

Hagen, Gutkin, Wilson and Oats (1998) used an experimental design [N=89] to show that pre-teachers completing a professional development program on behavioral management that used vicarious experience and verbal persuasion, increased participants’ sense of self-efficacy. Pre-service teachers in the experimental group showed significant differences in “Management/Discipline Self-

Efficacy ( $t(87) = 2.01, p=.047$ ) and Personal Teaching Self-Efficacy ( $Z=3.067, p=.022$ ) [Calculated with Mann Whitney U]” (Hagen et al., 1998, p. 174). This showed that professional development training could help novice teachers acquire some of these skills and develop their resources to help reduce stress when they respond to challenging teacher-child interaction situations (Hagen et al., 1998).

Smylie (1988) cited prior research showing that “teacher’s uncertainty about what classroom strategies may be most effective is related to lower personal teaching efficacy” (p. 7). Additionally Smylie (1988) developed a regression model that showed that the concentration of low-achieving students is one factor influencing teacher self-efficacy in the negative direction ( $\alpha=-.2684$ ). Smylie’s (1988) path analysis of factors affecting teacher change after participation in a continuing education workshop showed self-efficacy to be a major contributor to teachers’ willingness to implement the strategies presented. Teachers with higher self-efficacy measures were more likely to utilize personal continuing education strategies in their classrooms. Data analysis for Smylie (1988) showed two significant influences on teacher self-efficacy; certainty of practice in the positive direction ( $\alpha=.3012$ ) and concentration of low-achieving students in the negative direction ( $\alpha=-.2684$ ). In turn, personal teaching efficacy presented the largest significant path ( $\alpha=.2996$ ) influencing change in teacher practice from continuing education (Smylie, 1988). Connecting the results from diverse literature on inclusion and self-efficacy suggested that since some students with disabilities may struggle academically (Olsen et. al., 2008), one challenge inclusive classrooms might present is that teachers may link their own self-efficacy to student performance (Smylie, 1988). Since Smylie (1988) linked high self-efficacy to willingness to implement professional development strategies, one option for mitigating the above interaction, is to foster increased self-efficacy through training in effective classroom strategies, and self-protective

emotional and affective interactions (Di Fabio and Palazzeschi, 2008; Moe et al., 2010).

Le Maistre and Paré's (2010) qualitative study followed novice teachers (N=32) through their first year of practice. Their findings confirmed prior research showing the "increasing complexity of teachers' workloads" such as:

...greater societal expectations and lower societal recognition; greater accountability to parents and policy-makers; pedagogical and curriculum changes being implemented at an increasing rate; increased need for technological competence; increased demands beyond the pedagogical task; increasing diversity among students and more administrative work (Le Maistre and Pare, 2010, p.560).

The complexity of the teaching profession shown by Le Maistre and Pare (2010) coupled with the demands of teacher communications exemplified by Borko and Livingston (1989), Erickson (1982), and Good and Brophy (1987) illustrated that teachers are called upon to interact with students in dynamic, ambiguous environments, requiring excellent communication and social skills and classroom management techniques (Hagen et. al., 1998; Lambert et al., 2009; Pane, 2010). While for some teachers, these are welcome challenges; for others the stress leads to burn out and attrition (Lambert et al., 2009; Moe et al. 2010; Schwarzer & Hallum, 2008; Skaalvik and Skaalvik, 2007, 2010). Classroom management and the demanding nature of student interaction are two contributing factors to teacher attrition (Lambert et al., 2009; Moss et al., 2005; Pane, 2010; Siwatu, 2007; Stevenson et al., 1999; Tschannen-Moran & Hoy, 2007).

Michael Huberman (1993), cited in Le Maistre and Paré, (2010), asserts that teaching "poses... 'wicked problems'" (p.561). Le Maistre and Paré, (2010) posit that teaching is an act of ill-defined problem solving, which stresses even the best of novice teachers. They cited numerous studies on the dire state of teacher retention indicting that for some U.S. locations, teacher loss for beginning teachers is "as high as 50% within the first five years" (Le Maistre and Paré, 2010, p.560). Their comparison study of teachers with three other professions such as therapists and social

workers (N=32), lead them to conclude: “No other profession takes newly certified graduates, places them in the same situation as seasoned veterans, and gives them no organized support” (Le Maistre and Paré, 2010, p.560). Other research on novice and veteran teachers supported these findings (Byra & Sherman, 1993; Parise & Spillane, 2010; Schempp, Tan, Manross & Fincher, 1998; Tschannen-Moran & Hoy, 2007).

Le Maistre and Paré’s (2010) research showed that beginning teachers were often left with the schedules, supplies “and even students” (p.560) that veteran teachers rejected. Glickman and Tamashiro’s (1982) research showed evidence that teachers with lower self-efficacy are more likely to have left the profession within five years. They measured three indicators: ego development, problem solving; and sense of efficacy for three groups of teachers: first year teachers (N=50); fifth year teachers (N=49) and teachers who had left the profession before their fifth year (N=30). ANOVA results show that fifth year teachers and first year teachers scored significantly higher than teachers who left the profession on measures of self-efficacy and ego development (Glickman & Tamashiro, 1982). No significant difference was found between groups for problem-solving ability. Although not significant on all three measures, fifth year teachers scored higher than first year teachers and teachers who left the profession (Glickman & Tamashiro, 1982). This could be due to differences in the population or to experience.

Lambert et al. (2009) cited statistics from the National Center for Education Statistics 2004 showing “8% of teachers transfer to a different school each year and another 7% leave the profession altogether” (p. 973). They cited additional statistics showing that the teaching profession compromises the largest group of all research on burnout at 22% (Lambert et al., 2009). In their view: “costs of teacher attrition range from disrupted continuity of the instructional program, to a constant need to mentor and assist new teachers, to the resources and time that educational

administrators spend recruiting and attempting to retain new hires” (Lambert et al., 2009, p.973). Le Maistre and Paré, (2010) and Lambert et al., (2009) both cited high teacher attrition especially among novice teachers as an ongoing concern.

Finding novel ways to train pre-service teachers to respond appropriately to these challenges, especially to open-ended teacher-child interactions may improve teacher retention rates and increase positive teacher-student interaction in the classroom (Borko & Livingston, 1989; Lobman, 2006; Tschannen-Moran & Hoy, 2001; Siwatu, 2007). One example of this type of professional development, improvisation training, is examined later in chapter two. Mashburn et al. (2006) evaluated the reliability of teacher ratings of child characteristics using a large multistate dataset of 711 preschoolers from 210 preschool classrooms. Children came from diverse racial, ethnic and SES backgrounds. One finding from their regression analysis was “teacher self-efficacy was positively associated with their [teachers’] reports of children’s competence and closeness to teachers” (Mashburn et al., 2006, pp 375-377). This showed that in addition to being a self-protective factor for teachers, high teacher self-efficacy is linked to positive teacher-child interaction, specifically in the form of teachers’ beliefs about children (Mashburn et al., 2006).

Ng et al. (2010) evaluated changes in graduate-level Australian pre-service teachers’ [N=37] beliefs about effective teaching. Students completed questionnaires four times during the course of their yearlong certification program. Self-efficacy beliefs were collected with responses to two open-ended questions evaluating their perceived strengths and what they needed to know before their next placement (Ng et al., 2010). The last survey evaluated perceived weaknesses. Teacher beliefs about effective teaching changed over the course of their program. Between the first and second survey, perception that good teachers kept quiet classrooms decreased and teacher expectations of students increased (Ng et al., 2010). Between the second and third survey perceptions that good

teachers tell students they are wrong decreased and items related to positive affect, knowing students, helping students succeed, being consistent and establishing limits increased (Ng et al., 2010, pp. 283-284). Changes in teacher beliefs between survey three and four included: realization that good teachers “do not know everything,” must be “less consistent and more flexible” at times, and “listen more than they tell” (Ng et al., 2010, p. 284). These characteristics are consistent with theories of improvisation presented later in chapter two (Lobman, 2006; Sawyer, 2004a, 2004b, 2011). These results were also in line with other research on differences in pre-service/novice teachers and more experienced teachers which show a shift towards more student-centered thinking as classroom experience increases (Borko & Livingston, 1989; de la Torre-Cruz & Cassanova-Arias, 2007; Tschannen-Moran & Hoy, 2007).

Mashburn et al. (2008) found that quality instructional interactions are related to increased academic achievement and quality emotional interactions are related to social competence for pre-kindergarteners. In turn additional studies have shown a positive relationship between positive teacher-child interaction and student performance, task engagement, opportunities to respond (OTR), and better classroom management (O’Conner, 2010; Rathel et al., 2008; Tschannen-Moran & Hoy, 2001). Mashburn et al. (2008) suggested that professional development for teachers that is “active, collaborative, embedded within a classroom context, and part of school culture” has the potential to change teacher-child interaction (p. 745). They further suggest that this take place within a non-judgmental supportive environment (Mashburn et al., 2008). Tschannen-Moran and Hoy (2001) recommended that teacher education programs become more like “apprenticeships” (p.803), with increased emphasis on the mastery experiences that Bandura (1997) suggested are best at fostering self-efficacy. In such programs, “complexity and responsibility” increase while “scaffolding and supports” (p. 803) slowly decrease (Tschannen-Moran & Hoy, 2001).

## Fostering Expertise in Classroom Communication and Interaction

Since teachers play such a crucial role in student performance (Birch & Ladd, 1997, 1998; Downer et al., 2010; Hanushek, 1971; 2005; Hanushek, Kain, & Rivkin, 2001; Mashburn, Pianta et al., 2008; O’Conner, 2010; O’Conner & McCartney, 2007; Rathel et al., 2008; Ross 2007) there is an increased emphasis on researchers and teacher preparation programs to identify what makes a good teacher and to ensure that these skills are taught to both pre-service and in-service teachers (Borko & Livingston, 1989; Byra & Sherman, 1993; Lemov, 2010; Parise & Spillane, 2010; Pianta & Hamre, 2009; Schepens, Aelterman, & Vlerick, 2009).

There is consensus on the need for pre-service teachers to have strong content area knowledge (Beghetto & Kaufman, 2011; Borko & Livingston, 1989; Sassi & Goldsmith, 1995; Schemp et al., 1998). Borko and Livingston’s (1989) qualitative research following four case studies through student teaching showed the need for novice teacher’s to enter the profession with strong content knowledge background because so much of their cognitive resources during their first years are spent in planning, choosing instructional strategies and learning classroom management. Beghetto and Kaufman (2011) tied content knowledge and improvisation together stating, “in order for teachers to skillfully navigate the more fluid moments of teaching without compromising on a somewhat fixed academic goal, they need to have a rather strong familiarity with the subject matter and comfort with the unexpected” (p. 103). Ng et al. (2010) reviewed previous research showing “pre-service teachers have been described as having a tendency to emphasise [sic original] the academic dimension (content knowledge) of teaching much less than the personal, social, and affective characteristics of teaching in defining what a good teacher is” (p. 279).

While teacher preparation programs typically emphasize content area knowledge to prepare teachers to pass state accreditation tests, soft skills like those of social and emotional intelligence also



have played a crucial role in development. Di Fabio and Palazzeschi (2008) surveyed a diverse sample [N=169] of Italian schoolteachers collecting data on emotional intelligence and self-efficacy. They used an Italian version of the Tschannen-Moran and Hoy (2001) TSES to measure self-efficacy. Multiple regression analysis showed emotional intelligence was a predictor of teacher self-efficacy, particularly the intrapersonal variable (regression coefficient of  $\beta = .44$ ) (Di Fabio & Palazzeschi, 2008). The relationship was particularly strong for the classroom management factor. “The regression model... shows that efficacy in classroom management is explained by the intrapersonal variables with a regression coefficient of  $\beta = .39$ ” (Di Fabio & Palazzeschi, 2008, p.321). However all three self-efficacy factors, student engagement, instructional strategies and classroom management were predicted by all or some of the components of emotional intelligence. While demographics were not a factor, Di Fabio and Palazzeschi’s (2008) study showed younger teachers with higher levels of emotional intelligence in contrast to other prior research. Di Fabio and Palazzeschi’s (2008) research showed that emotional intelligence could be a predictor of teacher self-efficacy, which is linked to other measures such as stress and burnout (Lambert et al., 2009; Schwarzer and Hallum, 2008; Skaalvik & Skaalvik, 2007, 2010; Schwerdtfeger, Konermann, & Schönhofen, 2008; Yoon, 2002) and positive teacher-child outcomes (Mashburn et al., 2006; O’Conner, 2010). The emotional intelligence scale is one measure of the soft skills teachers must acquire to be able to foster supportive classroom environments and positive teacher-child relationships (Di Fabio and Palazzeschi’s, 2008; Goleman, 2007). Downer et al. (2010) conducted a literature review to examine how emotional, organizational and instructional support interactions link to within domain and cross-domain outcomes. They established a link between teacher beliefs and psychology and the quality of teacher-child interactions.

Even as researchers have identified personal qualities of effective teachers, some question

whether these soft skills could be taught at all, or if they are just innate personality characteristics (Schepens et al., 2009). Unlike content area knowledge, which is mostly factual in nature; many of the characteristics that make a teacher effective are what Daniel Goleman (2007) called “social intelligence” and included the characteristics of “social awareness, what we sense about others” and “social facility, what we then do with that awareness” (p. 84). This is similar to the awareness component of teacher with-it-ness (Irving & Martin, 1982). Due to the high amount of interpersonal communication in teaching, teachers must be able to understand how their behavior, voice and words influence and are interpreted by students (Good & Brophy, 1987; Kachur et al., 1977; Stanulis & Manning, 2002). Teacher communications and interactions set the stage for approach/withdraw behaviors of students; establish status and power norms in the classroom and set the emotional climate for students (Birch & Ladd, 1997; Conroy et al., 2009; Erickson, 1982; Gershenson et al., 2010; Goleman, 2007; Good & Brophy, 1987; Lobman, 2006; Mashburn et al., 2008; Merabian, 1971; Moritz Rudasill, 2011; Stanulis & Manning, 2002); all of which can have an impact on student achievement (Goleman, 2007; Good & Brophy, 1987; Lobman, 2006; Mashburn, et al., 2008; O’Conner, 2010; O’Conner & McCartney, 2007; Stronge, 2002).

Stronge (2002) examined multiple research studies in search of qualities of effective teachers. His category of personal characteristics of effective teachers includes qualities such as caring, fair, respectful, interactive, enthusiastic, motivating, positive, and reflective (Stronge, 2002); all descriptors that fall under the overarching categories of social and emotional intelligence and which promote positive teacher-child interaction (Goleman, 2007). Goleman (2007) calls this type of social intelligence “connectedness” (pp.281-285). Moe et al. (2010) suggested, “being able is not enough” (p1145). Their structural equation model that showed positive teacher affect and self-efficacy as moderators between teaching effectiveness (possessing instructional skills and praxis) and job

satisfaction (Moe et al., 2010). Glickman & Tamashiro (1982) found a relationship between ego development, self-efficacy and teacher retention. Kumarakulasignam (2003) demonstrated a relationship between teachers' self-efficacy for classroom management and teachers' levels of hope, a measure that bears some similarity to measures of positive affect.

Gershenson et al. (2010) showed that interaction interventions could be successful in changing undesirable teacher behaviors. They adapted the research proven methods of Parent-Child Interaction Therapy for the classroom as a means of improving the quality of teacher-child interaction and of providing behavioral indicators. Their research adapted PCIT to a preschool serving low-income racially diverse families linked to a clinical setting where PCIT is used and in which twelve preschool teachers were trained (Gershenson et al., 2010). Their adaptation took into account environmental differences and implementation modifications necessary to adapt PCIT to a school setting. Teachers were instructed to minimize commands and questions (but not eliminate them as in parental instructions) and emphasize specific interaction skills called PRIDE. Results showed that compared to a token reward system, Teacher-child Interaction Therapy was more labor intensive, but had potential for reversing inappropriate or undesirable teacher behaviors (Gershenson et al., 2010). Additionally, ten of the twelve teachers trained showed changes in behavior with the most common being increased use of praise or positive response to the child. Teachers also adopted the timeout strategy for use in disciplinary situations (Gershenson et al., 2010). Although this technique showed promise, concern exists that since the technique originated in a therapeutic setting, the intervention may unduly focus on negative teacher behaviors needing correction rather than on promoting positive behaviors that foster elaboration and deepen interaction.

Lobman's (2006) research provided examples of responsive teacher-child interaction. Her qualitative case study of a pre-school teacher examined teacher improvisational behaviors in teacher-child interactions. Her research is examined in more depth in the section on improvisation in chapter two.

If these soft skills are markers of teacher effectiveness and mediate teacher longevity as the research suggests; the question becomes how to cultivate these social and emotional intelligence skills in teachers. Anderson (2008) offers some clues on how to do this citing statistics on:

Average learning retention rates from various instructional modes... lecture (5%), reading (10%), audiovisuals (20%), demonstration (30%), discussion (50%), practice by doing (75%), and teaching others (90%). The highest levels of learning occur when the learner actively is engaged in the educational process and when there is opportunity to apply what is being taught (p.1).

This is similar to Bandura's (1997) idea of enactive mastery experiences, which he posits as the most potent source of self-efficacy. Improvisation has the potential to afford teachers the opportunity of a "sandbox" (Reiber, 1996, p. 46) to practice using social intelligence skills in a safe environment using "practice by doing" (Anderson, 2008).

Although at times ongoing professional development for teachers has been called into question for its value as addressed in Smylie (1988), Parise & Spillane (2010) stated that "results suggest that formal professional development and on-the-job opportunities to learn are both significantly associated with changes in teachers' instructional practice" (p.323). Hagen et al. (1998) concur. Their experimental design showed that pre-teachers exposed to a professional development program on behavioral management for dealing with difficult students that used vicarious experience and verbal persuasion, two techniques advocated by Bandura (1997) increased participants' sense of self-efficacy (Hagen et al., 1998).

Redmon's (2007) action research on the teacher preparation program at a midwestern state university in Texas shows that pre-service teachers' self-efficacy increased over the course of their undergraduate work. Redmon (2007) administered a 15-item self-efficacy survey customized for the MSU program (but based on Tschannen-Moran and Hoy (2001) and Bandura's (1997) recommendations) to approximately 70 pre-service teachers three times during the course of their degree program, once at the beginning, once in the middle and once at the end. Mean scores on all 15 items increased over the course of the teacher preparation program. Of interest for this dissertation, pre-service teachers at MSU showed an increase in their belief that they could establish a positive learning environment, and their belief that they could establish positive learning relationships with students as they completed their teacher preparation program over the course of two years (Redmon, 2007).

Kotcher, Doremus, & Great Neck Public Schools (1972) report the outcomes of a program evaluation on a professional development program designed to increase positive teacher-child interaction. Elementary and secondary teachers participated in a three-day workshop including role-playing, film and instruction designed to increase positive teacher-child interaction (Kotcher et al., 1972). Results of an ANOVA show that all three measures from the Indicators of Quality observation checklist showed significant changes as did the overall classroom measure at  $p < .05$ : Teacher behavior - pre-training=4.66, post-training=5.21,  $F=12.80$ ; Student-Student behavior - pre-training=3.32, post-training=4.25,  $F=28.65$ ; Teacher-Student - behavior pre-training=3.00, post-training=3.91,  $F=6.17$  (Kotcher et al., 1972). Elementary teachers had higher overall positive interactions pre-training and post-training, but secondary teachers closed the gap after training: Results of an ANOVA show these changes to be significant. Results also showed that teachers were

able to sustain the results of training over time, but did not use follow-up activities after the workshop (Kotcher et al., 1972).

Hagen et al. (1998), Kotcher et al. (1972), Redmon (2007), and Smylie (1988), showed that teachers provided with opportunities to learn new teacher-child communication and interaction skills through professional development experiences could incorporate that new knowledge into their teaching, although this may be mitigated by personal teaching self-efficacy. It also showed that the construct of self-efficacy is malleable up to a point as Bandura (1997) and Tschannen-Moran and Hoy (2007) theorize; especially during the novice phase as evidenced by the experience of the pre-service teachers participating in Redmon's (2007) and Hagen et al.'s (1998) research. Runhaar, Sanders and Yang (2010) showed a relationship between self-efficacy and teachers' willingness to reflect and use feedback – a hallmark of effective teaching (Stronge, 2002). They surveyed [N=456] faculty members at a Dutch vocational training college. Results from the two simple hierarchical regression analysis models showed that there is a positive significant correlation between self-efficacy and reflection and feedback asking; this relationship also exists between learning goal orientation and reflection and feedback (Runhaar et al., 2010). The willingness to reflect and incorporate feedback into routines is associated with emotional maturity (Runhaar et al., 2010; Goleman, 2007).

The self-efficacy research presented reviewed in chapter two showed teacher self-efficacy linked to self-protective personal outcomes, and more global teacher-child relationship and interaction outcomes. Bandura (1993) said, "Teachers' beliefs in their ability to motivate and promote learning affect the types of learning environments they create and the level of academic progress their students achieve" (p. 117). Higher teacher self-efficacy was related to more positive teacher evaluations of children's social competence and close teacher-child relationships (Mashburn

et al., 2006); and specifically for teacher-child relationships with African-American children (O’Conner, 2010). High teacher self-efficacy was correlated with classroom management (De la Torre-Cruz & Cassanova Arias, 2007; Lambert et al., 2009; Smylie, 1988). Runhaar et al., (2010) showed high self-efficacy correlated with teachers’ willingness to reflect and seek feedback. Self-efficacy is a self-protective factor against stress and burnout (Lambert et al., 2009; Schwarzer and Hallum, 2008; Skaalvik & Skaalvik, 2007, 2010; Schwerdtfeger, Konermann, & Schönhofen, 2008; Yoon, 2002). Teachers with high self-efficacy stay longer in the profession; are more persistent with hard to reach students and are more supportive of inclusion for difficult to teach students (Glickman & Tamashiro, 1982; Tschannen-Moran & Hoy, 2001; Chan, 2008; Siwatu, 2008; Skaalvik & Skaalvik, 2007, 2010; Lambert et al., 2009; Yoon, 2002). In summary, strong positive linkages have been shown between high teacher self-efficacy and many beneficial educational outcomes. However pre-service/novice teachers and in-service teachers showed differences in self-efficacy and behavior (De la Torre-Cruz & Cassanova Arias, 2007; Ng et al., 2010; Glickman & Tamashiro, 1982; Redmon, 2007; Hagen, et al. 1998; Tschannen-Moran & Hoy, 2007); this indicates that self-efficacy is malleable during learning periods.

### Teacher Thought Processes and Problem-Solving

Bandura (1997) noted that as people mature they acquire a more realistic sense of their capabilities. Novices may initially perceive their capabilities as greater than actual performance (de la Torre-Cruz & Cassanova Arias, 2007; Tschannen-Moran & Hoy, 2007). One reason for this is that they gain a better understanding of the complexity of the environment over time. Research has shown that significant differences exist in the behavior and thought processes of pre-service, novice and experienced teachers (Borko & Livingston, 1989; Byra & Sherman, 1993; de la Torre-Cruz &

Cassanova Arias, 2007; Henry, 1994; Kohler, Henning & Usma-Wilches, 2008; Schempp et al., 1998; Stough & Palmer 2001; & Tschannen-Moran & Hoy, 2007).

Formative evaluation research showed that often teachers could assess student levels of understanding but were not as able to decide the next best instructional step (Borko & Livingston, 1989; Kohler, et al. 2008; Heritage, Kim, Vendlinski, & Herman, 2009). Research indicated that this gap between knowledge and action (praxis) also occurred in areas besides instruction such as teacher-child communications (Borko & Livingston, 1989; Kohler, et al. 2008; Erickson, 1982), and applied to classroom management and student engagement (Borko & Livingston, 1989; Shem Tov, 2011). Borko and Livingston's (1989) six-person paired case study specifically examined differences in high-performing novice and expert mathematics teachers through the lens of teaching as a complex cognitive skill and improvisational performance. They found that even highly prepared novices struggled with being able to respond appropriately to unexpected student contributions and questions and modified classroom structures to reduce student involvement as a means of reducing the complexity of the classroom environment (Borko & Livingston, 1989). They provided the following example:

For Jim [a novice calculus teacher] ... these experiences led to decisions to curtail student questioning in subsequent class sessions, despite the value [he] placed on responsiveness to students. Jim explained, 'I think also because I'm not that proficient yet in handling questions, it's better to cut off the questions, just go through the material, because it'll be much clearer to them if they just let me go through it...I don't want to discourage questions, but there are times I'd rather get through my presentation and then get to the questions' (Borko & Livingston, 1989p. 488).

In contrast, expert teachers created classroom structures designed for student interaction and purposely sought student contributions, as the following example illustrates:

Randy [an expert fifth grade teacher] often began a lesson with a demonstration problem and used an inductive questioning strategy to help students recognize key procedures and principles to use in the problem solution. As he explained in a post-lesson interview, 'I'd genuinely rather get it [the lesson content] from them than me provide it. But even when



that's not possible, I'd rather give them the illusion it's coming from them if possible' (Borko & Livingston, 1989, pp. 480-481).

Borko and Livingston (1989) use the term *pedagogical reasoning* to describe the specialized type of skill teachers need. *Pedagogical Reasoning* is “the process of transforming subject matter knowledge into forms that are pedagogically powerful and yet adaptive to the variations in ability and background presented by the students” (p.474). They continue stating, “This form of thinking is unique to teaching. Not surprisingly, it is relatively undeveloped in novice teachers” (Borko & Livingston, 1989, p. 474). Bandura (1997) tied this gap to self-efficacy stating “having knowledge and skills does not produce high attainments if people lack the self-assurance to use them” (p. 80).

As the research on novice and expert teacher showed, one of the difficulties with adequately preparing pre-service teachers to assume independent responsibility for their own classrooms is surmounting the learning curve of gaining experience (D. Berliner, 1994; Borko & Livingston, 1989; Le Maistre & Pare, 2010; Parise & Spillane, 2010). Bandura (1997) observed that adaptation to a new profession could be “a lengthy, complex process of self-development,” especially if the individual “lacks the necessary knowledge and competencies”(p.30). Le Maistre and Pare (2010) stated that after leaving the university novice teachers:

Often assume that classroom situations will be equally well-defined, with discrete solutions, and find it difficult to make the kind of spontaneous decisions needed when responding to unpredictable situations – situations that are not included in their ‘script.’... This transition from support and dependence to sole responsibility and independence makes a large contribution to the reality shock [novice teachers] experience in their first year (p. 561).

Le Maistre and Pare (2010) suggested that while pre-service teachers needed to develop coping skills early in their careers to help them respond to uncertainty, there was no evidence that teacher preparation programs emphasized this. Le Maistre and Pare (2010) suggested that “since a broad knowledge base can only be developed through experience” teachers must learn to “satisfice” (p. 562) which means to “identify a threshold of expected utility that would be satisfactory, and

choose the first alternative whose expected utility exceeds the threshold” (Le Maistre & Pare, 2010, p.562). *Satisficing*, is often difficult for high achieving novice teachers, because “the sufficient solution is not necessarily the optimal solution, [and] the problem solver must be able to live with a less than perfect solution” (p. 562). *Satisficing* involves finding a solution that is “good enough” (p.564) for the moment until a better solution can be found. Interviews Le Maistre and Pare (2010) conducted with novice teachers about coping strategies show that improvisation skills are a significant part of effective *satisficing*, although they are not identified as such.

Lending support to Le Maistre and Pare’s (2010) findings, DeZutter (2011) examined teacher education texts for references to improvisation in teaching, examining how teacher educators and teacher education programs approach instructing pre-service teachers to respond to the unexpected or take advantage of opportunities for constructivist interaction in the classroom. Out of the fourteen general methods texts she examined from major publishers, only one briefly mentioned “improvisation” (DeZutter, 2011, p.37).

Byra and Sherman’s (1993) research on decision making in novice teachers found that more experienced pre-service teachers adapted their lessons if they observed problems, while less experienced pre-service teachers pushed forward. They studied twelve pre-service teachers, six with limited experience in their third year of a teacher education program; and six with more experience in their final year. All twelve participants were physical education majors, who planned, taught and reviewed two 30-minute lessons on lacrosse. Participants were encouraged to use the *think aloud* method during planning and the *stimulated recall* method for reviewing the videotape of their lesson to understand thought processes. Byra and Sherman (1993) connected their results to prior research showing that “expert teachers view classroom events differently, employ instructional and managerial routines more often and more effectively, make more informed planning decisions, and

can recognize and rectify problem situations during interactive teaching more readily than novice teachers” (p.6). Results of Byra and Sherman’s (1993) study confirmed that more experienced pre-service teachers made more decisions and requested more information during planning; and while both groups followed their lesson plans when things appeared to be “progressing as planned, the more experienced PTs [pre-service teachers] tended to make lesson adjustments whereas the less experienced PTs tended to continue to teach without making any adjustment” (p.6). They also found that experienced teachers made a greater number of decisions than novices and were “better at anticipating critical moments in a lesson and creating contingency plans (Byra & Sherman, 1993, p. 7). Borko and Livingston (1989); Henry (1994); Kohler et al. (2008); Schempp et al. (1998); and Stough and Palmer (2001) found similar behavior differences between novice and expert teachers. Kohler et al. (2008) examined the decision-making skills of [N=150] student teachers who were asked to evaluate work samples. Their results indicated that while student teachers were able to identify some student difficulties and make modifications as part of formative evaluation, their repertoire was limited and they were not able to provide a good rationale for choices.

This type of on-the-go reaction is often called “in-flight decision making” (Byra & Sherman, 1993, pp. 7-8; Hines & Hines, 2010; Schempp et al., 1998, p.12). Kohler et al. (2008) call this “reflection-in-action” (p. 2109). *Reflection-in-action* is “making an immediate adjustment when encountering an unexpected situation” (Kohler et al., 2008, p.2109). They characterize “the process of monitoring and responding to student cues in the midst of teaching... as interactive or improvisational teaching” (Kohler et al., 2008, p.2108). They continue stating, “the ability to collect, interpret, and then adjust information about student learning is a hallmark of expert teachers” (Kohler et al., 2008, p.2109). These results support those found by Runhaar et al. (2010) on reflection and Heritage et al. (2009) on formative evaluation. Studies cited in Kohler et al. (2008)

showed that “novice teachers had more difficulty trying to construct on-the-spot explanations to student’s questions and comments” (p. 2109); and chose to stick with prior plans and scripts more often even when faced with student learning difficulties. Borko and Livingston’s (1989) found similar findings between novice and expert teachers.

As an additional characteristic of novice teachers, Tschannen-Moran and Hoy (2007) showed that novice teacher’s self-efficacy beliefs are open to change, more so than those of more experienced teachers. Their research used a pool of 255 graduate students at three state universities in Ohio and Virginia. Participants completed the TSES self-efficacy survey (the same survey used in this research). The researchers divided the sample into novice teachers (<3 years teaching, 74 participants) and career teachers (>4+ years teaching, 181 participants). Results showed novice teachers having “somewhat lower mean self-efficacy beliefs” (Tschannen-Moran & Hoy, 2007, p. 932). This ties into attrition data showing that novice teachers with lower self-efficacy are more likely to leave teaching within the first five years (Lambert et al., 1989, Tschannen-Moran & Hoy, 2007). Glickman and Tamishiro’s (1982) self-efficacy research showed similar findings. Among others, Tschannen-Moran and Hoy’s (2007), Ng et al.’s (2010), and Schempp et al.’s (1998) research showed contextual factors and availability of teaching resources affected novice teachers more than experienced teachers

David Berliner’s Developmental Stage Theory (1994) characterized the changes from novice to expert practitioner. According to D. Berliner’s (1994) descriptions, novices tried to apply more algorithmic processes, while experts were more heuristic in their approaches (D. Berliner, 1994; Henry, 1994; Schempp et al. 1998). Schempp et al. (1998) conducted three repeated interviews to examine qualitative data using the “constant comparative method to identify trends, themes and categories” (p.14) on the behaviors and thought processes of five novice and five experienced

teachers. Their results support D. Berliner's (1994) theory showing "differences... between competent and novice teachers in assessing student learning difficulties, conceptions of knowledge and reflective practice" (p. 9). Novices were more apt to ascribe student difficulties in learning to the student or their environment; select material based on teacher authority; and feel "they knew most, if not all, they needed to know to teach well, while competent teachers believed they had much to learn about their craft" (Schempp et al., 1998, p. 9). Berliner (2011) himself has come to recognize the importance of improvisation skills in teacher practice advocating for its use in his forward to Sawyer's (2011) book on the topic, *Structure and Improvisation in Creative Teaching*.

Many studies have looked at the reality shock novice teachers experience in their first few years on the job (Le Maistre & Paré, 2010; Parise & Spillane, 2010; Schempp et al., 1998; Tschannen-Moran & Hoy, 2001; Tschannen-Moran & Hoy, 2007). The first 3-5 years were shown to be critical for teacher retention (Glickman & Tamashiro, 1982; Le Maistre & Paré, 2010; Tschannen-Moran & Hoy, 2007). Pre-service training programs needed to better prepare future teachers for the realities of the job (Borko & Livingston, 1989; DeZutter, 2011; Le Maistre & Paré, 2010; Parise & Spillane, 2010; Redmon, 2007; Tschannen-Moran & Hoy, 2007). Novice teachers have limited familiarity with the true complexities of teaching (Le Maistre & Pare, 2010). Preparing teachers to be comfortable with the unexpected, which is just one skill common to teaching and improvised performance, might provide a general skill set that could be adapted to novel contexts, and thereby compensate for lack of experience or expertise (Beghetto, & Kaufman, 2011; Berliner, 2011). This research on pre-service teachers proposed to evaluate whether professional development training in improvisation could be useful for developing some of these social intelligence skills discussed above that may foster resilience in teachers, give them strategies for managing difficult

students and ambiguous situations which may change teacher self-efficacy evaluations and help reduce attrition as teachers enter the workforce.

### Fostering Self-Efficacy

Since two of the research questions proposed in this investigation evaluated the outcomes of improvisation training and its effect on teacher self-efficacy, understanding the means by which self-efficacy could be developed was a key component of this research. A short summary of Bandura's (1997, 2006) psychological theories underlying the transfer of self-efficacy were discussed to provide background for the research and ground an understanding of the linkages between improvisation and self-efficacy posed in the research questions.

Le Maistre and Paré's (2010) description of teaching as ill-defined problem solving, and Huberman's (1993) conceptualization of teaching as "posing wicked problems" (Le Maistre & Pare, 2010, p.561), indicated the need for teachers to poses strong self-efficacy for interacting in uncertain and ambiguous situations.

According to Bandura (1997) high self-efficacy helped individuals to navigate uncertain and ambiguous situations. Bandura (1997) stated:

Effective functioning requires both skills and the efficacy beliefs to use them well. This calls for continuous improvisation of multiple subskills to manage ever-changing situations, most of which contain ambiguous, unpredictable, and often-stressful elements. Preexisting skills often must be orchestrated in new ways to meet varying situational demands. Even routinized activities are rarely performed the in exactly the same way each time. Initiation and regulation of transactions with the environment are, therefore, partly governed by judgments of operative capabilities – what people believe they can do under given circumstances and task demands. Perceived self-efficacy is not a measure of the skills one has but a belief about what one can do under different sets of conditions with whatever skills one possesses (p. 37).

For teachers working with students, everyday in the classroom holds promise of novel interaction with students (Beghetto & Kaufman, 2011). Whether this interaction is positive or negative depends

on the communication and interaction skills of the teacher (Lobman, 2006). Bandura's (1997) language closely paralleled Halpern et al.'s (1994) description of improvisation from the improv comedy tradition, that people improvise everyday throughout the course of their lives. For Halpern et al. (1994) the only thing that distinguished this type of improvisation from improvised performance in the theater was the presence of the audience and the end goal of entertainment. For teachers the difference was the presence of students and the end goal of education (Sawyer, 2004a, 2004b, 2011; Beghetto & Kaufman, 2011). Bandura (1997) and Le Maistre and Pare (2010) suggested that having a large repertoire of possible behaviors could help individuals to confront ambiguous situations, which might be particularly vexing to novice practitioners. The paradox however was that novice teachers tended to have a rather limited toolbox or repertoire of possible behaviors (Kohler et al., 2008). Improvisation training for teachers might develop that toolbox and foster experience so that novice teachers could better demonstrate behaviors associated with master teachers.

Bandura (1997) posited that there are four sources of self-efficacy, "mastery experiences, vicarious experiences, verbal persuasion, and physiological arousal, with mastery experiences postulated as the most potent source" (Tschannen-Moran & Hoy, 2007, p. 943). He stated:

Building a sense of self-efficacy through mastery experiences is not a matter of programming ready-made behavior. It involves acquiring the cognitive, behavioral, and self-regulatory tools for creating and executing effective courses of action to manage ever-changing life circumstances. The development of efficacy beliefs through enactive experience creates the cognitive and self-regulative facility for effective performance (Bandura, 1997, p. 80).

Bandura (1997) did not explicitly address how to categorize role-play and theater as a source of self-efficacy. This was a shortcoming or gap in Social Cognitive Theory in the context of this research.

Although Bandura (1997) did not address this, he did describe a theory for how self-efficacy transfers from one context to another. Bandura (1997) posited that when two or more different

domains share “*similar subskills*” [emphasis in original] (p.51) self-efficacy may be generalized from one situation to another. Although improvisation is a domain typically thought to be distinct from teaching, it shares much in common with teaching in terms of communications needs and successful interaction strategies for instance: heightened environmental awareness, being present in the moment, welcoming student contributions, and establishing a positive framework (Beghetto & Kaufman, 2011; Borko & Livingston, 1989; Erickson, 1982; Halpern et al., 1994; Lobman, 2006; Sawyer 2004a, 2004b, 2011; Wirth, 1994).

Bandura (2006) discussed in general how the transfer of self-efficacy from *similar subskills* (p. 51) might occur:

When different spheres of activity are governed by similar sub-skills there is some interdomain relation in perceived self-efficacy. Proficient performance is partly guided by higher-order self-regulatory skills. These include generic skills for diagnosing task demands, constructing and evaluating alternative courses of action, setting proximal goals to guide one’s efforts, and creating self-incentives to sustain engagement in taxing activities and to manage stress and debilitating intrusive thoughts. Generic self-management strategies developed in one realm of activity are serviceable in other activity domains with resulting co-variation in perceived efficacy among them (Bandura, 2006, p. 308).

The communication and interaction skills measured in the first research question are important in overall effective teaching (Goleman, 2007; Good & Brophy, 1987; Olson et al., 2008; Stronge, 2002). A review of Olson et al.’s (2008) exceptional education textbook used for the methods course that is the setting for this research showed similarities between the communication section in Olson et al.’s (2008) chapter three (pp 59-65) and the feedback section presented in Olson et al.’s (2008) chapter five (pp 155-156), and the improvisation skills presented as part of the training. Difficult teacher-child interactions (part of classroom management and often referred to as stressors in the literature) have been linked to teacher burnout and decisions to leave the profession (de la Torre Cruz & Cassanova Arias, 2007; Le Maistre & Paré, 2010; O’Conner, 2010; Pane, 2010; Skaalvik & Skaalivk, 2007; 2010; Schwarzer & Hallum, 2008; Stevenson et al. 1999; Tschannen-



Moran & Hoy, 2001). Even typical classroom interactions such as fostering student interaction and questions in a lesson were shown to be stressors for the student teachers in Borko and Livingston's (1989) study. A goal of this research was to examine whether improvisation training influenced self-efficacy and if so, whether the theory of *common subskills* proposed by Bandura (1997) could explain why.

One self-efficacy issue related to this study and addressed by the mixed-method approach to triangulate the data was that pre-service teachers, who have limited actual experience managing their own classrooms, might often report levels of self-efficacy higher than actual performance abilities (Bandura, 1997; Tschannen-Moran & Hoy, 2007). De la Torre-Cruz and Cassanova Arias (2007) reported such an outcome in their study of pre-service and in-service teachers (N=339). Pre-service teachers reported statistically significant higher general efficacy for teaching than did in-service teachers  $t(337)=-2.665, p=.006$  (de la Torre-Cruz & Cassanova Arias, 2007). In-service teachers however reported higher scores for "the measurements "overall efficacy,"  $t(337)=3.157, p=.002$  and "control efficacy,"  $t(337)=5.989, p<.000$ ," (de la Torre-Cruz & Cassanova Arias, 2007, p. 649). Bandura (1997) posited "in new undertakings, people have a limited basis on which to assess the adequacy of their self-appraisals. Given limited familiarity with the new activity, they tended to make self-efficacy judgments partly from knowledge of what they could do in similar situations" (p. 70). The actual level of observed competence might be higher or lower than the individual's perceived self-efficacy (ability) for several reasons (Bandura, 1997). One might be due to limited experience producing a limited understanding of the task.

Additionally, Bandura (1997) stated that self-efficacy could be a strong predictor of future performance. Bandura (1997) posited:

In most social, intellectual, and physical pursuits, those who judge themselves highly efficacious will expect favorable outcomes, whereas those who expect poor performances of

themselves will conjure up negative outcomes. Where performance determines outcome, efficacy beliefs account for most of the variance in expected outcomes (p. 24).

He recommended evaluating both self-efficacy and outcome expectancies to the extent that was possible for any given research study (Bandura, 1997; 2006). Bandura (1997) theorized: “This agentic causation relies heavily on cognitive self-regulation. It is achieved through reflective thought, generative use of the knowledge and skills at one’s command, and other tools of self-influence, which choice and execution of action require” (p. 7). Bandura’s (1997, 2006) suggested guidelines informed the use of the qualitative methods in this mixed-methods research design on self-efficacy and improvisation to evaluate teachers’ reports of implementing improvisation strategies in the classroom after the training as a means of linking self-efficacy reports to potential outcome expectancies; and to address concerns that pre-service might perceived higher levels of self-efficacy due to limited experience.

### Measuring Self-Efficacy

Since this research included a custom self-efficacy scale, the CSAI, to measure change in self-efficacy for improvisation skills, theoretical background on the creation of self-efficacy scales was presented; as well as a short discussion of the theoretical background on the TSES scale selected to evaluate research question two. The general construct of perceived self-efficacy as described by Bandura (1997, 2006) is an evaluation of personal ability measured by self-report survey. Self-efficacy is not a global personality trait (Bandura, 2006, p. 307). The perceived self-efficacy construct is multidimensional and to achieve predictive power for performance should be domain specific and “represent gradations of task demands within those domains” (Bandura, 1997, p42; Bandura, 2006). Self-efficacy scales should be constructed for different performance domains, (i.e. teacher self-efficacy scales will differ from those representing other professions) (Bandura, 2006). As Bandura

(2006) described “the construction of sound efficacy scales relies on a good conceptual analysis of the relevant domain of functioning. Knowledge of the activity domain specifies which aspects of personal efficacy should be measured” (p. 310). Additionally, Bandura (1997, 2006) recommended making questions as specific as possible while still allowing for generalized grouping of concepts. Measurements that achieve the optimal level of specificity and level gradation are useful research tools, as Bandura (2006) states:

Self-efficacy assessment tailored to domains of functioning and task demands identify patterns of strengths and limitations in perceived capability. This type of refined assessment not only increases predictiveness, but provides guidelines for tailoring programs to individual needs (p. 319).

These suggestions informed the development of the CSAI, as well as the selection of Tschannen-Moran and Hoy’s (2001) TSES self-efficacy measure for this research on pre-service teachers and improvisation from among the other instruments examined in the literature review of chapter two.

While the research presented in the background section showed an extensive relationship between self-efficacy and teacher and student outcomes, as with any theory, certain concerns and criticisms exist. In the case of self-efficacy, these fall into three main areas: concerns about measuring the construct; concerns about self-report and social evaluation pressures, and the overall stability of the construct. Most concerns about self-efficacy have focused on instrumentation and measurement (Tschannen-Moran & Hoy, 2001; O’Neill & Stephenson, 2011), and not with the actual concept itself. Prior to developing their 2001 TSES measure, Tschannen-Moran and Hoy (2001) conducted a meta-analysis of existing teacher self-efficacy measures and concluded the following:

The conceptual confusion around the concept of teacher efficacy has made developing appropriate measures of efficacy difficult. Researchers have tried very simple, general measures as well as long complex vignettes. None of the measures currently in use seems to have found the proper balance between specificity and generality. In addition there are conceptual problems in the interpretation of the factor structure and the poor correlation

between the factors where two or more have been found (Tschannen-Moran & Hoy, 2001, p. 792).

These concerns prompted the development of their own instrument and the extensive testing and revision they conducted (Tschannen-Moran & Hoy, 2001).

Tschannen-Moran and Hoy's (2001) scale originally called the Ohio State Teacher Efficacy Scale (OSTES) and currently called the Teacher Sense of Efficacy Scale (TSES) provided both a long 24-item scale and a shortened 12-item version. Factor analysis revealed three subscales: engagement, instruction and management with high internal reliability.

Due to the results of the factor analysis from Tschannen-Moran and Hoy's (2001) research and development, the TSES is one of the better known and more widely used scales measuring teacher self-efficacy today (O'Neill & Stephenson, 2011). O'Neill and Stephenson (2011) conduct a meta-analysis on self-efficacy for classroom management and report that "Tschannen-Moran and Woolfolk Hoy calculated criterion validity for their scale and reported a positive correlation between their SE scale and both Rand items, and Gibson and Dembo's Personal Teaching Efficacy (PTE) and General Teaching Efficacy (GTE) factors" (p. 283). Tschannen-Moran and Hoy (2001) also made an effort to achieve balance between specificity and generality by eliciting the self-efficacy tasks from teachers and professionals in the education field (Tschannen-Moran & Hoy, 2001). Di Fabio and Palazzeschi (2008), Moe et al. (2010), and Tschannen-Moran and Hoy (2007) used the TSES in their research. Cawthorn and Dawson (2009) used the TSES short form although they incorrectly attribute it to Bandura (1997).

In addition to the Tschannen-Moran and Hoy (2001) TSES scale chosen for use in this research study, the researcher reviewed other teacher self-efficacy instruments cited in the background articles reviewed for this study. Tschannen-Moran and Hoy's (2001) TSES scale was chosen because of its extensive testing and revision, high internal reliability, comprehensiveness and

validity of measuring the construct with items originating from teacher focus groups. Since the TSES is widely used in other research its selection for this investigation also allowed results generated as part of this research to be comparatively evaluated.

#### Prior Research on Self-Efficacy and Improvisation

Of particular interest for this research were studies examining the relationship between self-efficacy and improvisation in teaching. A review of the literature identified only one study, Cawthon and Dawson (2009). A description of this study's context, methods and limitations were presented in depth because of its similarity to this investigation.

Cawthon and Dawson (2009) reported on the Drama for Schools program that provides long-term (1-2 years) drama-based training including improvisation and mentoring for in-service teachers in the Austin area. The program described in the research is a partnership between the University of Texas drama and education departments and local school districts. Participating teachers received a monthly site visit from a drama mentor. The process included identifying a lesson to enrich with drama-based activities prior to the visit, followed by after-school drama training for the teacher, in which a mentor models and practices drama-based strategies, and then the lesson was implemented, evaluated and the process was debriefed. While many types of drama are introduced as part of the program, improvisation was one of the core theater skills developed.

The DFS program was meant to be dialogic, engaging the teacher in conversation about their role in the educational process; elements of Augusto Boal's (2002) Theater of the Oppressed and street theater were incorporated into the after school training to empower teachers to take ownership of their classrooms (Boal, 2002; Dawson et. al., 2011). Teacher voice and reflection were two other focal points of the program (Cawthon & Dawson, 2009). As a professional development program, Drama for Schools, sought to promote sustainable change using active-learning strategies

for adults and mentorship. The outcome was a very individualized training program that was customizable to individual teacher and classroom needs. The program sought to foster constructivist strategies in the classroom to foster authentic learning for students (Cawthon & Dawson, 2009; Cawthon & Dawson, in press; Dawson et. al., 2011).

The authors theorized that drama-based training resulted in teachers with better communication skills, who were willing to take risks, capable of reflection and transformation (Cawthon & Dawson, 2009; Dawson et. al., 2011). Drama-based training should also promote praxis, embodied cognition, higher-order thinking skills and foster emotional intelligence (Cawthon & Dawson, 2009; Dawson et. al., 2011). Because such training had the potential to result in positive personal transformation, the authors evaluated participants' change in self-efficacy for teaching and capacity for creating authentic learning environments in the classroom as a result of the training (Cawthon & Dawson, 2009). Three research questions were posed:

- RQ1: Is there a change in self-efficacy for teachers participating in DFS?
- RQ2: Does DFS promote Authentic Learning in classrooms?
- RQ3: Program evaluation of DFS by participants.

Cawthon and Dawson (2009) evaluated the in-service teachers participating in Drama for Schools training in the Victoria Independent School District (VISD) in Victoria, TX. The research site included 4 school sites, with 27 participants, 77% female, ~13years mean teaching experience with a range between 0-34 years experience. The research was conducted as part of the DFS program evaluation. The Victoria Independent School District serves 12,000 students, half of which are Title 1. One third are classified *at-risk*, and two-thirds are minority. The district has a 20% high school dropout rate (Cawthon & Dawson, 2009).

Cawthon and Dawson (2009) stated, "The self-efficacy measure was based on Bandura's

model of self-efficacy factors that affect performance... The adapted measure included two components: Teaching Efficacy and Personal Efficacy” (p. 151). However upon examination, the self-efficacy measure used was actually Tschannen-Moran and Hoy's (2001) short form measure although this is not noted in the research. This measure has three factors, not two as suggested and three factors are correctly used during data analysis. Data were analyzed using a matched pairs t-test for surveys completed pre- and post-training.

To evaluate the construct of Authentic Learning, Cawthon and Dawson (2009) used Newmann, Byrk, & Nagaoka's (2001) framework for Authentic Intellectual Work. Participants completed a Lesson Plan Evaluation survey that included 10 questions on a Likert scale. Participants completed one pre- and post- each DFS site visit for four total. Cawthon and Dawson (2009) report “analysis focused on average score changes across teachers before and after each lesson, measured with one t-test for each of the four lessons” (p. 151).

Program feedback was evaluated using 15 questions on a Likert scale analyzed using descriptive analysis. Results for the three research questions showed that for Authentic Instruction there were significant differences in changes on scores over first three visits: (V1:  $t(17) = -3.638$ ,  $p < .001$ ; V2:  $t(17) = -3.171$ ,  $p < .01$ ; V3:  $t(13) = -2.523$ ,  $p < .05$ ); but no significant change in scores over the fourth visit: (V4:  $t(12) = -.229$ ,  $p = .823$ ). Pre-visit scores increased steadily over the year but leveled off at V4. The dataset for this question was not complete for all participants. Results for Teacher Self-Efficacy for matched pairs (N=21 fall/spring) showed no significant difference for the three factors: Student engagement ( $t(20)=-4.52$ ,  $p=6.56$ ), Instructional strategies ( $t(20)=-4.52$ ,  $p=6.56$ ), Classroom management ( $t(20)=-4.63$ ,  $p=6.48$ ). A matched pairs *t-test* was used with the small sample (N=21) but no evaluation of normalcy was included to justify the use of the test with fewer than thirty participants. Results from Program Feedback (N=19), which included 70% of

participants, showed an overall rating of 4.2 out of 5, SD .26. Responses indicated strong ratings of arts integration, student engagement, collaborative professional development and hands-on teaching; but lower ratings in self-perception as teacher and personal engagement in teaching. District support and student application to new contexts were also rated low.

To examine the self-efficacy results, it is important to review the length of time the participants had been teaching (~13years mean teaching experience with a range between 0-34 years experience). Self-efficacy theorists assert that the measure is much more malleable in novice practitioners and that over time the measure becomes more fixed (Bandura, 1997; Tschannen-Moran & Hoy, 2001, 2007). Research seems to support this (Hagen et al., 1998; Redmon; 2007). Due to the mean length of time (~13years) participants in this study had been teaching, their self-efficacy might have been more fixed and less susceptible to change. In this case self-efficacy might not have been the most appropriate measure to use to evaluate the effects of the training for in-service teachers.

### Improvisation Training

Improvisation training addresses the professional complexity of teaching by fostering a sense of capability with unknown situations. Kadwell (Personal Communication, March 4, 2010) characterizes this as embracing the unknown and becoming comfortable with uncomfortable situations. Lewis's (2007) research on applying improvisation training to develop work teams describes certain improvisation styles that focus on "dealing with the fear of the unknown" (p. 9). In fact improvisational performers in the theater often get to the point where they crave the challenge of responding in the moment and making it up as they go along (Kadwell, Personal Communication, March 4, 2010). The section on improvisation found later in chapter two evaluated applying improvisation to educational contexts in more depth.



This previous section of chapter two situated this investigation in the context of the problem, which is how to foster communication and interaction expertise in pre-service teachers. It examined research on inclusive classroom settings, challenges with teacher-child interaction, prior research on self-efficacy for teaching linked with outcomes, research on teacher-child interaction and communication and interaction differences between novice and expert teachers and the relationship between them.

### Improvisational Communications

Teaching has often been likened to acting (Barker & Borko, 2011; Naftulin, Ware & Donnelly, 1973; & Sawyer, 2004b) and so the application of improvisation in theater and music was examined first because it offers a close parallel to teacher practice. The application of improvisation in other domains and prior research on improvisation in education follows in later sections.

### Overview of Improvisation

Improvisational theater has “its own discipline and aesthetics” (p.14) with roots dating to the sixteenth century commedia dell’arte (Halpern et al., 1994). While most often used to elicit humorous ends today, it could be used equally well for dramatic intents. In fact the early versions of Chicago’s renown Second City Theater did not have comedy as a goal (Halpern et al., 1994) and therapeutic uses today, such as Playback Theater, are often based off of retelling traumatic events (Cohen, 2005; Patterson, 2004; Salas, 2005) or for the purpose of social change and personal development (Hosking & Penny, (n.d); Rosado-Pérez, 2005; Park-Fuller, 2005; Lipsker, 2005). Even when the end goal *is* the generation of humorous material; humor is an emergent property of the improvised interaction between the players arising out of a complex interplay of techniques such as *Yes, and...*, pattern finding, and incongruity among many others (Halpern et al., 1994; Kadwell, personal communication, March 4, 2010; Dutton, 2010, Wirth, 1994). Halpern et al. (1994) said in

their improvisational theatre guide, *The Truth in Comedy*, that comedy is a “side-effect” (p. 25) of a theater ensemble touching on what is deeply human; laughter comes with “terrific connections made intellectually, or terrific revelations made emotionally” (p. 25). It is an accidental, emergent unintentional by-product of the interaction (Halpern et al., 1994; Kadwell, personal communication, March 4, 2010; Dutton, 2010, Wirth, 1994). Players who go in with the intentions of being funny, who crack side jokes, often do so at the expense of the other players and miss opportunities for deep humor (Halpern et al., 1994; Kadwell, personal communication, March 4, 2010). Even failure is fun (Halpern et al., 1994; Kadwell, personal communication, March 4, 2010; Hirumi, Unpublished course material, 2007; Reiber, 1996). People ad-lib and improvise everyday, going through life without a script (Bandura, 1997). Halpern et al., (1994) described what is different about improvisational theater is that “the performers are trying to create while entertaining an audience” (p.14). For this end, there are multiple communication tools, games and techniques that allow improvisers to hone their craft (Halpern et al., 1994; Kaldwell, improvisation curriculum Fall 2009-Spring 2010).

Improvisational performance is ephemeral. It is one of those constructs that *you-know-it-when-you-see-it*; however it is very difficult to go back and establish a truly comprehensive definition for improvisation. Halpern et al., (1994) said, “strictly speaking, improvisation is making it up as you go along” (p.14).

One of the characteristics agreed upon by all the descriptions, either implicitly or explicitly was that improvisation is about communication and the factors related to communication such as listening, interpreting and sensing (Barrett, 1998; Crossan, 1998; Halpern et al., 1994; Kadwell, personal communication, March 4, 2010; Lobman, 2003a, 2003b, 2006; Sawyer, 1998, 2204a, 2004b;

Wirth, 1994). Erickson (1982) expressed a parallel thought on the role of communicative competence in education.

Another characteristic of improvisation universally accepted is its heuristic nature. As Miller Nelson (1999) explains:

Heuristic tasks are made up of a complex system of knowledge and skills, which can be combined in a variety of ways to complete the task successfully... For instance, the type of knowledge and skills that a psychologist must draw upon when counseling clients would require an understanding of a wide range of principles of human behavior, different ones of which would be required for different cases. In contrast, procedural tasks, like assembling a bicycle, generally have a more stable and predictable pattern (p. 247).

David Berliner (1994) provided a similar explanation of the heuristic nature of expertise and later tied improvisation directly to education and teaching (Berliner, 2011). Recognizing the heuristic nature of improvisation helps to foster understanding of why it is so difficult to precisely define. It also hints at the power of one of improvisation's properties, which is its use of a flexible and adaptable underlying structure that provides guidelines applicable in multiple contexts (Barrett, 1998).

Frank Barrett (1998) in his seminal piece *Creativity and Improvisation in Jazz and Organizations: Implications for Organizational Learning*, said "improvisation involves exploring, continual experimenting, tinkering with possibilities without knowing where one's queries will lead or how action will unfold" (p. 606). Barrett's (1998) definition built on prior work by Schuller (1989) concluding: "from the Latin 'improvisus,' meaning 'not seen ahead of time,' improvisation is 'playing extemporaneously... composing on the spur of the moment'" (p.606). While Barrett situated his definition in the context of jazz music, Crossan (1998) changed the domain to theater and described improvisation as "the counterpoint to traditional theatre. In improvisational theatre, there is no script, no sets, minimal if any props, no predetermined roles, and a very different role for the director/producer. Action is taken in a spontaneous and intuitive fashion" (593). Musician, Paul

Berliner (1994) described it like this, “improvisation involves reworking pre-composed material and designs in relation to unanticipated ideas conceived, shaped, and transformed under the special conditions of performance, thereby adding unique features to every creation” (p. 241). This parallels what effective special education teachers must do as they adapt lessons to fit their students needs in inclusive classrooms (Olson et al., 2008). Anderson (2008) synthesized the ideas of prior theorists for her description of “improvisation as freedom within structure... Without structure, there is simply chaos. Without freedom, there is suffocation” (p. 5). This definition exemplifies the challenges currently faced by schools struggling to balance the standardization of scripted curriculums with the needs of adapting learning to individual students (Berliner, 2011; Sassi, 2011; Sawyer, 2011).

Additionally, improvisation is extemporaneous; it occurs in real time, *in the moment* (Barrett, 1998; Bogart & Landau, 2005; Halpern et al., 1994; Vera & Crossan 2005; among others). Vera and Crossan (2005) cited several different descriptions or definitions of improvisation including: Seham (2001) “‘making do’ and ‘letting go;’” Crossan and Sorrenti (1997) “‘intuition guiding action in a spontaneous way;’” Moorman and Miner (1998a) “‘the degree to which composition and execution converge in time;’” Cunha et al. (1999) “‘the conception of action as it unfolds... drawing on available material, cognitive, affective, and social resources;’” and finally refer to Frost and Yarrow’s (1990) longer definition:

Improvisation may be close to pure ‘creativity’ – or perhaps more accurately to creative organization, the way in which we respond to and give shape to our world. The process is the same whenever we make a new arrangement of the information we have, and produce a recipe, a theory, or a poem. The difference with doing it a l’improviste, or all’improvviso, is that the attention is focused on the precise moment when things take shape (Frost and Yarrow, 1990 cited in Vera and Crossan, 2005, p. 205).

This act of consciously being present in the moment is a hallmark of improvisation. Bergum (2003) described it this way:

Improvisation and improvisators require sensitivity to the ongoing life experiences of others – of teachers and students, nurses and patients, in each situation. It helps one to move beyond the language of instrumentalism, such as goals and objectives which give easily measurable results, toward a ‘language that resounds bodily’ where a student finds her own voice, discovers her own music, and is able to relate to the other (p.124).

In a personal communication and embedded in his improvisation curriculum, Kadwell (March 4, 2010; Fall 2009-Spring 2010) theorized that what improvisation training increases most is a practitioner’s ability to empathize with others. Barker and Borko (2011) used the term “presence” (p. 281) to describe this awareness of self and other in the moment of *now* and Erickson (1982) framed this in the distinction between the Greek terms of “*chronos*,” chronological time, and “*kairos*,” “strategic” or “appropriate time” (p. 160.). Erickson (1982) established the earliest connection between improvisation and teaching identified in this research.

For their own definition Vera and Crossan (2005) described improvisation as “the creative and spontaneous process of trying to achieve an objective in a new way” (Vera & Crossan, 2005, p. 205). They continued addressing the process of improvisation rather than the product or outcome stating:

...by defining Improvisation as a creative process, the focus is not on the creative outcome that is novel and useful but on how teams ‘attempt to orient themselves to, and take creative action in, situations or events that are complex, ambiguous, and ill defined.’ [This] ...definition also highlights Improvisation as a conscious choice people make rather than as random behavior (Vera & Crossan, 2005, p. 205).

Many improvisational theorists have agreed with this process-oriented focus (Barrett, 1998; Halpern et al. 1994; Kadwell, Personal Communication, March 4, 2010; Sawyer, 2004b, 2011).

Improvisation techniques have also sought to develop *in-flight* decision making skills and to promote collaboration (Halpern et al., 1994; Hines & Hines, 2010; Kadwell, personal communication, March 4, 2010; Kadwell, improvisation curriculum, Fall 2009-Spring 2010). “In-flight” and adaptive decision making skills are often cited in education literature as well (Byra &

Sherman, 1993, pp. 7-8; Hines, Course Material, 2008; Kohler et al., 2008, p.2109; Schempp et al., 1998, p.12). Bogart & Landau (2005) added an additional characteristic to the description of improvisation: that of democratic decision making, through interaction; a “nonhierarchical art” (p.4). In the context of post-modern dance they stated that “improvisation became the common language and everyone helped each other out” (Bogart & Landau, 2005, p.4). This agreement to collaborate following the *Yes, and* rule is the guiding principle of improvisation; as Halpern et al., (1994) stated: “agreement is the one rule that can never be broken” (p.47). Finding ways to disagree is too easy; the challenge is to find common ground (Halpern et al., 1994). Disagreement impedes the furtherance of action; while agreement moves a scene along (Halpern et al., 1994). This type of interaction promoted what Kadwell (Personal Communication, March 4, 2010) referred to as *comping*. Comping is the supportive behavior players in an ensemble agree to as part of improvised performance. Comping makes all the players on the stage look good and allows highly democratic interaction to take place (Barrett, 1998; Bogart & Landau, 2005; Halpern et al., 1994). “In improvisations, each participant [has] the same power in the creation of an event”(Bogart & Landau, 2005, p.4). Agreement fosters democratic participation also known as collaboration and is a crucial skill that special education teachers must have when working with general education teachers in inclusive classrooms (Hines & Hines, 2010). Sawyer (2004b) recognized the important of collaboration as a general skill in teaching.

Lobman (2003) as part of the emergent themes of her data analysis of the use of improvisation in the early childhood classroom identified another core improvisation characteristics: the giving and receiving of offers, which she frames in the lens of teacher-child interaction and as an extension of *Yes, and...*; always trying to find ways to accept student offers instead of negating or blocking contributions.

To summarize, improvisation then is a flexible organizing construct that uses heuristic guidelines to foster extemporaneous communication, *in-flight* decision-making and to promote democratic collaboration and awareness in a supportive environment, now, in *this* moment (Barrett, 1998, Crossan, 1998; Halpern et al., 1994; Hines & Hines, 2010; Kadwell, personal communication, March 4, 2010; Kaldwell, improvisation curriculum Fall 2009-Spring 2010; Lobman, 2006; Erickson, 1982, Sawyer, 2004b). The descriptions of interaction that Barrett (1998), Bogart and Landau (2005) and Halpern et al. (1994) provided of how an improvisational ensemble group works in jazz music, postmodern dance or improvisation comedy, overlap the descriptions of ideal classrooms Hadjioannou (2007) presented in her description of authentic discussions in classrooms. Her case study of a fifth grade Florida classroom showcasing authentic discussion showed that collaboration, trust, humor and playfulness, active listening, nurturing environment, classroom structure and teacher enthusiasm helped to permit the instructor to use constructivist teaching methods, even while being constrained by high-stakes tests and a prescribed curriculum. This is similar to the ideal classroom Sassi and Goldsmith (1995) described in chapter one and the argument Sassi (2011) made for blending scripted curriculum materials with a structure that permits improvisation in her case study involving a reading curriculum adopted by Boston Public Schools. Burnard (2011) and Lobman (2003, 2006, 2011) provided similar classroom descriptions in their qualitative research, emphasizing the teacher's role in the creation of positive, collaborative spaces that permit improvisation within the school structure.

The specific improvisation characteristics and skills identified as common between improvisation and teaching used as the foundation of the improvisation training presented in this research and evaluated by the proposed methods are found in Appendix D. These characteristics/skills provide more detailed instantiation of the improvisation construct.

## Improvisation as an Independent Construct

Although improvisation may be most known for its comedic ends or as a Miles Davis riff, improvisation is actually an independent construct (Barrett, 1998; Crossan, 1998; Sawyer, 2004b, 2022; Vera & Crossan, 2005). It is procedural in nature and designates “how” the task will or should be accomplished, with a complementary set of methods or procedures (Barrett, 1998; Crossan, 1998; Sawyer, 2004b, 2022; Vera & Crossan, 2005). Halpern et al. (1994) theorized that improvisation is “an art form that stands on its own, with its own discipline and aesthetics” (p.15). Barrett (1998) and Crossan (1998) described it as an organizing structure; as such it could be applied to many fields. Typically these fields were Jazz music and both serious theater and Improv Comedy Theater, the later of which endeavors to coax the emergence of humor (P. Berliner, 1994; Halpern et al., 1994). However, researchers and theorists have examined improvisation in non-traditional domains such as nursing and healing (Bergum, 2003; Lipsker, 2005; Patterson, 2004), social change and national healing/bearing witness (Dauber, 1999; Hosking & Penny, (n.d); bullying (Salas, 2005); conflict resolution in narrative (Park-Fuller, 2005); resilience (Welch Knox, 1998); public health (Rosado-Pérez, 2005); mediation/negotiation (Balachandra, Barrett, et al., 2005; Balachandra, Crossan, et al., 2005); therapy (Strekas, (n.d.); organization science and team building (Anderson, 2008; Barrett, 1998; Crossan, 1998; Weick, 1998); business (Huffaker & West, 2005; Lewis, 2007); innovation (Vera, & Crossan, 2005) and philosophy (Ross, 2010).

Barrett (1998) was one of the first to recommend applying improvisation to alternate domains outside of theater and music. He advocated for its application to business management.

Barrett (1998) said:

To be innovative, managers – like jazz musicians – must interpret vague cues, face unstructured tasks, process incomplete knowledge and yet they must take action anyway... [they] need to engage in dialogue and negotiation, the creation of shared spaces for decision making based on expertise rather than hierarchical position (p. 620).



He described how the metaphor of improvisational jazz could be applied to the management of complex dynamic organizations like those found in business and shows what skills managers should have to thrive in such environments. In example, Balachandra, Barrett, et al. (2005) and Balachandra, Crossan, et al. (2005) presented descriptive and prescriptive studies recommending how improvisation-like skills could be incorporated into the design of teaching methods and curricula for negotiation students.

Crossan (1998) described the use of improvisation in business for innovation and prescribed recommendations on how to transfer skills learned in improvisation workshops to promote innovation in management and business. Her initial theories paved the way for two solid research-based studies of the application of improvisation in business and organizational science, Vera and Crossan (2005) and Huffaker and West (2005). Vera and Crossan's (2005) quasi-experimental study is one of only three quantitative studies to evaluate improvisation as a training technique. Cawthorn and Dawson (2009) discussed earlier in this chapter and Anderson (2008) are the others. Although relevant contextually, the significant methodological concerns of Anderson's (2008) study eliminated it from further consideration.

Vera and Crossan (2005) designed a strong quasi-experimental design to evaluate improvisation-like qualities in teams and individuals. Their study emphasized the improvisational theater principals of "practice, collaboration, agree, accept, and add, be present in the moment, and draw on reincorporation and ready-mades" (p. 203). They theorized that improvisational training would encourage the collective improvisation of work teams and lead to innovative solutions to workplace problems. Teams that improvise well together were theorized to share certain characteristics such as: "making do" and "letting go" (p. 204), and have shared mental models between participants on teams, seek organizational change through both the individual and the team,

and demonstrate innovation and teamwork. While Vera and Crossan (2005) advocated for the use of improvisation on teams, they realized that this was not a panacea. In their view, two misconceptions of improvisation were that the “spontaneous facet[s] of improvisation...[are] overemphasized (Vera & Crossan, 2005, p. 203),” and that improvisation is always positive and improves performance. Improvisation is neither good nor bad, but the context determines its value as an approach. Team improvisation depended on the improvisational skill of the members as well as “team characteristics..., team dynamics..., and contextual influences” (Vera & Crossan, 2005, p. 204). Their study examined six research questions using regression analysis. Municipal employees on 50 work teams were invited to participate in a 2-day training on creative and flexible thinking. This represented 348 total employees. While the training did not explicitly endeavor to teach improvisation, content analysis revealed hallmarks of improvisational thinking such as:

Being responsive and creative under pressure and the roles that spontaneity, flexibility, intuition, expertise, and teamwork play in this process. The training also discussed the need to create a culture that supports and rewards experimentation, and the need to continuously look at the internal and external environment to remain nimble (Vera & Crossan, 2005, p.210).

Results showed that individual measures of expertise, teamwork skills, experimental culture and real-time information and communication were positively correlated with the improvisational training, while organizational memory, theorized to provide team members with a foundation upon which to draw as a resource for improvisation, was negatively correlated. Although the effect sizes were not large, they were significant within the  $p < .01$  to  $p < .10$  range (Vera & Crossan, 2005). Results also showed partial support that improvisation could be taught through training. Post hoc tests showed training increased the amount and quality of improvisation. As far as the results were concerned, Vera and Crossan (2005) stated:

This is one of the few studies that attempts measurement of improvisation and, to our knowledge, the first empirical study to test arguments based on the improvisational theater

metaphor. With our improvisation scale we sought to help fill the gap in quantitative work in the Improvisation field, in which measures of improvisation are scarce and existing scales only partially represent the phenomena (p. 220).

Vera and Crossan's (2005) work provided tentative results that seem to verify that improvisation techniques could be taught and learned both for individuals and teams.

Getting adults to interact in adult learning was one of the focal points of Huffaker and West's (2005) study of the use of improvisation techniques in a business classroom. They cited many name brand businesses "Nike, FedEx, PricewaterhouseCoopers" (p. 855) that have used improvisation training for "teambuilding, collaboration, and communication, vision and identity creation; organizational change; and brand and/or character development" (Huffaker & West, 2005, p.855-856). Additionally they cited well-known business schools using the technique; "Colombia, Stanford and Duke have offered improv-based courses for business students" (Huffaker & West, 2005, p.856). They theorized that improvisation allowed participants to be present in the moment, listening, and to "shut off their internal critic" (Huffaker & West, 2005, p. 854). Improvising also "provide[s] in-the-moment responses to stimuli [students] can't predict" (p. 854), and encourages intuitive responses. Overall they characterized improvisation as "learning by surprise" that "leverages the joy of play" (Huffaker & West, 2005, p.855). Citing *The On Your Feet: Improv for Business* program used by Nike, FedEx and PricewaterhouseCoopers, Huffaker & West (2005) detailed the following improvisation training principles: participants need to be present, fit and well, i.e. "willing to take risks with a positive attitude" (p.856), and listening, embracing change and accepting offers (Huffaker & West, 2005). Interestingly Huffaker and West (2005) theorized, "student learning and thought processes would be enhanced through structures that facilitate physical movement and engagement" (p.862). This bears a striking resemblance to the idea of

embodied cognition from the cognitive psychology literature and brain-based learning (Jensen, 2008; Wilson, 2002). Bergum (2003); and Cawthon and Dawson (2009) also draw this conclusion.

The research setting was a ten-week elective business management class called *The Power of Soul and Spirit in Business*. The researchers established three primary objectives for the course 1) “build community and encourage risk taking” (p. 854), 2) promote experiential learning of course material, and 3) foster dynamic classroom discussion and exchange (Huffaker & West, 2005). The class also included readings on organizational creativity and “positive turbulence” (Huffaker & West, 2005, p.863). Sixteen adult participants took part; twelve undergrads, and four MBAs. Data collection included anecdotal and descriptive information from the class and improvisation games used in the class, the course midterm and final evaluations and feedback from a class reunion – what students remembered about the class and improvisation games. Results for the midterm course evaluations showed an average score of 4.66 out of 5; five students specifically commented on the improvisation activities, with responses mostly positive. The final course evaluations reported on results for two specific questions: instructor “is sensitive to the response of the class, encourages student participation, and welcomes questions and discussion” (Huffaker & West, 2005, p. 864). Results showed an average score of 9.83 out of 10 and; “enjoys teaching, is enthusiastic about the subject, makes the course exciting, and has self-confidence” (Huffaker & West, 2005, p. 864). Results showed an average of 9.92 out of 10. The classroom observations found: an “unusual degree of support and trust among class members...[and] rich collaboration” (Huffaker & West, 2005, p. 854); experiential learning for themes of “creativity and distributed leadership” (Huffaker & West, 2005, p. 854); increased engagement for students; instructors fun and spontaneous, increased facilitation, and “sensitivity to student process in class” (Huffaker & West, 2005, p.854). Although Huffaker and West (2005) did not explicitly draw the connection, DeZutter, (2011) described how

the increased role of the student in the class is a hallmark of constructivist classrooms. Huffaker and West (2005) theorized that the improvisation activities “enhanced...students’ classroom experience:” and created an “environment conducive to learning – an open, risk-tolerant, creative, participative, and energized atmosphere – enhanced the amount of exchange and exploration that took place” (Huffaker & West, 2005, pp. 864-865).

Huffaker and West (2005) showed how improvisation activities could be incorporated into other adult learning environments with success. While their use of classroom evaluations showed that the class was received well, there were too many other variables that could also affect critique scores. Andersen’s (1978) research showed that while no clear connection between teacher immediacy and academic learning exists; teacher immediacy does influence affective learning. Huffaker and West’s (2005) contribution substantiated this. Also student responses, instructor observations of the class and anecdotes from the class did corroborate other researchers’ observations about the use of improvisation in adult learning environments (Borko & Livingston, 1989; Dawson et al., 2011; Lewis, 2007; Lipsker, 2005; Sassi & Goldsmith, 1995; Vera & Crossan, 2005).

A specific type of improvisation called Playback Theater has psychological aspects that have made it useful as a therapy (Dauber, 1999). In Playback Theater a group of trained improvisers elicit personal stories from the audience and relive them collectively with audience participation. Playback Theater has successfully been used to train nurses, with the nurses themselves enacting their stories (Lipsker, 2005). Strekas (n.d) used it as a therapy to help teachers address feelings of burnout and stress.

Lipsker (2005) conducted a long-term qualitative study of the effectiveness of using an improvisation technique, Playback Theatre, for training twenty-one community nurses in Israel. She

employed three qualitative methods, phenomenology, hermeneutics, and aesthetics, to examine text-based versions of videotape, semi-structured questionnaires and pre/post interviews taken over the course of the training. The training was integrated into participants regular nursing curriculum and occurred once a day every four weeks for a year. She describes how the effect of incorporating improvisation into the established curriculum assisted in the professional development of the nurses:

Operating a playback theatre workshop imposed theatrical dimensions and concepts on the context of training processes, such as 'space and stage,' 'actors and audience,' and 'spontaneous Improvisation.' The combination of the creative-theatrical dimension with structured educational elements enabled, through a reconstructed and intensified process, the development of professional awareness in an organizational environment. In other words, whatever took place in the 'creative space' affected the direction of developments in the 'procedural space,' and the fusion of the two created a new formula for focusing on nursing values and regulating its functions (Lipsker, 2005, p.11).

Three main developments were observed as a result of the workshop: change in participant's study habits, achievement of coherent ability to express emotion (knowledge and self-awareness), and better interpersonal skills both between participants and between participants and patients (Lipsker, 2005). Additionally eight main themes emerged from a qualitative analysis of the data. Although Lipsker (2005) was not directly looking for a change in the concept of nursing self-efficacy, and does not reference the concept specifically, she describes this as a main result of the workshop, succinctly expressed in the nurses' own words as "*I can and I'm allowed*" [emphasis in original] (Lipsker, 2005, p.9) She further describes this shift towards an agency-oriented outlook in the nursing participants stating:

The processes that took place in this course changed the nurses' self-image, their confidence in their skills, and their commitment to maintaining professional standards when confronted with challenges, resulting in personal and professional empowerment. In their opinion, acting helped the learning process, as it facilitated inward observation, the expression of emotions, a glance into the other's inner world, a return to suppressed creativity and spontaneity, the development of conscious reflection, and the interpretation of therapeutic interactions (Lipsker, 2005, p 9).

Lipsker's (2005) study although qualitative in nature was perhaps the closest prior research to the current investigation in terms of theorized outcomes resulting from improvisation training. The researcher was interested to see if the quantitative analysis of pre-service teachers' self-reported self-efficacy beliefs and the qualitative examination of classroom behavior examined in this investigation could substantiate the phenomena of personal and professional growth observed in nursing students in Lipsker's (2005) research.

While her context and population were distinct from this research focus, the results of Welch Knox's (1998) study help to explain why improvisation might change self-efficacy. Welch Knox (1998) evaluated the therapeutic uses of improvisational performance training in a South Dakota alcohol, tobacco, and drug abuse prevention (ATOD) program as part of her dissertation research. The program Welch Knox (1998) evaluated uses socio-drama relationships to address high-risk adolescent behavior. Improv-based socio-drama is deemed to be effective because it promotes democratic participation and the "inherent competence of individuals" (Welch Knox, 1998, p.11). It provides for open-ended discussion or "processing" (Welch Knox, 1998, p.12), and allows the examination of bias and stereotypes. The therapeutic effects are thought to arise because the summer workshop is highly interactive and actively processed information effects behavior change (Welch Knox, 1998). Between its inception and Welch Knox's (1998) research, over 3,200 student improvisers had been trained as part of a five-day summer workshop funded by the South Dakota Department of Alcohol and Drug Abuse for students selected from a variety of school districts. The program is based on Resilience Theory, which helps to explain why some at-risk youth in certain conditions fall prey to risky behaviors and others are able to successfully avoid such problems (Welch Knox, 1998). Results of the qualitative data analysis show that improvisational training offered "protective factors... [and]...developmental assets" (Welch Knox, 1998, p. iv) that

fostered resilience in participants and supported Resilience Theory. Welch Knox (1998) found participants to be: more socially competent, better problem solvers, more self-aware with increased internal locus of control, more aware of others, and show a greater sense of purpose and future orientation.

Welch Knox (1998) states:

The dominant themes that emerged indicated that Improv participants felt a sense of connection, of attachment to others. Participant responses confirmed that Improv was a 'safe' place. Participants said they felt they could be authentic without fear of being judged. They noted that the sense of connection would make it possible for them to act independently. They said they would be better able to withstand the pressures of peers to engage in risky behaviors. Specifically participants in this study linked the experience of social connectedness to the expression of autonomy (p. 67).

Interview results show some students making a link between the experience they had at the improvisation summer camp and their decisions not to drink or use drugs (Welch Knox, 1998). Students indicated that what they liked most was the team environment or the relationships they forged (Welch Knox, 1998). Participants indicated that they had gained better coping skills, and a positive outlook (Welch Knox, 1998). While it is possible that some of changes participants referred to may be due to the Hawthorne Effect of participating in a retreat-style summer camp regardless of the content, interview results show enough specific references to improvisation games or concepts that the content of the summer workshop was likely a change factor in these student participant lives (Welch Knox, 1998).

In their conceptualization, Barrett (1998) and Sawyer (2004a) viewed improvisation as a useful metaphor that could be applied to diverse domains. While jazz improvisation may be a useful metaphor, it is limited by domain specific musical expertise. Crossan (1998) viewed theatrical improvisation as more than just a metaphor because it involved "the skills of listening, communication, and story-telling" (p. 594) which were available to everyone. She said "individuals



can engage in improvisation exercises to develop their capacity to improvise” (Crossan, 1998, p. 594). She conceived of improvisation as a social practice and process that could be learned and improved through exercises and then applied to a given domain or context (Crossan, 1998). Sawyer (2004a, 2004b, 2011) advocates for this same practice in the teaching profession.

An increasing number of educational theorists and researchers have also examined the role that improvisation plays in teaching (Barker & Borko 2011; Beghetto & Kaufman, 2011; Berk & Trieber, 2009; Borko & Livingston 1989; Brunard, 2011; Cawthon & Dawson, 2009; Dawson, Cawthon, & Baker, 2011; Erickson, 1982, 2011; Hine & Hines, 2010; Lobman, 2003, 2006, 2011; Sassi & Goldsmith, 1995; Sassi, 2011; Sawyer, 1999; 2004a, 2004b, 2011; Shem Tov, 2011). Research on the application of improvisation to teaching has increased considerably in the last few years. Initial database searches for the keywords *Improvisation* and *Teaching* when this research began in 2008 turned up only a handful of articles, virtually all of which were theoretical in nature.

### Classification of Improvisation Related Research

Since the purpose of this research was to examine improvisation in the domain of teaching related research articles on improvisation were consulted in domains outside of theater and music but focusing on training, teaching or learning. While many researchers and articles detailed the potential prescriptive or theoretical benefits of applying the process of improvisation to a given domain, relatively few researchers used quantitative or qualitative research methods to test their hypotheses. Most of the recent research used qualitative methods with an emphasis on case study or anecdote. Relatively few of these studies used explicit research questions and pre-established methodologies. A significant contribution of this research is that it used explicit research questions and a mixed method design to evaluate the potential benefits of improvisation outlined by theorists.

Of the forty-two improvisation related articles/media outside of the domains of art and music consulted for this research, twenty-three were classified as theoretical/prescriptive or descriptive; three used quantitative methods with explicit research questions and could be classified as quantitative research. Two of the three quantitative studies, present serious concerns; Anderson (2008) did not include any information on the duration or type of improvisation training presented as part of her research which affected the evaluation of her results; and tests showed that participants in her control sample were already high performing compared to the test group. Cawthon and Dawson (2009), discussed earlier in the chapter in the self-efficacy section, evaluated the self-efficacy of in-service teachers, a population thought to be less responsive to changes in self-efficacy than pre-service or novice teachers (Bandura, 1997; Hagen et al., 1998; Redmon; 2007; Tschannen-Moran & Hoy, 2001, 2007).

Sixteen articles presented varying degrees of qualitative data analysis ranging from implicit research questions and anecdotal material to full-fledged qualitative analysis with coding, emergent themes and explicit research questions. Of the sixteen, only five (Dawson, et. al., 2011; Welch Knox, 1998; Lewis, 2007; and Lobman, 2003b, 2006) met the rigorous standards of presenting explicit pre-defined research questions with solid qualitative data analysis methods advocated by Denzin (1978), Glesne (2006), Merriam (1992), Quinn Patton (1987), and Wolcott (1994). Four others, (Borko & Livingston, 1989; DeZutter, 2011; Erickson, 1982; & Lipsker, 2005) present solid research methods but only include implicit research questions in their written publications. (Lipsker's (2005) may be an exception to this. However only a summary of her research was available in English. Her complete dissertation is in Hebrew at the University of Haifa). Three research tables organizing the studies reviewed as part of this literature review are provided in Appendix H.

Evaluating the content of the prior research, only one study Cawthorn and Dawson (2009) evaluates the relationship between self-efficacy and improvisation; and no prior research studies were found that evaluated the use of improvisation techniques in inclusive classrooms. Hines and Hines (2010) however did present a DVD connecting improvisation techniques to collaborative teaching directed towards the application in inclusive classrooms.

The three research studies presenting quantitative methods were discussed previously in chapter two. The theoretical/prescriptive/descriptive literature generally advocates for similar benefits to the application of improvisation in diverse domains as a training or teaching technique. However a handful of seminal pieces were examined below to provide further background in the construct and proposed theoretical benefits.

### Contributions to the Theory of Improvisation in the Classroom

Although mostly prescriptive, Ross (2010) and Sawyer (2004a) justified the use of the improvisation metaphor in education anecdotally as a means to preserve complexity in the classroom and promote creative teaching.

Sawyer (2004a, 2004b, 2011); Borko and Livingston (1989) and Berliner (2011) among others posited that teachers naturally improvise as part of their job. It is often said that teaching is performance. However both Sawyer (2004a, 2004b, 2011) and Crossan (1998) distinguished between traditional scripted performances and the type of extemporaneous performance characterized by professions in which workers must think on their feet. Sawyer (2004a) redefined the teaching-as-performance metaphor as teaching-as:

*-Improvisational Performance.* Conceiving of teaching as improvisation emphasizes the interactional and responsive creativity of a teacher working together with a unique group of students. In particular, effective classroom discussion is improvisational, because the flow of the class is unpredictable and emerges from the actions of all participants, both teachers and

students. Several studies have found that as teachers become more experienced, they improvise more (pp. 12-13).

Borko and Livingston (1989) also used the term “improvisational performance” (p. 474) as part of their metaphor of teacher-as-performer, stating:

An improvisational actor enters the stage with a definition of the general situation and a set of guidelines for performing his or her role, rather than working from a detailed written script. Such a performer draws upon an extensive repertoire of routines or patterns of action while playing out a scene, incorporating them into a performance that is continually responsive to the audience and to new situations or events (Borko & Livingston, 1989, p.475)

Sawyer (2004a) explained how improvisation skills could be used to establish a constructivist classroom, “in improvising, the teacher creates a dialogue with the students, giving them the freedom to creatively construct their own knowledge, while providing the elements of structure that effectively scaffold that co-constructive process” (p. 14). Advocates for improvisation in teaching such as DeZutter (2011), Sassi (2011), Sassi and Goldsmith (1995) and Sawyer (2004a, 2004b, 2011) viewed improvisation as a way to promote and foster constructivist-teaching methods. Sawyer (2004a, 2004b, 2011) recommended using improvisation as a framework for teacher education and classroom performance as a way to counter certain trends towards down-skilling in the teaching profession. He advocated for up-skilling or raising expectations for teacher interaction in the classroom (Sawyer, 2004b). Hanushek’s (1971, 2005) research on factors that influence student achievement repeatedly showed that teachers matter. High quality teachers were able to bridge achievement gaps by showing more than a year’s worth of academic gain on standardized achievement tests while low quality teachers often showed less than a year’s worth of gain and might actually set students back (Hanushek, 1971, 2005; Hanushek, et al., 2001). Downer et al. (2010) conducted a literature review on teacher-child interaction and corroborated the importance of teachers in closing performance gaps.

Sawyer (2004a, 2004b, 2011) has done much to promote using improvisation in teaching. He presents a very convincing theoretical argument, but his evidence up to this point has been mostly anecdotal. Sawyer (2004a) compared the similarities of constructivist teaching and improvisation; providing classroom and theater examples of “Yes, and...,” (p. 192) “no denial,” (p.193) collective creativity, “endowing” (p.196) and open-ended response techniques beyond questioning, staying within “the fourth wall,” (p. 197) and “listen and remember” (P.198) (Sawyer, 2004a). His theories about the role of questioning were similar to those expressed by Gershenson et al. (2010) in teacher-child interaction. In Sawyer (2004b) he argued against scripted teaching and for disciplined improvisation, which he theorized increased the skill level and expertise of the teacher. His theoretical contributions have suggested that improvisation might be used as the underlying structure of the curriculum making it an instructional strategy (Sawyer, 2004a).

Sawyer’s (2011) recent edited collection of research and essays advocating for the application of improvisation to teaching, *Structure and Improvisation in Creative Teaching*, framed the argument for improvisation in teaching in terms of achieving balance in the paradox between structure and improvisation in teaching. He presented three paradoxes that were a source of constant tension in education, the teacher paradox, the learning paradox and the curriculum paradox. In the teacher paradox, teachers struggled to find balance between structure and improvisation (Sawyer, 2011). The learning paradox was “the always-difficult task of identifying just the right degree and type of scaffolds” (pp. 17-18) for each learner to maximize their own progress (Sawyer, 2011). The curriculum paradox was the tension between establishing a scope and sequence of well planned lessons linking assessments and objectives but allowing for the fruitful exploration of learner-directed contributions as they arose (Sawyer, 2011). The Deborah Lowenberg Ball example cited at

the introduction to this research, and in Erickson (2011) were good examples of the curriculum paradox (Green, 2010).

Contributors to Sawyer's (2011) compilation built on the foundation he established to examine the role of improvisation and: constructivism and teacher education texts (DeZutter, 2011); arts-based partnerships in the schools (Burnard, 2011); improvisation-based teacher development – much like the training proposed in this research (Lobman, 2011); the tension between planned curriculum and its application (Beghetto & Kaufman, 2011); meta-communication in the classroom and teachable moments (Erickson, 2011); marrying improvisation with scripted approaches (Sassi, 2011); and the nature of *presence* in teaching and improvisation (Barker & Borko, 2011). All the contributors pre-supposed the role of improvisation in teaching.

Good and Brophy (1987) in their well-known teacher education text, *Looking in Classrooms*, cited the use of role-playing as an effective improvisation technique for teacher training. Role-playing is one type of improvised performance. The benefits of role-playing according to Good and Brophy (1987) were showing how to respond to:

...half-serious jokes and jibes about personal appearance or habits, dealing with conflicts between what the group is urging and what conscience dictates, responding to flirtations from the opposite sex, [and] fear of losing face before the group... These activities help bring the fears and self-doubts in these situations out in the open (p.200).

They cited a wide body of research encouraging the use of role-playing in teacher training and provided examples on how such training could help teachers prepare for difficult situations, such as sex education classes and discussions on uncomfortable topics (Good & Brophy, 1987). Playback Theatre is an example of role-playing based off of retelling real stories. Strekas (n.d) described how Playback Theater could be used to address teacher burnout.

Rebecca Hines (2010) in conjunction with her sister, well-known improviser, Cheryl Hines, adapted certain improvisational techniques for teacher education. They offer a DVD workshop

using improvisation techniques to foster teacher relationships and promote collaborative teaching in exceptional education classrooms (Hines & Hines, 2010). Hines (2008) also included basic improvisational strategies in her undergraduate teacher education classes (Unpublished course material).

Sawyer (2004b) has also advocated for using improvisational strategies to promote collaborative discussion in the classroom. He too recognized the potential for using improvisation as a professional development tool. Sawyer (2004a) cited prior research highlighting several existing professional development programs with an improvisation foundation that have begun to serve k-12 and college teachers such as: [www.academicplay.com](http://www.academicplay.com); [www.artistryinteaching.org](http://www.artistryinteaching.org) and “the Center for Artistry in Teaching runs a summer workshop in Washington D.C. which is heavily based on Improvisational exercises such as verbal spontaneity games, role-playing, and physical movement” (p. 18).

Lobman (2011) detailed one such program in New York called the Developing Teachers Fellowship Program. The program was a year long for a small group (<15) of specially selected teachers. Teachers attended class bi-weekly on Saturdays plus one monthly on-site mentoring session. For their time, they received a small (\$2500) stipend. The workshops consisted of “improvisational theater activities, philosophical dialogues and teacher supervision...the workshops [themselves] were improvisational and emergent” (pp. 80-81) meaning that the topics and discussions were driven by the on-going experiences of the teacher participants. The DTFP training structure was very similar to the one independently developed for evaluation in this study.

Lobman (2006) also contributed to the theoretical foundation of improvisation in the classroom, by using it as a lens for teacher-child interaction. She examined a case study of improvisation in a preschool classroom, looking at responsive and unresponsive teaching practices.

Three other researchers beyond those cited above made significant contributions to the theoretical examination of improvisation in teaching, Erickson (1982) and Beghetto and Kaufman (2011). Erickson (1982) examined the behavior associated with learning task environments and broke this procedural knowledge down into two component parts, academic task structure (ATS) and social participation structure (SPS) (p. 153). These tools provided another means to evaluate classroom interaction. Erickson (1982) posits, “the academic task structure (ATS) could be thought of as a patterned set of constraints provided by the logic of sequencing in the subject-matter content of the lesson. The social participation structure (SPS) could be thought of as a patterned set of constraints on the allocation of interactional rights and obligations of various members of the interacting group” (pp. 153-154). By establishing the distinction in the two behavior types, Erickson (1982) provided tools to better examine the distinction between what is supposed to happen in classrooms and what actually takes place. He employed this tool for his linguistic analysis of classroom dialogue in Erickson (1982, 2011). Lobman (2006) and Erickson (1982) provided a set of tools to examine types of interaction and address the teacher and learning paradoxes Sawyer (2011) discussed.

Beghetto and Kaufman (2011) provided a framework for examining the curriculum paradox. They used the terms “curriculum-as-planned” and “curriculum-as-lived,” and discussed the “paradox in which teachers find themselves balancing two inverse tensions: (1) teaching requisite academic subject matter while still wanting to foster student creativity; and (2) wanting to allow for creativity yet fearing curricular chaos” (Beghetto & Kaufman, 2011, p. 94). They argued for *disciplined improvisation* building on the term used by Sawyer (2004b) and provided the following definition of this construct:

Disciplined Improvisation in teaching for creativity involves reworking the curriculum-as-planned in relation to unanticipated ideas conceived, shaped, and transformed under the



special conditions of the curriculum-as-lived, thereby adding unique or fluid features to the learning of academic subject matter. In our definition, the “discipline” of disciplined improvisation) refers to determining what aspects of the teaching and learning activity will be more or less fixed, and the “improvisation” refers to identifying what aspects will be more or less fluid (Beghetto & Kaufman, 2011, p. 96).

They provided anecdotal evidence to show how disciplined improvisation could be applied in the classroom. The following section examines prior qualitative research on improvisation in teaching and training.

### Prior Research on Improvisation in Teaching and Training

Despite a fair amount of prescriptive research using theoretical justifications to advocate for the use of improvisation in diverse domains, there were only three quantitative studies that sought to measure its actual effectiveness. One potential reason for this is because while there are many markers of improvisation, the actual construct itself is more a set of heuristic principles or a “gestalt;” than a concrete measurable entity. So rather than measure the construct of improvisation directly due to its heuristic nature, some prior researchers instead established characteristics based off their operational definition that could be measured, such as creativity, tolerance for ambiguity, and spontaneity (Vera & Crossan, 2005; Barrett, 1998). Sixteen qualitative studies evaluating improvisation in education were identified. Qualitative methods are often more suited for evaluating ephemeral constructs that do not have established reliable instruments (Patton, 1987).

Borko and Livingston (1989) also demonstrate that teachers improvise in the classroom. They conducted a six person paired case study examining pedagogical expertise in novice and expert mathematics teachers. The researchers collected qualitative data from planning, classroom observations of teaching and post-lesson reflections of three sets of student teachers (the novices) and their cooperating teachers (the experts), including one pair of elementary teachers and two secondary pairs (Borko and Livingston, 1989). They used two frameworks as lenses with which to

analyze the data, *teaching as a complex cognitive skill* and *teaching as improvisational performance* (Borko and Livingston, 1989). They ground their research in an examination of prior studies on the differential performance of novices and experts (Borko & Livingston, 1989).

In their discussion of *teaching as a complex cognitive skill*, they refer to two definitions adapted from Schulman's (1987) research, *pedagogical reasoning*, (previously defined in chapter two's background section and *pedagogical content knowledge*, defined as "the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented and adapted to the diverse interests and abilities of learners for instruction" (Shulman, 1987, p.8; Borko & Livingston, 1989, p. 474-475). Borko and Livingston (1989) asserted that these skills are particular to the teaching profession and that they are acquired with experience. Another concept that informs the *teaching as complex cognitive skill* framework is *schema*, which they characterize as an inductive process of establishing "an abstract knowledge structure" (Borko & Livingston, 1989, p.475). They build on prior research breaking schema down into three pieces of scripts, scenes, and propositional structures.

A script is a knowledge structure that summarizes information about familiar, everyday experiences. Relationships in a script are temporal. Expert teachers have scripts for common teaching activities such as checking homework, presenting new information, providing guided practice, and conducting class discussions. Scenes represent teachers' knowledge of people and objects in common classroom events such as whole-group instruction, small-group work, and independent seatwork. The relationships in scenes are spatial. Propositional structures represent teachers' factual knowledge about components of the teaching-learning situation such as the students in their classrooms, subject matter, and pedagogical strategies (Borko & Livingston, 1989, p. 475).

One observation they make is that the schemas of experts are more elaborate and that "propositional structures for pedagogical content knowledge seem to be virtually nonexistent in novices' knowledge systems" (Borko & Livingston, 1989, p. 475). Berliner's (1994) heuristic model provides some explanation for this.

Borko and Livingston (1989) provided the following description of teacher behavior for their exploration of teaching as improvisational performance:

When improvising, a teacher begins with an outline of the instructional activity. Details are filled in during the class session as the teacher responds to what the students know and can do. Preparation for such improvisation entails the creation of general guidelines for lessons that are designed to be responsive to the unpredictability of classroom events. When planning for a structured lesson, in contrast, the teacher attempts to predict and then identify ways to control classroom events and action (Borko & Livingston, 1989, p. 476).

The novice teachers participating in the study were selected for high performance in content area and teaching methods courses to purposefully examine the performance of high achieving novices (Borko & Livingston, 1989). The research protocol involved participating in an interview prior to classroom observation, undergoing one week of five consecutive days of classroom observation with an interview immediately following each lesson for reflection. Field notes of classroom observations were transcribed immediately after each lesson and were supplemented with audio taped samples. Participant interviews and reflections were audio taped and transcribed. Additional data from planning documents was also used (Borko & Livingston, 1989). The researchers used ethnographic procedures for qualitative research to code and sort the data (Borko & Livingston, 1989). Categories were developed and later organized into a taxonomy (Borko & Livingston, 1989). A case was prepared for each participant, however the final data presentation involved examining patterns of similarities and differences between the cases. One pair of data for the elementary school was incomplete due to a participant's illness and was not included in the final report (Borko & Livingston, 1989).

Results show that expert teachers complete "several levels of planning, from yearly planning to daily rehearsal of the lesson.... yearly planning consisted of establishing the general content and curriculum sequence for the course and constructing a timeline for content coverage" (Borko & Livingston, 1989, p.479). Weekly or daily planning involved deciding how to present a topic or the

best way to explain it. Much planning occurred informally outside of school time and was rarely written down. Specific daily plans were flexible and depended on student ability and performance (Borko & Livingston, 1989). Experts were skillful at keeping lessons focused on objectives while allowing student interaction and participation. They “balance[d] between content-centered and student-centered instruction with what appeared to be minimal use of written plans or textbooks” (Borko & Livingston, 1989, p. 481). For the experts, post-lesson reflections focused on student understanding.

Novice teachers in contrast showed much more focus on short-term day to day planning and were more likely to script out elaborate plans with detailed expected interactions and problem sets to be covered (Borko & Livingston, 1989). They were also more likely to work out the specific mathematics problems to be covered ahead of time to ensure content knowledge (Borko & Livingston, 1989). Considerable time was spent in this elaborate planning, provoking frustration and self-doubt (Borko & Livingston, 1989). Novices expressed concern about not having enough background knowledge to make good pedagogical decisions (Borko & Livingston, 1989). The elementary school teacher noted, “And I have to really think in math. I love it. But I have to really think carefully about it. I can't ad-lib it too well” (Borko & Livingston, 1989, p.487). Novices also felt unprepared to include student questions and participation without it disrupting the lesson (Borko & Livingston, 1989). As a response they used classroom structures that limited student interaction (Borko & Livingston, 1989). Novices reflected on a greater variety of topics including classroom management, concerns about personal effectiveness, daily events and student behavior (Borko & Livingston, 1989). Borko and Livingston (1989) examined these findings through the lens of improvisational performance and teaching as a cognitively challenging act. Characteristic of expert behavior such as playing chess, the expert teachers “attend to and process information only when

they believe it is relevant to following or modifying their agendas” (Borko & Livingston, 1989, p.482; Hofstadter, 1979). Expert teacher planning behavior can be thought of as “a process of integrating scripts for teaching activities such as explanation or discussion, propositional structures for specific instructional content and strategies, and scenes for instructional formats such as whole-class or small-group instruction” (Borko & Livingston, 1989, p.482). Borko and Livingston (1989) provide several examples of expert teacher classroom instruction that is improvisational in nature in which teachers “fill in the outlines during interactive teaching to ensure that their instruction is responsive to student performance” (Borko & Livingston, 1989, p.483). One specific example in which Randy, the expert calculus teacher reviews properties of integrals, describes *Yes, and...* without naming it.

[Randy] elaborated and clarified students' suggestions, giving examples for some. Through this process, and by accepting all reasonable suggestions but listing only the key strategies, he was able to accomplish the lesson objectives. In fact, to Randy's pleasant surprise, the review accomplished more than his primary objective (Borko & Livingston, 1989, p.484).

They summarized their findings on expert teachers' improvisational skills stating:

As these examples illustrate, the success of the expert teachers' improvisation seemed to depend on their ability to quickly generate or provide examples and to draw connections between students' comments or questions and the lesson's objectives. In terms of cognitive structure, successful improvisational teaching requires that the teacher have an extensive network of interconnected, easily accessible schemata (Borko & Livingston, 1989, p.485).

Borko and Livingston's (1989) research provided numerous examples, like the one above to support their claim that expert teachers improvise more than novices. Their research also established that teachers improvise in the act of teaching.

Dawson et. al. (2011) presented a qualitative study of the effectiveness of the Drama for Schools program, a partnership between the University of Texas, Austin and local public schools. The program matched in-service teachers with mentors from the University drama department to provide teacher training in a variety of performance techniques including improvisation. Dawson et.

al. (2011) grounded their research in three theoretical frameworks: andragogy (Knowles, Holton, & Swanson, 1998), constructivism (Vygotsky, 1978) and critical pedagogy (Freire, 1970).

They theorized that effective professional development should model an ideal student environment for teachers; as such the DFS program emphasized “collaborative, dialogic professional development” (Dawson et. al., 2011, p. 315). In the DFS training, trainers and teachers “co-construct knowledge and create a safe space for risk-taking” (Dawson et. al., 2011, p. 315). This is a hallmark of improvisational performance and constructivist teaching. DFS also promotes teacher empowerment while recognizing that this is often paradoxical in current standards driven environments (Dawson et. al., 2011). Knowles et al.’s (1998) conception of andragogy helps to justify training decisions in DFS, which views “teachers as adult learners” (Dawson et. al., 2011, p. 316), and takes into account Knowles et al.’s (1998) four guiding principles “1) concept of the learner, 2) role of the learner’s experience, 3) readiness to learn, and 4) goal of the learner” (Dawson et. al., 2011, p. 316). Huffaker and West (2008) also cited the principles of andragogy as having guided their decision to use improvisation in the business classroom theorizing it would be an effective delivery strategy for adult learners. The Drama for Schools program presents a professional development program that is “ongoing, intentional and systemic” (Dawson et. al., 2011, p. 319). DFS included a reflective component that aimed to encourage teachers to examine their role in their schools and as agents of change using techniques advocated by Freire (1970) and Augusto Boal (2002).

Dawson et. al., (2011) pose two explicit research questions, “(1) How did teachers conceptualise [sic] the purpose of the Drama for Schools programme [sic]? [and] (2) What effects did Drama for Schools have on the relationship between teachers and students? More specifically, how did participants’ view their students, teaching, and the learning culture of their classroom as a

result of their participation in DFS?” (p. 323). An additional implicit question was also considered: how does DFS “leverage three components of teacher change to influence teacher practice: (1) how teachers see students as learners; (2) what teachers see as their role and identity in the classroom; and (3) implementation of the DFS strategies” (Dawson et. al., 2011, p. 322). Twenty-four in-service teachers from four middle schools participated during the 2007-08 school year (Dawson et. al., 2011). Two data sources, (pre-/post lesson plan evaluations & transcriptions from 2 focus groups) were coded using a grounded theory approach (Dawson et. al., 2011).

Dawson et. al.’s (2011) findings included the following observations: the Drama for Schools professional development program: engages students, allows teachers to hear student voices, pushes comfort zones, encourages teachers to act out information, and creates challenges for those in the *audience* to stay engaged. Teacher perceptions of DFS changed over the year from a way to engage students to an approach to thinking or teaching (Dawson et. al., 2011). Over the course of the training, participants went from initial excitement to concern about challenges of implementation at the mid-way point. Teachers also addressed concerns of pushing comfort zones, classroom management and time management. The end of year provided resolution to some of these concerns. Data from the focus groups showed:

- Teachers noticed students responded well to DFS activities despite challenges of implementation,
- Teachers expressed how time was a major factor for implementation
- Teachers saw an increase use of and value for classroom discussion
- Lesson plans showed changes in teacher identity, more student centered
- DFS changed the way teachers viewed students and students viewed teachers (Dawson et. al., 2011).

Results of Dawson et. al.'s (2011) study showed that teachers saw the DFS program as a means to be able to increase student involvement and interaction in the lessons. The relationship between the teacher and students had changed, empowering both.

DeZutter (2011) focused her research on teacher education. Like Borko and Livingston (1989) she theorized “that teaching is inherently improvisational” (p. 27) but that teacher-educators and teacher education programs do not recognize this or explicitly discuss this in pre-service teacher education programs or texts (DeZutter, 2011). She examined connections between constructivist teaching and improvisation. DeZutter (2011) posited, “teaching improvisationally emphasizes knowledge generation rather than knowledge acquisition” (p. 32). She advocated for “viewing teaching as an improvisational profession” so that teacher educators develop “a body of professional knowledge to support... improvisation” (p. 33). For her research, DeZutter (2011) examined fourteen general-methods teacher education textbooks to see 1) how the text presented constructivism and 2) whether the text mentioned improvisation as a teaching skill and if so, what information was presented. The textbooks were selected from the catalogs of major publishers in the US. Only one textbook, Ornstein and Lasley's (2004) *Strategies for Effective Teaching*, 4<sup>th</sup> Edition, McGraw Hill, mentioned improvisation as part of the teaching process, citing Borko and Livingston's (1989) research. One additional text, mentioned theatrical improvisation as a teaching technique but gave the impression that it is not something used daily (DeZutter, 2011). DeZutter (2011) also examined whether the texts presented improv-like strategies without explicitly using the term *improvisation*. She found some evidence for this but such topics were overshadowed by longer more in-depth sections and more pages devoted to detailed lesson planning and instructional strategies; so much so that beginning teachers were unlikely to see “teacher flexibility,



responsiveness, and in-the-moment revision of plans” (DeZutter, 2011, p. 39) as central to the teaching process. DeZutter (2011) stated:

Most pre-service teachers hold transmissionist views of teaching, in which teaching is seen as a fairly unproblematic matter of transferring information from the mind of the teacher to the mind of the student. This is done chiefly by telling the information to the students. This ‘transmission model’ is linked to the history of western schooling and has been shown to be the dominant ‘folk pedagogy,’ or implicit model of teaching in our culture... Research has also shown that transmissionist beliefs act as a lens through which teacher education students interpret the ideas presented in their courses (pp. 40-41).

DeZutter (2011) advocated for the explicit inclusion of improvisation in new teacher education texts and for its inclusion in pre-service teacher education programs as a means of countering the transmissionist model and promoting constructivist teaching. However, she cited Borko and Livingston’s (1989) research and cautions that improvisation may be tied to experience. Since improvisation was given a relatively minor acknowledgment in pre-service teacher texts, one goal of this dissertation research was to extend DeZutter’s (2010) research and examine whether improvisation skills in pre-service teachers could be fostered with training.

Erickson (1982) was one of the first researchers to identify the improvisational nature of teaching, before even Barrett (1998) and Weick (1998) began to advocate for its use in organizational contexts. Erickson introduced his 1982 research study on classroom discourse with the following introduction:

Talk among teachers and students in lessons-talk that is not only intelligible but situationally appropriate and effective-can be seen as the collective improvisation of meaning and social organization from moment to moment. How this improvisation happens, and what the pedagogical significance of improvisation may be, are the topics of this chapter (Erickson, 1982, p. 153).

By using improvisation as a framework, Erickson (1982) was able to conduct a discourse analysis of classroom interaction for an elementary school mathematics lesson in a bilingual classroom. To categorize types of interaction, Erickson (1982) broke down classroom procedural tasks into two

learning environments, which he characterized as academic and social participation. The “Academic Task Structure” (ATS) he describes as a “patterned set of constraints provided by the logic of sequencing in the subject-matter content of the lesson” (Erickson, 1982, p. 153). The ATS “governs the logical sequencing of instructional ‘moves’ by the teacher and students” (p. 153), and focuses on the academic content of the class. The “Social Participation Structure” (SPS) is the “patterned set of constraints on the allocation of the interactional rights and obligations of various members of the interacting group” (Erickson, 1982, p. 153). The SPS “governs the sequencing and articulation of interaction; it involves multiple dimensions of interactional partnership according to which interactional work is divided up in sets of articulated communicative roles” (p. 153). The SPS involves the social interaction of the class. Erickson (1982) said: “considered as a whole pattern, [the] participation structure can be thought of as the configuration of all the roles of all the partners in an interactional event” (p. 154). Both task structures have four definable aspects. For the Academic Task Structure these included:

- (a) the logic of subject matter sequencing; (b) the information content of the various sequential steps; (c) the ‘meta-content’ cues toward steps and strategies for completing the task; and (d) the physical materials through which tasks and task components are manifested and with which tasks are accomplished. (Erickson, 1982, p. 154).

The Social Participation Structure had a parallel set of features:

- (a) the social gatekeeping of access to people and other information sources during the lesson; (b) the allocation of communicative rights and obligations among the various interactional partners in the event; (c) the sequencing and timing of successive functional ‘slots’ in the interaction; and (d) the simultaneous actions of all those engaged in interaction during the lesson (Erickson, 1982, p. 155).

Erickson’s (1982) research contributed a framework for analyzing and understanding communication in the classroom. Erickson’s (1982) descriptions of learning task environments (ATS and SPS), timing and cultural patterning contributed linguistic structures that could be used to

evaluate “teaching and learning as socialization” (p. 153). As Erickson (1982) said, students’ right answers must fit in both social and academic environments. Erickson (1982) cited prior research on the role of contextual cues in maintaining good communication. Contextual cues have multi-level organizations “of speech and nonverbal behavior, in syntax, lexicon, stylistic register of speech, in speech prosody, in body motion, gaze, postural position, and interpersonal distance” (Erickson, 1982, p. 159). Erickson (1982) cited the work of Hymes (1974) to show how crucial the role of contextualization cues are for communication. “The ability to ‘read’ the signal system of contextualization cues is a crucial aspect of what Hymes (1974) terms communicative competence, that is, contextualization cueing and the inferential processes by which the cues are read are a fundamental requisite for performing communication that is not only intelligible, but appropriate and effective in its use” (p. 159). Erickson (1982) theorized that classroom lessons are on the continuum of speech models between formal ritual and informal spontaneity. As classroom activities lean more towards informal spontaneity, the teacher’s ability to improvise becomes more crucial. Teachers must respond to “contingencies” (Erickson, 1982, p. 169). Erickson’s (1982) exemplified these practices.

In his research study, Erickson (1982) used conversational analysis within a musical framework to examine the communication structure of dual academic (ATS) and social procedural (SPS) knowledge structures in the classroom. The research setting was a bilingual first grade classroom, on the fourth day of school year. The lesson was conducted in Spanish. Erickson (1982) used a qualitative methodology applying discourse and linguistic analysis techniques to analyze the transcripts of the classroom conversational exchanges. For his unit of measurement, Erickson (1982) used what he terms, “educational encounters” (p. 166), similar to a short scene. The classroom observations were transcribed and analyzed for the following properties: *kairos* - strategic use of

time; context; ATS and SPS; explicit and implicit communication; and verbal and nonverbal communication. While Erickson (1982) did not explicitly use the word jazz, he describes the process of classroom lessons as an implicit jazz metaphor. The lesson plan was described as an ideal theme and teacher response to real-time interaction and use of contingencies was described as improvisation on a theme. Erickson (1982) provided examples where teachers and students demonstrated the use of acceptance of offers (*Yes, and...*); and awareness of timing, (with-it-ness). He also showed that teachers and students use communication “channels” (Erickson, 1982, p. 160); and often these channels operate simultaneously with differing goals.

Erickson’s (2011) contribution to Sawyer’s (2011) compilation, *Structure and Improvisation in Creative Teaching* revisited many of his topics from (1982) and showed how classroom structures and scaffolds could present opportunities for improvisation. Erickson’s (1982) research and his (2011) update contributed significant theoretical tools to the analysis of communication in the classroom. His use of the jazz routine as a metaphor for the classroom lesson, showing how teachers perform variations on a theme was seminal; and informed the qualitative analysis of this investigation. Beghetto and Kaufman (2011), Borko and Livingston (1989), Sawyer (2011), and Sassi (2011) all built on Erickson (1982) in later research.

Lobman (2003b, 2006) presented two studies examining teaching and improvisation in early childhood education classrooms. In her research, Lobman (2003b) examined how improvisation helps teachers engage in play activities with students. She states: “improvisation is an activity that can be taught... improvisation, similar to play, creates a low-risk learning environment where people are not afraid of being wrong or seeming stupid” (Lobman, 2003b, p. 141). She examined prior research on play as a developmental activity focusing on Vygotsky’s (1978) Zone of Proximal Development. Lobman’s (2003b) background as an improviser and early childhood education

teacher also allowed her to connect with and expand on Sawyer's (1997) theory that play is a collective activity. She states:

As an early childhood teacher I was aware of the fact that children do not play in isolation. In school they play in environments that are shared with teachers. Early childhood teachers have traditionally been taught to have either a child-centered or a teacher-directed approach to children's play. Child-centered approaches recommend that teachers serve primarily as observers and facilitators of children's play, and urge them to be cautious about entering the play as co-players (Lobman, 2003b, p. 132).

She posited that this dualistic approach is too narrow to fully describe the role of the teacher in children's play in the early childhood education classroom, which leads to the focus of her research as she describes:

My experiences as an improviser and my reading of the recent literature on play as an improvised cultural activity have led me to question this dualistic understanding of the role of the teacher in play-based classrooms. Can the lens of improvisation help us to go beyond the traditional dualisms of child-centered and teacher-directed approaches to find a more relational and creative view of teaching? (Lobman, 2003b, p. 132).

This overarching question led her to examine teacher-child interaction in the classroom and to ask two research questions:

- RQ1: "Do teachers and children collectively create a playful environment in the toddler and preschool classroom? If so, how?" (Lobman, 2003b, p.132).
- RQ2: "Do the teachers improvise with the children? If so, how?" (Lobman, 2003b, p. 132).

Lobman (2003b) used qualitative data analysis methods to examine videotaped observations from two early childhood education classrooms at a university-based preschool. Participants included four full time staff members, (three women and one man). All participants had 5+ years teaching experience. The instructors were students in post-graduate programs at the university. None had prior performance or improvisation experience (Lobman, 2003b). Observations were made in the toddler room-serving children 20-month to 3-years and the preschool room, ages 3-years to 5-years.

The preschool is located in a large metropolitan area, with a diverse racial and ethnic mix of students.

The following categories were established with examples of each: giving and receiving of offers; *Yes, and...*; leadership in play; fantasy and reality; don't negate, create collectively. After examining all the data and the categories, Lobman (2003b) made the following observations about the roll of improvisation in the early childhood classroom. Improvisation was seen in both free-play and teacher-lead play, even though the instructors were not trained improvisers and were not *intentionally* improvising (Lobman, 2003b). Improvisation provided a middle ground between the child-directed play and teacher-directed play dichotomy (Lobman, 2003b). Lobman (2003b) theorized that improvisation could be used to train more responsive teachers.

Lobman's (2006) follow-up research examined "the quality of children's preschool experiences... [and]...their interactions with teachers and caregivers" (p. 454). Researchers are beginning to "focus specifically on the nature and the quality of the interactions that occur between teachers' and children in early childhood classrooms" (Lobman, 2006, p. 454). This emerging research has begun to identify characteristics of good teacher-child interaction; such as teacher elaboration, participation in activities, sensitivity, and a child-centered focus. The term "responsiveness" (p. 456) has emerged from this prior research to describe positive teacher-child interaction. Lobman (2006) provided a definition stating: "responsive teachers are those who pick up on children's cues and who find ways to extend and enhance what children are doing, rather than limiting or redirecting their activity" (p. 456). Prior research according to Lobman (2006) established a link between responsive teaching and increased opportunities for learning and development, and child outcomes such as better social skills, language development and cognitive reasoning. Additionally this research showed that negative teacher-child interactions resulted in less student

engagement, and that neutral interaction also resulted in less complex cognitive engagement and social interaction (Lobman, 2006). The one criticism that Lobman (2006) offered about the existing teacher-child interaction research was that it was primarily quantitative in nature and is devoid of context, lacking the detail to describe effective moment-to-moment teacher-child interactions. Her research used qualitative methods examining an in-depth case study to help extend the teach-child interaction research.

She used improvisation as “a lens for viewing teacher-child interactions” (Lobman, 2006, p. 456). Lobman (2006) posited that the relational nature of improvisation offers “a potential lens for seeing and describing teaching interactions and not just the behaviors of teachers themselves” (p. 457). According to Lobman (2006) improvisation techniques such as collective behavior, “Yes, and,” “don’t negate,” and the giving and receiving of offers, “resemble the characteristics of responsive early childhood teaching” (p. 457). To guide her research she posed two research questions:

- RQ1. “Can the principles of theatrical improvisation (improv) be used as an analytic tool to examine the relational activity going on between a teacher and the children in an early childhood classroom?” (Lobman, 2006, p. 458).
- RQ2. Does the lens of improv have the potential to add to the current understanding of teacher–child interactions?” (Lobman, 2006, p. 458).

The research site was a play-centered university daycare. The teacher observed for this study was a graduate student working at the university preschool who taught preschool for six years. The study was designed to allow the researcher to videotape the teacher interacting with students.

Observations took place for two hours for sixteen weeks (Lobman, 2006). Lobman (2006) conducted two semi-structured interviews with the research subject prior to- and after-the classroom observation period.

Results showed eighty-one of the ninety-six teacher-child interactions coded were responsive. Lobman (2006) provided an example of each teacher-child exchange coded as an improv characteristic. She analyzed each exchange as if it were a theater scene and the teacher and students improv players. She posited the benefits of doing this were:

When teacher-child interactions are viewed relationally, we are able to see the complexity of early childhood teaching. Improv analysis offered a nuanced picture of what early childhood teachers are doing in practice. The data presented would suggest that improv could provide a new way of understanding at least three teaching activities: leading, redirecting, and listening (Lobman, 2006, p. 468).

Lobman's (2006) research provided a solid structural design for examining the role of improvisation in teaching. Her (2006) study in particular informed the qualitative data analysis methods adopted for this dissertation research. She also established that teachers improvise in the classroom, even when they do not have formal training in improvisation (Lobman, 2003b, 2006).

The qualitative research studies discussed below contribute much to the understanding of how improvisation could be used in educational environments. These articles were included in this section due to the limitations of their research designs or the condensed nature of the written report of their findings. A few were from Sawyer's (2011) collection, *Structure and Improvisation in Teaching*, directed towards a mainstream audience. Many included only implicit research questions. They might have used qualitative methods that focused on anecdotal material or limited examples or their methods might not have used well-defined data collection and analysis methods. This did not necessarily minimize their contribution to the examination of the construct, or to the body of literature on improvisation in education since many of the authors are well-respected contributors in their field. However, because this literature review was being conducted as part of dissertation research, investigations that had explicit research questions and well-established qualitative methods including a description of research setting, participant demographics, and data collection and analysis



procedures were emphasized. The observations made in these articles corroborate previously reviewed research showing how improvisation fosters constructivist teaching, and addresses the issue of the interplay of structure and adaptation, *in-flight* decision making and positive teacher-child interaction. Burnard (2011) addressed one unique caution: that of potential resistance to change for in-service teachers asked to use more constructivist methods. Cawthorn and Dawson (2009) and Dawson et. al., (2011) touch on this in their Drama for Schools evaluations, but Burnard's (2011) interview data was much more vivid.

Classroom chaos is a big fear for novice teachers (Beghetto & Kaufman, 2011). Beghetto and Kaufman (2011) examined the tensions between teachers who want to be creative with students but fear fostering classroom chaos instead. They stated: “no matter how much planning goes into teaching a particular lesson, anyone who has taught will quickly admit that there is always a gap between the curriculum-as-planned and the curriculum-as-lived” (Beghetto & Kaufman, 2011, pp. 94-95). To close the gap, they suggested applying the *disciplined improvisation* technique for which Sawyer advocated (2004b). In an effort to fully explain this seeming paradox, they cited musician Paul Berliner (1994)

[T]he popular definitions of improvisation that emphasize only its spontaneous, intuitive nature – characterizing it as the “making of something out of nothing” – are astonishingly incomplete. This simplistic understanding of improvisation belies the discipline and experience on which improvisers depend, and it obscures the actual practices and processes that engage them. Improvisation depends, in fact, on thinkers having absorbed a broad base of musical knowledge, including myriad conventions that contribute to formulating ideas logically, cogently, and expressively (p. 492).

Their research used anecdotes and examples to show what disciplined improvisation looked like and how it could be planned for in lessons. They theorized that teachers needed to be both able to respond to the unexpected in teaching, and also to plan for such opportunities to occur. One such example of a teacher using disciplined improvisation, is Randy the expert fifth grade teacher, from

Borko and Livingston's (1989) study. One element of disciplined improvisation is finding the right balance between criticism and encouragement (Beghetto & Kaufman, 2011). Beghetto and Kaufman (2011) stated that creating opportunities for fluid teaching required planning and a good understanding of context and the student population. They also examined the role of intrinsic and extrinsic motivators in participation (Beghetto & Kaufman, 2011).

Burnard (2011) examined the tension between “the accountability agenda and the creativity agenda” (p. 51) in school reform. She described, “teaching for creativity’...[as] creating a positive learning environment in which students [could] take risks, engage in imaginative activity, and do things differently” (p. 51). Her research described The Creative Partnership program that brings visiting arts, music and drama professionals into classrooms in England for an artist-teacher partnership. She described prior research examining the benefits of teacher-artist partnerships for students, and examined some of the benefits and tensions that emerge in such partnerships from competing pedagogical/aesthetic goals, but lamented the limited research on how teachers benefit from such partnerships. Her research used improvisation as a lens to examine interview data from a small set of teacher-artist partnerships. The first set of interviews examined the relationship between “Dorothy, a composer with twenty years of experience, and John, a teacher with twenty years of experience. John is the Director of Performing Arts, a music teacher, conductor and arranger” (p. 61). Burnard (2011) characterized Dorothy's description of “the shared space of her pedagogic practice as the *dialogic improvisation of teaching*” [emphasis in the original] (p. 610). Dorothy gave an extended description of how she let her interaction with students be child-centered. Although she did not use the term “constructivist” she described this approach. John on the other hand respected Dorothy's interaction with students and how the students respond to her and he tried to model her approach, however he said:

But it's the giving up control, which I struggle most with. It's like learning to teach all over again...Standing back and just letting the students play and go about their work without jumping in and dictating further instructions of how best to approach or 'the right' way (Burnard, 2011, p. 63).

Burnard (2011) cited prior research suggesting, "that artists share processes of creative thinking in classrooms through an apprenticeship model of teaching, in contrast to the instructionist style that dominates most school classrooms. This observation is similar to the criticisms offered by DeZutter (2011) with her use of the term transmissionist model, and Freire (1970) with his banking model of education. These common concerns form the background environment pushing for more "teacher-proof" curriculums criticized by Sawyer (2004b, p.12) and Berliner (2011).

While the relationship between Dorothy and John was positive, other interviews showed the artist-teacher relationship to have more tension, specifically in classrooms where teachers and students were used to less ambiguity, more scripting and well-established performance criteria. One teacher who characterized "her own practice to 'a fully orchestrated score'" (p. 64) thought that the artist wasted class time with meaningless, emotionally charged discussions (Burnard, 2011). She felt that the artist did not understand that classrooms and curriculums do not have the "freedom to let go" (p. 64); did not like feeling put on the spot herself or for students and felt like students struggled with projects that did not provide well-defined performance outcomes (Burnard, 2011). For this pairing the partnership was challenging (Burnard, 2011). Many of the partners interviewed discussed the challenges of collaborating together (Burnard, 2011). Artists and teachers described their work processes and goals differently (Burnard, 2011). However most of the teacher interviews showed the teachers learning from the creative professionals and making changes in their practice, although some of these schema shifts occurred more willingly than others (Burnard, 2011). Burnard (2011) showed that the change in teachers' practice could be characterized as improvisatory and that improvisation is a good lens for examining the shift in teacher practice. Research showed that the

challenges with collaboration in educational environments were not limited to teacher-artist partnerships; the support resource personnel serving ESE students often collaborate with general education teachers in inclusive classrooms and might have competing philosophies or goals (Hines & Hines, 2010). Finding ways to foster productive collaboration and team teaching is crucial to the success of students in these classrooms (Hines & Hines, 2010; Olson et al. 2008); improvisation offers one potential tool to make this happen (Hines & Hines, 2010).

Burnard (2011); Dawson et. al. (2011); and Lobman (2011) all focused their research on in-service teachers exposed to improvisation or improvisation-like experiences for professional development or as teaching partnerships. While some in-service teachers were receptive to the new techniques, others shared reservations about giving up control. Improvisation training designed to change teacher behavior, as with change in self-efficacy, might be more likely with novices or pre-service teachers. However, Borko and Livingston (1989) presented convincing evidence showing experienced teachers improvise more, although they may or may not embrace constructivist-teaching practices.

In addition to Anderson's (2008) research specifically examining using improvisation training for professional development, Lewis (2007) a trained improviser and organizational consultant, conducted action research on improvisational training for teams as part of his master's thesis. Lewis (2007) described improvisation as: trust, spontaneity, accepting offers, listening and awareness and storytelling (Lewis, 2007); characteristics that were very similar to other theorists and to the definition presented in this research. He described teams as complex, dynamic systems (Lewis, 2007). Lewis (2007) asked the following research question: "How does improvisation training affect an organizational team?" (p. 40). Participants included six members of the Banff Centre's twelve-person development team: the director, a manager, three specialists, and one assistant. The training

included a two-hour improvisation training session, covering six improvisation games, with debriefing after each game. The research used an “ethnographic action research methodology” (Lewis, 2007, p.3) to collect and examine the data. Lewis (2007) used progressive coding to analyze and code the interview transcripts, categorizing them into three themes of: “team social processes... communication, bonding and trust” (p. 40). Lewis (2007) found that debriefing sessions after the games led to increased participant awareness of concepts in the training (although participants did not share this perception). Thematic data analysis showed that improvisation training: increased team bonding; promoted changes in communication style, more communication about process (meta-level); caused awareness of team issues; “Improv interventions work by generating individual and group awareness” (p. 57); had minimal affect on trust; and the debriefing process was not seen as valuable by participants. One recommendation Lewis (2007) made to improve the research was the need for multiple training sessions. Limitations also included no baseline or pre-training interviews to examine perceptions of teamwork prior to the training and the small overall sample size.

Sassi’s (2011) research addressed two of the paradoxes, Sawyer (2011) discussed in his introduction to his collection, *Structure and Improvisation in Creative Teaching*, the teaching paradox and the curriculum paradox. The teaching paradox highlighted the degree of control in the classroom, between chaos and tight orchestration; and the curriculum paradox examined the struggle between scripted curriculum and “responding to students’ ideas and curiosities” (Sassi, 2011, p. 209). Unlike Burnard’s (2011) research which provided a description of an overly controlling teacher, Sassi (2011) provided an example of an overly spontaneous teacher, who “might jettison plans for revisiting multiplication strategies because a student brought in a new book, or might allow students to discuss whether or not a thumb is a finger for a whole lesson that was initially intended to explore making

groups of five” (Sassi, 2011, p. 210). While advocating for improvisation in teaching, she cautioned: “improvisation should not devolve into chaotic, unfocused, or substantially weak classroom practice. However... a too rigid classroom does not encourage independent thinking and creativity” (Sassi, 2011, p. 210). She advocated for achieving a balance between the two.

Her research evaluated the implementation of a scripted curriculum called *Making Meaning: Strategies That Build Comprehension and Community* into an existing model called *Reader’s Workshop* in the Boston Public Schools in 2004 (Sassi, 2011). The *Reader’s Workshop* model was designed to “foster student engagement and independent learning (Sassi, 2011). The workshop has a four-part structure: 1) a “mini-lesson” during which the teacher presents or models a teaching objective... 2) independent reading time” (p. 216), 3) small group instruction with the teacher and “4) whole group sharing” (Sassi, 2011, p. 216). The *Reader’s Workshop* is a framework for organizing reading instruction that fits well with constructivist approaches as well as Sawyer’s (2004b) and Beghetto and Kaufman’s (2011) notion of disciplined improvisation (Sassi, 2011). The problem is that not all teachers were capable of selecting and sequencing the specific reading instruction presented in part one, the mini-lesson. The Boston Public Schools sought to evaluate the possibility of using *Making Meaning* for these mini lessons. *Making Meaning* is a scripted reading curriculum as Sassi (2011) explains: “1) It is developmental; 2) It incorporates a standardized lesson format; 3) Each lesson entails step-by-step teaching instructions, including teacher questions and other prompts” (p. 217). Sassi (2011) provided specific curricular details of the *Making Meaning* program and then provided several classroom descriptions showing how teachers implemented portions of it into the *Reader’s Workshop*. Data analyzed included classroom observations/transcripts, and principal and teacher interviews as well as the content of the *Making Meaning* program. From the classroom observations she analyzed the degree to which teachers followed the scripting or improvised; and if they

improvised, why? She also looked for places where the teachers should have been more responsive to students but may have focused more on the script and why (Sassi, 2011). Sassi (2011) showed that teachers were able to move between the scripted prompts and guided curriculum and open-ended dialogue with students. The scripted prompts held promise “for being starting points for a more substantive discussion” (Sassi, 2011, p. 224). The *Making Meaning* program allows disciplined improvisation by keeping:

The focus on a particular component skill of reading comprehension...the teacher was able to employ both the questions and the cooperative structure of think-pair-share to keep the students focused on identifying important ideas in the text while giving them some room to explore this concept on their own, with their partner, and with the whole class. This feature may not seem like it would necessarily support improvisation but it can help by providing intellectual channels that maintain attention to the core intellectual idea (Sassi, 2011, pp. 224-225).

Sassi (2011) showed how a carefully crafted curriculum could allow for the right balance of structure and improvisation. The *Making Meaning* program from this example, while scripted, still allowed for teacher and student input; and it was situated in a larger constructivist framework allowing for independent reading and student choice. It is important to keep in mind that many scripted programs do not offer this flexibility (Sassi, 2011). One additional caution noted in some of Sassi's (2011) examples is that teachers new to the *Making Meaning* program focused more on following the scripts and often missed important student cues or opportunities to improvise and generate discussion. Sassi (2011) recommended professional development, coaching, role-playing and experience with the curriculum to counter these problems.

Along with Erickson (1982), Sassi and Goldsmith (1995) provided some early evidence of improvisation in teaching. They conducted a qualitative analysis of how teacher educators at a summer teacher-training institute for inquiry-based mathematics used improvisation-like techniques in an inquiry-based activity called Starfish (Sassi & Goldsmith, 1995). The Starfish activity presented

a playworld where teachers could investigate the properties of place value, simple arithmetic and number systems. The activity helped teacher educators understand the difficulties small children have with the base-10 system and develop empathy (Sassi & Goldsmith, 1995). The math teachers (students) were placed into investigative groups of three to five people and had to come up with a novel place value system given the symbols A, B, C, D and 0 and a set of blocks (Sassi & Goldsmith, 1995). The researchers asked the following implicit question: What observations about praxis emerged from the elementary teachers' interaction with the Starfish project? Data analysis proceeded from the institute facilitators' notes, student responses and problem solutions and the results of a facilitator debriefing at the end of the institute (Sassi & Goldsmith, 1995).

Sassi and Goldsmith (1995) were able to identify four recurrent themes characterizing “improvisational practice: 1) the structure of the activity; 2) planning and preparing that is both reflective and anticipatory 3) attentiveness and responsiveness in the moment and 4) understanding of the content itself” (p.3). The structure of the activity allowed for deep exploration; the emergence of a solution from collaboration; and differing results based on choice (Sassi & Goldsmith, 1995). The tightly planned activity allowed for responses to “unfamiliar territory” (Sassi & Goldsmith, 1995, p. 5); forced participants to anticipate the next step; and allowed for “families of responses” (Sassi & Goldsmith, 1995, p. 6). The third theme of attentiveness allowed for listening; responsiveness to contingencies; participation of a range of abilities; the ability to follow lines of reasoning and to question and redirect. The fourth theme of understanding the material or content area expertise allowed for demonstration of deep flexible understanding of content, connections and mathematical fluency. Research suggests that providing such interactive mastery experiences for adults allows them to acquire expertise (Anderson, 2008; Bandura, 1997); and also encourages them to implement such strategies in the classroom (Dawson et al., 2011; Lobman, 2011)



Sassi and Goldsmith (1995), Borko and Livingston (1989) and Erickson (1982) evaluated the role of improvisation in the mathematics classroom. The inspiration for this research was also the potential improvisation offered for teacher training in the mathematics classroom (see Appendix G – Pilot Studies).

Similar to other researchers, (DeZutter, 2011; Sawyer 2004a, 2004b, 2011) Sassi and Goldsmith (1995) also saw the value improvisation offers for fostering constructivist-teaching environments. They cited the need for “conceptual frameworks that preserve rather than collapse the complexity of attending to the particularities of individual classrooms” (Sassi & Goldsmith, 1995, p. 3), and theorized that improvisation could be one such conceptual framework.

Shem-Tov (2011) produced the only prior participant-based research focused on pre-service teachers. They conducted a case study of a third year “teacher educator in the theater-dance educators’ program of the Dance Arts School in the Kibbutzim College of Education, Tel Aviv, Israel” (p. 104). The program emphasized the use of narrative through body movement. Data was collected through classroom observation of the pre-service teacher. The data description and analysis was qualitative through the lens of improvisation, using the theoretical frameworks of aesthetics and theater knowledge. The classroom location was special to this school; a drama class in a special circular theater room, open, with no furniture except a round bench in the back of the room. Shem-Tov (2011) asked an implicit research question: Is it possible to develop a teacher's reflective expertise through improvisation?

Shem-Tov (2011) situated her study in prior teacher education research. Much like this research, she discussed the challenge of “training educators.... to contend with surprising and unexpected situations” (p. 103) in the classroom (Shem-Tov, 2011). She described how classroom management and teachable moments were unexpected. Developing teacher reflective experience was

also important for educators. Although it appeared that improvisation is a theater technique, she cited Eliot Eisner's theory that aesthetics are a way of knowing, to advocate for linking improvisation and education. Shem-Tov (2011) referred to how Schonmann (2005) developed Eisner's concept of aesthetics and connects theater to teacher training examining "three theatrical concepts - conventions, improvisation, and catharsis – and their application to teaching" (Shem-Tov, 2011, p. 104). Schonmann (2005) defines improvisation "as a dialectical process between spontaneity and self-control" (Shem-Tov, 2011, p. 104). Building on prior research, Shem-Tov (2011) described improvisation as "the ability to respond spontaneously, without planning, to every moment as a choice, taking responsibility for changing and stable reality – both internal and external – and the ability to recreate, each time, the relationship between them" (p. 106). She discussed the following elements of improvisation in her research and showed examples of how her pre-service teacher participant used each: adaptation and design, accept-add, don't contradict, concede and accept others' materials, bring complete and specific information (relationships), think and act positively, empathy, blocking (how to avoid it) and sensory awareness (Shem-Tov, 2011).

Results showed how the pre-service teacher used improvisation techniques for classroom management. For example, she used the initial fidgety "offer" of a child classified as problematic to initiate class with movement exercise (Shem-Tov, 2011). The pre-service teacher was able to maintain her overarching lesson plan structure, but adapt each module to current student "offerings." The pre-service teacher practiced "accept-add" (*Yes, and...*) and she showed situational awareness of the student's initial states (empathy), she practiced "don't contradict" to allow student contributions but redirect and defuse if necessary (Shem-Tov, 2011). The pre-service teacher demonstrated she could think on her feet to respond to an unexpected challenge to the lesson by a difficult student redirecting both the individual student and the class, without using direct discipline

(Shem-Tov, 2011). The pre-service teacher was adept at using implicit communications techniques and body language (Shem-Tov, 2011). In Shem-Tov's (2011) view the pre-service teacher demonstrated good "reflective teaching" (p. 11-112). This pre-service teacher taught drama and had much prior experience with theater and improvisation techniques (Shem-Tov, 2011). Her behavior patterns compared to the case descriptions presented by Borko and Livingston (1989) were much more characteristic of the expert teachers in their study. One possibility for this is her prior improvisation training (Shem-Tov, 2011).

The above review of the literature shows improvisation has strong theoretical support in diverse domains and teaching. Research by Borko and Livingston (1989); Erickson (1982); Lobman (2003b, 2006); Sassi (2011); Sassi and Goldsmith (1995) and Shem-Tov (2011) showed that teachers improvise in their classrooms. Improvisational teaching was also linked to constructivist methods, child-centered teaching and authentic instruction (Beghetto & Kaufman, 2011; Burnard, 2011; Borko & Livingston, 1989; Dawson et. al., 2011; DeZutter, 2011; Erickson, 2011; Sassi & Goldsmith, 1995; Sawyer, 2004a, 2004b, 2011). Borko and Livingston (1989) and Shem-Tov (2011) informed on differences between the practices of novice and expert teachers. Erickson (1982, 2011) and Lobman (2003a, 2006) addressed the communication and interaction similarities between improvisation and teaching. Lobman (2003b, 2006) links improvisation to responsive teaching and positive teacher-child interaction. Additional themes presented were the importance of play in learning (Lobman, 2003a; Sassi & Goldsmith, 1995); the challenges with collaboration (Burnard, 2011; Hines & Hines, 2010); the role of interaction in adult learning (Huffaker & West, 2005; Sassi & Goldsmith, 1995); achieving balance in scripted and improvised performance (Beghetto & Kaufman, 2011; Burnard, 2011; Lobman, 2011; Sassi, 2011); and the benefits of improvisation in professional development programs (Dawson et. al, 2011; Huffaker & West, 2005; Lewis, 2007;

Lobman, 2011; Sassi & Goldsmith, 1995).

Striking a constructive balance between heuristic and algorithmic approaches to teaching are what Berliner (2011), Burnard (2011), Beghetto and Kaufman (2011), Sawyer (2011) and Sassi (2011) speak to in their examination of the role of structure and improvisation in teaching as examined in Sawyer's (2011). This emerging research examined the seeming paradox or tension between the need for accountability, planning, curriculum and scripts in teaching and the complementary need to be able to respond in the moment, recognize and build on *teachable moments*, adapt to student challenges and needs; and keep the educational environment *human*. Burnard (2011), Sawyer (2011), Berliner (2011) and other contributors argued that the pendulum has swung too far in the direction of algorithmic prescriptive teaching and that improvisation provides a lens with which to address the heuristic side of teaching as an art.

If improvisation were found through additional research to be an effective organizational strategy for teaching, then how could theory be translated into practice? Barrett (1998) asked:

Are there ways to socialize a mindset that nurtures spontaneity, creativity, experimentation, and dynamic synchronization in organizations? What practices and structures [could] we implement that might emulate what happens when jazz bands improvise? (pp. 617-618).

Barrett suggested seven strategies for managers that may be useful in the teaching context as well:

- Boost the processing of information during and after actions are implemented
- Cultivate provocative competence: create expansive promises and incremental disruptions as occasions for stretching out into unfamiliar territory
- Ensure that everyone has a chance to solo from time to time
- Cultivate comping (supporting) behaviors
- Create organizational designs that produce redundant information

- Create organizational climates that value errors as a source for learning
- Cultivate serious play: too much control inhibits the flow (pp. 618-619).

These contexts were very similar to ideal conditions that foster learning in constructivist classrooms (Sawyer, 2004a).

### Summary

Chapter two established the background environment for this study examining issues of teacher training and retention and the mediating role that self-efficacy plays in both teacher and student outcomes. The constructs of self-efficacy and improvisation were defined and described. Prior research for both self-efficacy and improvisation was examined and connected where possible. Chapter two presented prior research that showed current teacher training methods leave performance gaps for novice teachers, which can result in attrition from the profession. Factors such as experience, affect and training were linked to higher teacher self-efficacy, which research shows correlated with longevity. Prior research on the use of improvisation training as a “sand box” in which to gain vicarious experience and develop empathy, improve communication skills and possibly increase self-efficacy was presented. High teacher self-efficacy among other characteristics was linked to more positive teacher-child relationships, which overarch teacher-child interaction and correlate with positive affective and cognitive student outcomes.

Chapter three discusses the proposed methodology for the research study, examining the theoretical framework, research participants, setting and the relevant protocols.

## CHAPTER 3 METHODOLOGY

### Introduction

This research investigated whether training in improvisational acting (improv) could be used to assist pre-service teachers in acquiring the complex communication and interaction skills necessary to influence teacher-child interaction in the classroom; and if such training affected teacher self-efficacy and self-efficacy for improvisation skills.

This chapter details the methodology of the research and training design, including: the setting and participants, instrumentation, variables, interview and survey data collection procedures, reliability, and proposed data analysis. It also presents the descriptive statistics for the participant sample.

### Review of Research Questions

The purpose of this study was to determine if training in improvisation influences the perceived self-efficacy of pre-service teachers for improvisation communications and teaching. The study also examined qualitative data generated by the pre-service teacher participants to determine their perception of the improvisation training and their intentions (if any) for implementation.

The research questions were:

1. Did pre-service teachers who participated in improvisation training show a change in perception of self-efficacy for improvisation skills (i.e. communication and interaction skills identified as common to both improvisation and teaching) as measured by the Communication Skills Assessment Inventory, (CSAI)? This self-report measure was researcher generated to evaluate the effectiveness of the training. It included:

a) Self-efficacy Questions for training topics

b) Knowledge Questions about the training topics

2. Did pre-service teachers who participated in improvisation training show a change in perceived self-efficacy for teaching as measured by the Tschannen-Moran and Hoy's (2001) Teacher Sense of Efficacy Scale (TSES) long form?

3. How did the pre-service teacher participants evaluate the improv training, to the extent that they used the improvisation skills in their interaction with students during their service-learning project?

### Research Design

The researcher conducted an in-depth review of the literature for methodology used in similar studies. It was determined that quantitative data findings alone would not present a complete picture of the proposed study. Qualitative methodology, in the form of pre-service teacher classroom artifacts (i.e. interviews, reflections, projects, final exam data) helped to triangulate the data to answer the research question addressing the perceived value of the training and intended implementation (i.e. outcome expectancies); and to corroborate pre-service teachers' reports of self-efficacy.

This study utilized a mixed-methods research design, based on design and development research methods (Ellis & Levy, 2010; Richey & Klein, 2007; Patton, 1987). Self-report survey data was examined using statistical analysis for the self-efficacy constructs. The self-efficacy for improvisation skills instrument was used to validate the training. To triangulate the data and provide additional verification of the training's effectiveness qualitative data from pre-service teachers' classroom artifacts was collected, coded and categorized using qualitative methods (Glesne, 2006; Patton, 1987; Miles & Huberman, 1994; Merriam, 1992).

A mixed methods approach, using both self-report surveys and student artifacts, was used for the data in this study. A mixed method design was chosen to better understand the relationships and the effect that the improvisation training had on the pre-service teachers. Quinn Patton (1987) emphasizes: “Using more than one data collection approach permits the evaluator to combine strengths and correct some of the deficiencies of any one source of data” (p. 60). In research this is called triangulation. Patton (1987) states: “triangulated evaluation designs are aimed at increasing the strength and rigor of an evaluation” (p. 60). Denzin (1978) advocates for triangulation stating:

No single method ever adequately solves the problem of rival causal factors... Because each method reveals different aspects of empirical reality, multiple methods of observations must be employed. This is termed triangulation. I now offer... the principle that multiple methods should be used in every investigation (Denzin, 1978, p. 28).

Denzin identifies four types of triangulation. The type employed in this research was methodological triangulation where multiple methods are used to study a single problem.

The qualitative artifacts were used to support the survey data in this research because a quantitative instrument does not yet exist to measure the communication and interaction aspects of improvisation. They were also used as a means of evaluating the relationship between self-efficacy measured by self-report surveys and the pre-service teachers’ intentions to implement the skills presented in the training (outcome expectancies).

Quinn Patton (1987) supported the use of qualitative data in situations where alternative methods had not been developed stating: “another reason for gathering qualitative data in an evaluation is that for particular variables of interest no acceptable, valid, and reliable quantitative measures exist... where rigorous measuring instruments have not been carefully developed, it is often more appropriate to gather descriptive information” (p. 36-37). He continued citing as an example the difficulties measuring creativity. While Vera and Crossan (2005) developed a reliable ( $\alpha = .91$ ) seven-item measure of improvisation for their research study of 348 city workers in 50



teams looking at the relationship between improvisation and innovative performance on teams, this instrument was not applicable in the context of this research, since the instrument focused on creativity and spontaneity, rather than on the communication and interaction elements of improvisation.

Additionally, for this study self-report surveys were used to evaluate perceived self-efficacy for improvisation skills and the participants' valuation of the training and intended use of improvisation skills. Using both methods to triangulate the data helped to address potential concerns about the validity of the training.

The researcher's background in instructional design informed the choice of methodology. Although this research did not evaluate a specific technology, it did evaluate improvisation as the instructional delivery system. Richey and Klein (2007) explained that design and development research could be used to evaluate a new process. Since the training used improvisation as a novel delivery system to provide affective and communication instruction for pre-service teachers, the researcher also drew on the foundations of design and development research commonly used in Instructional Technology for designing and evaluating instruction and training.

Richey and Klein (2007) adapted design science research for educational aims. They defined this type of research as: "the systematic study of design, development and evaluation processes with the aim of establishing an empirical basis for the creation of instructional and non-instructional products" (p. xv). As in all research, design and development research starts by identifying a problem. Ellis and Levy (2010) stated that one way in which a problem might surface in design and development research is when "an unresolved condition in one domain might be similar to a problem that a given product, tool, or model has successfully addressed in a different but in some fashion similar domain, creating the problem that we don't know how to adapt or instantiate the

solution to this new situation” (p.112). This characterized the potential application of improvisation training to teacher training. Improvisation had been used successfully for real-time communications training in several other domains, such as negotiator training and business innovation as well as those it is typically associated with such as theater, music and comedy. There were several underlying communications commonalities between the two domains of improvisation and teaching (see Appendix D for details) and the research problem became one of adapting the model of improvisation or the processes used in improvisation training for the teaching domain; and then testing its effectiveness.

The general Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model from instructional design also informed how the researcher thought about creating and evaluating the training. The analysis part involved becoming aware of the communications needs of pre-service teachers. It involved recognizing commonalities between improvisation classes and the communication skills used in teaching; and designing and developing a training that would target those needs. Two design models informed the design and development of the improvisation training, Backwards Design and the ADDIE model. Additional information on the process for designing and developing the training is found in Appendix E. Since instructional design methods informed the structure of the research design, the design, development and evaluation of the training were important elements to the research. This research study completed the final two parts of the ADDIE model: implementation and evaluation. According to Ellis and Levy, (2010) surveys, questionnaires, interviews and/or observations are often used as the evaluation method of choice in design and development research. Because this research examined pre-service teacher outcomes from the training, this research used methods from design and development research. This research design was based on guidelines in Patton’s (1987) book, *How to Use Qualitative Methods in Evaluation*,

which established how qualitative and mixed methods approaches could be used for evaluation. In addition to measuring changes in pre-service teachers' self-efficacy for teaching, two main methods were used to evaluate the effectiveness of the training, self-report surveys with quantitative analysis and qualitative analysis of pre-service teacher artifacts from the methods class in which the training was presented. For the quantitative analysis of the training, the researcher designed the instrument called the Communication Skills Assessment Inventory, (CSAI) to evaluate the improvisation skills being presented in the training.

### Participants

Twenty-three undergraduate university students enrolled in a pre-service teacher preparation course called Methods for Academic Skills for Exceptional Students: Teaching Strategies, Instructional Materials, and Monitoring Techniques for Children and Adolescents with Special Needs at a large southeastern state university. Eighteen from the class consented to participate in the research. Two additional students from other methods courses also completing a service-learning project that involved interaction with students were recruited to increase the sample size; and one student from the principle group dropped for medical reasons. The final research group consisted of 19 active participants who completed the surveys and permitted collection of coursework artifacts. Eleven of these participants contributed videotaped interviews to the collected data.

Pre-service teachers in these courses were from three majors: Elementary Education, Early Childhood Education and Exceptional Education. Two of the university pre-service teacher participants in the class had 504 accommodations for issues related to memory and focus. While the course instructor shared this information with the researcher; she did not disclose who the students were.

The methods course that incorporated the training was a mixed-mode course where most of the instruction was completed online but the course had required campus-meeting dates. The researcher arranged with the instructor to use the campus meeting dates to conduct the improvisation training with students as part of a service-learning project for the course.

Demographic data was collected from the university pre-service participants. The demographic data from the university pre-service students helped to establish the relative uniformity of the population. Participants were surveyed about previous theater and improvisation training history. Due to the small sample size, additional demographic information was collected from the participants to verify that the underlying population represented a normal distribution of the data. Although not reported in the table, the population was racially/ethnically diverse.

Table 1

*Descriptive Statistics for University Pre-service Participants (N = 19)*

Question	Responses
Previous classes with instructors part of this research (Q1)	2 out of 19, yes
Formal theater or actor training (Q2)	2 out of 19, yes
Prior experience with improvisation (Q3)	3 out of 19, yes
Major of study (Q4)	
Exceptional Ed	15
Early Childhood	2
Elementary Ed	2
Interdisciplinary Studies	1
Class is requirement or elective (Q5)	15 out of 19, requirement
Gender (Q6)	18 out of 19, female
Age Range (Q7)	
18-21	8
22-25	5
26-29	3
30-33	2
34-37	1
Class standing (Q8)	17 Junior; 1 Senior; 1 n/a
Previous experience in classrooms (Q9)	17 out of 19, yes

Demographic data was used to determine to what extent participants may have had prior exposure to explicit communication and interaction instruction like that presented in the improvisation training. Two participants indicated that they had both theater and improvisation training prior to entering the class. One participant had exposure to improvisation training prior to enrolling in the class. Participants' responses were reported but were edited to remove identifying data.

Table 2

*University Pre-Service Teacher Responses for Prior Teaching Experience (N=19)*

Participant	Prior Teaching Experience (Q9)	Detailed Response
1	Yes	1 year in a kindergarten classroom, Tutored student one-on-one
2	Yes	1year educator at local Science Center, ages 5-15
3	No	I have had interactions with children varied in ages 8-13. I participated in Junior Achievement for 3rd grade and I taught the entire class a lesson each week for 5 weeks. Another one-on-one interaction was at a charter school for 15 hours helping students w/lunch, changing clothes/restroom duties, and also stretches-plus classroom activities other experience includes reading aloud to student Pk-5th grade and being a classroom assistant to 5 M grades for 15 hours
4	No	I do have experience with children with special needs. I have worked as a counselor at a summer camp for kids with special needs for the past 7 summers.
5	Yes	Fall of 2011, I worked in a 4th grade classroom for Junior Achievement
6	Yes	9 years working in Preschool ( as teacher) 18months-6 year olds
7	Yes	I've done other service-learning for other classes. Last semester, I was in a classroom or children w/Autism, Kindergarten. I did different centers with them. I'm doing J.A. this semester. I teach a lesson every week, first grade class.
8	Yes	Girl scouts, Junior Achievement
9	Yes	Volunteered in elementary school with kindergarten children
10	Yes	Since 2008 I have worked as an After Care Leader in the classroom setting in addition to service-learning. I have worked with students ranging from K-5 High School. I was responsible for creating new enrichment activities, some of which included play.
11	Yes	I have done numerous service-learning hours and have already completed Junior Achievement with a 2nd grade classroom. Also spent time in a 3rd grade co-inclusion class at a local elementary
12	Yes	I've volunteered in multiple classrooms over several years. Most recently, I've worked in a VPK classroom at a local charter school, a first grade classroom, a third grade classroom, and a fifth grade classroom. During these times I've mentioned students and observed teachers
13	Yes	3 months, 2nd graders JA (taught social studies lesson); 1 year- service-learning hours grade 3 (tutor students, help w/classroom management, grade papers); 2 years- summer camp day learning camp(help students with math, reading, and included games, and fun.)
14	Yes	1-year in a high school resource room ages 15-21, 1-year in a inclusion Bio-class with 4, 16 year old boys with autism, Worked on 3 occasions with a child at give kids the world.

Participant	Prior Teaching Experience (Q9)	Detailed Response
15	Yes	VPK Teacher for 1 year, 2's Assistant Teacher; Service-learning Experience at several local elementary schools; substitute Teacher 9/12-Present K-12
16	Yes	I've done observation hours, and I teach my Sunday school classroom and a preschool classroom.
17	Yes	I have had several courses over the past 3 years that have required service-learning and volunteer time in the classroom. I worked with a self contained classroom with children with autism. I also worked with individual students that were identified as ELL students.
18	Yes	blank
19	Yes	I had service-learning last semester at an elementary school. The teacher had me check lessons, give spelling tests and guide reading.

The researcher collected data on participants' prior teaching experience to account for the role that the tutoring experiences or volunteer work at the charter school might have played in occasioning changes in teacher self-efficacy. Two out of 19 participants indicated that they did not have prior experience working with children in a classroom, however their more detailed explanation indicated that they do have experience interacting with children in instructional settings. One respondent who indicated she did have prior experience did not provide details. Although the one-on-one tutoring sessions might have been novel for the participants, all seem to have come into the class with prior experience interacting with and communicating with children, so the tutoring experience alone was unlikely to account for changes in teacher self-efficacy.

The two students recruited from outside methods classes had recently taken the Methods for Academic Skills for Exceptional Students with the same course instructor who assisted the researcher. Some of the communications techniques delivered as part of the improvisational training had educational counterparts that were part of the course material, such as positive feedback (Olson, et al., 2008).

Participants with prior experience or exposure to improvisation or related areas such as acting or communications techniques might not show as much change as a result of the improvisation training. The researcher took participant background into account with the demographic data to be aware of these variables. Due to the small sample size, all participants completing survey data were used for the statistical analysis.

### Setting

The inclusive school site where pre-service teachers completed their service-learning project to tutor a second or third grade student was a free public charter school that, in addition to regular classroom instruction served special needs children with Cerebral Palsy, Down syndrome, Autism, speech delays, developmental delays, vision and hearing impairments in an inclusive setting. The school included children with and without disabilities through the third grade. Additionally 70 percent of families were at a household income of less than \$30,000 per year. The charter school had a working relationship with the university with which the researcher was affiliated and routinely invited undergraduate and graduate students in to assist in the classrooms, practice teach or volunteer. The pre-service teacher participants worked with students at this site and referenced interaction with these students in their artifacts collected by the researcher for the qualitative analysis. The improvisation training sessions were conducted in the cafeteria at this location.

### Data Collection, Analysis and Interpretation Procedures

Inferential statistical analysis was used to evaluate both surveys that were part of this research. The researcher used a sample of 19 pre-service teachers for data collection for the two self-efficacy surveys; 1) self-efficacy for communication and interaction skills presented in the training (CSAI) and 2) self-efficacy for teaching (TSES). The researcher intended to sample at least 30 participants to allow for parametric statistical analysis using a matched t-test (Pagano, 1994). Since



the number of participants fell below 30 participants, the researcher confirmed that the data reflected an underlying normal distribution and confirmed the appropriateness of the matched pair t-test for data collected for this study with a statistician at the university. Had the results violated tests of normalcy, the researcher was prepared to use the non-parametric complement to the t-test, the Mann-Whitney U (Pagano, 1994).

All participating pre-service teachers in the undergraduate teacher education course were offered the opportunity to take a survey designed to measure self-efficacy levels for improvisation skills and knowledge of improvisation skills (CSAI) at two points in the course of the research: 1) prior to any participants completing the training; and 2) at most one class period after the training. A matched pairs t-test was used to evaluate changes in perceived self-efficacy and knowledge for skills common to both teaching and improvisation presented in the training. The data collected with the CSAI instrument met the criteria for assumptions of normalcy so a matched pairs t-test was used to for statistical analysis. A Consent to Participate agreement was included with the survey.

All participating pre-service teachers in the course had the opportunity to take Tschannen-Moran and Hoy's (2001) Teacher Sense of Efficacy Scale (TSES) long form survey to assess teacher self-efficacy for teaching at two points in the course of the semester: 1) prior to any participants completing the training; and 2) at most one class period after the training. A matched pairs t-test was used to evaluate changes in pre-service teachers' perceived self-efficacy for teaching. The appropriate statistical test was chosen based on data collection showing that assumptions of normalcy were met. A Consent to Participate agreement was included with the survey.

The surveys were administered to all members of the teacher education class. However only those indicating consent to participate in the study were included in the research. This was done to minimize the disruption of the learning environment for the class. Participants were informed that it

was their choice to participate in the research and that a decision to refrain would not have any bearing on their class grades.

To collect the initial survey data and obtain informed consent from the pre-service teachers, the researcher met with the university class participants during their second campus session. The researcher provided a brief overview of the research and passed out folders containing the informed consent summary, the survey packet, and a pen.

Permission to use the Tschannen-Moran and Hoy (2001) TSES instrument was obtained prior to using the survey, (see Appendix C).

As part of the consent process for collecting the surveys participants agreed to allow the researcher access to their classroom artifacts (i.e. personal reflections written after each training and tutoring experience with a student, and a copy of their final service-learning project, Teachers In Action (TIA) narrated PowerPoints). An additional IRB protocol was submitted and approved to allow collection of final exam responses. The methods courses participants were enrolled in were part of the required course sequence for students completing a teaching degree in Early Childhood Education, Elementary Education or Special Education. Part of the methods courses requires a service-learning project in which the pre-service teachers work with children in an inclusive classroom setting to provide experiential learning prior to completing their student teaching. During the service-learning project, participants worked with both typically developing children and children receiving exceptional education services. Seven children tutored by the research participants for the service-learning project received exceptional education services. The nature of the disabilities ranged from mild to severe and included children with Autism, Down syndrome, Cerebral Palsy, orthodontic impairment and cognitive disabilities; as well as ADHD. Participants were asked to provide separate consent to allow the researcher to videotape follow-up interviews after the teacher-child interaction

for service-learning. Eleven of the nineteen participants agreed to allow the researcher to complete a video taped interview after their first tutoring session with a child at the charter school prior to the improvisation training. These same eleven participants also consented to be interviewed by the researcher after their second tutoring session with the same child following the improvisation training. The researcher used small discrete hand held video cameras to capture the audio and video for the participant interviews. The eleven interview participants were asked the open-ended question: “Did you use any particular strategies while working with the student? If so, what were they?” Depending on the responses, follow-up questions were asked to clarify details or elicit elaboration.

All nineteen participants allowed the researcher access to written artifacts (i.e. reflections, TIA PowerPoints, final exam questions).

As part of the coursework for the teacher preparation course, study participants participated in improvisation training between their two child tutoring sessions. The training was conducted over the course of three on-campus meeting days over three weeks for a total of approximately six hours during regular course hours. The improvisation training was provided to all class enrollees including the one pre-service teacher who did not grant consent to participate. Methods course students were instructed to keep a written reflection after each training and tutoring experience to assist them with compiling their final service-learning project, the Teachers in Action PPT presentation. They were asked to think about how they could relate the improvisation training to their practice in their written reflections after each improvisation training session, and were asked to describe the interaction they had with their child after each tutoring experience.

The researcher followed Wolcott’s (1994) process of D.A.I. -description, analysis and interpretation, in collecting and processing the observed data. The pre-service teacher interviews

were described by transcribing the audio/videotapes. The audio/videotapes were analyzed using Transana, qualitative data analysis software, that allows for tagging and coding of video documents. The researcher followed Merriam's (1992) suggestions on "what to observe" (p.96-100) to help guide description. Additionally, Miles and Huberman's (1994) sourcebook *Qualitative Data Analysis* was used to guide the analysis of the data. The videotape of each observation was coded and analyzed for categories and/or patterns representative of the communications and interaction skills presented in the improvisation training, as well as other instructional strategies. Transcripts from the second interview looked for self-reports of implementation or application of the training skills/techniques.

Audio-/videotapes of the interviews were used to transcribe and analyze the data. University pre-service teacher participants were given the option to sign a video release form for the researcher to share portions of the tutoring sessions for additional research purposes. Videotape files in which participants did not sign the release form were to be erased and destroyed after the transcriptions were made and checked. However all eleven participants signed the video release form to share interview files. The initial videotaped sessions were conducted over a two-week period as soon as IRB approval was received. Participants being videotaped were presented with their transcripts for review and revision (if necessary).

Pre-service teachers in this course also completed a final reflection on their service-learning experience called Teachers In Action (TIA). This reflection involved writing weekly journal entries or reflections on the training and child tutoring sessions to create a final narrated PowerPoint presentation about their experience with the training and student interaction. The student interaction in the form of the two tutoring sessions constituted the service-learning project, which was a component of the methods course. The final TIA reflections and the weekly reflections for the

nineteen pre-service teachers granting consent to participate in the research study were analyzed to determine for emergent themes related to how the pre-service teachers processed the improvisational training and made sense of it in their practice. Miles and Huberman's (1994) sourcebook *Qualitative Data Analysis* was used to guide the analysis of the data. Participants reviewed transcripts of the interviews and copies of their reflections to establish the credibility of the data.

The researcher had one unexpected challenge collecting the participant data. At least two of the university students were familiar with the charter school students because they had participated in prior service-learning projects at the school. A few other students enjoyed the initial tutoring experience so much that they came back and volunteered for additional hours at the school during the research period. The researcher planned to have a more controlled environment where the university students' interaction with the charter school students was limited to just working with the same student twice before and after the improvisation training. Since the researcher only became aware of this issue during the course of the research, she added the demographic question to the final survey collection to evaluate the university student's prior experience working with students and participating in a school environment so that she could incorporate this information into her analysis and interpretation of the data if she could not control for it.

### Instrumentation

#### *Communication Skills Assessment Inventory (CSAI)*

The researcher generated self-report survey, called the Communication Skills Assessment Inventory (CSAI), was designed to measure pre-service teacher participant's efficacy for and knowledge of communication and interaction skills presented as part of the improvisation training. This instrument measured the pre-service teachers' self-efficacy for specific improvisational skills

tailored to the training. Self-efficacy statements were written using the verbs *can* and *am able to* as suggested by Bandura (1997) in his guidelines for crafting self-efficacy scales. Additionally the items targeted the specific skills covered by the training as suggested by Bandura (1997). The CSAI was mainly used in the context of this research to verify that the improvisation training effected change pre-service teachers' perceptions about using the communication and interaction skills identified as objectives for the training. Items were scored using a 9-point Likert-type scale. An example statement is: *How readily can you establish a relationship with a student you have just met and engage him or her in conversation?* In addition to the self-efficacy questions, additional questions measured participants' knowledge and awareness of the communication and interaction skills introduced in the training to evaluate the extent to which learning occurred as a result of the training. The two types of questions elicited what Anderson, cited in Reigeluth and Moore (1999), classifies as "declarative knowledge and procedural knowledge" acquired as a result of the training (p.54). Items in the Self-efficacy and Content Knowledge sections of the CSAI were summed individually for each section first. Secondly a total score comprised of both sections was calculated for each participant.

Factor analysis on this researcher-generated scale was not calculated due to the limited sample size of the research group. Small sample sizes can lead to error in the identification of factors (Pagano, 1994). Identification of factors within the improvisation training was not a focus of this research study. A copy of the CSAI survey can be found in Appendix B.

### *Teacher Sense of Efficacy Scale (TSES)*

After extensive analysis of existing teacher self-efficacy scales presented in chapter two, the researcher chose to use the Teacher Sense of Efficacy Scale (TSES), formerly called the Ohio State Teacher Efficacy Scale (OSTES) for this study. The TSES was developed and tested by Tschannen-

Moran and Hoy (2001) to address recognized issues in previous self-efficacy scales for teachers. The 24-item long form scale measures three factors, efficacy for student engagement, efficacy for instructional strategies, and efficacy for classroom management. Items are scored on a 9-point Likert-type scale.

To develop the instrument, Tschannen-Moran and Hoy (2001) reviewed the literature on existing scales and examined their strengths and weaknesses. They developed a stronger instrument that could adequately balance the specificity of self-efficacy for tasks related to teaching with practicality and validity (Tschannen-Moran & Hoy, 2001). A focus group of teachers and researchers developed items for the initial survey. These items were tested and refined three times. In the third study which included 410 participants (103 pre-service teachers, 255 in-service teacher and 38 undefined respondents), factor analysis on the 24-item long form identified three factors, and indicated reliabilities of efficacy for student engagement of  $\alpha = .87$ ; efficacy for instructional strategies of  $\alpha = .91$ ; and efficacy for classroom management of  $\alpha = .90$  (Tschannen-Moran & Hoy, 2001). The TSES was further examined in relation to other self-efficacy measures and found to be correlated indicating a measure of construct validity (Tschannen-Moran & Hoy, 2001).

Items for the three individual factors were summed individually first for each factor: efficacy for *instructional strategies*, efficacy for *student engagement*, and efficacy for *classroom management*. Secondly a total score for the scale comprised of the sum of all three factors was calculated for each participant.

### *Variables*

The independent variable for both surveys (CSAI) and (TSES) was time. Pre-service teacher participants' were surveyed two times during the course of the research, once before the improvisational training and once after the training.

There were two sets of dependent variables that correspond to the two surveys being administered. The CSAI was designed to evaluate two subscore variables, one for *improvisation self-efficacy* and one for *knowledge and application* of the material presented in the training. The CSAI survey is located in Appendix B for review. The first subscale score for participant self-efficacy for communication and interaction techniques using the full scale calculated a composite score for items 1 thru 17 divided by seventeen. The second subscale score for participant *knowledge and application* calculated a composite score for items 18 thru 30 divided by thirteen. These subscale scores are called *improvisation self-efficacy (full)* and *knowledge and application (full)* respectively. Due to time limitations in some training sessions, three topics were covered in less overall depth than originally planned (teacher persona, mantra, and physical immediacy). Two reduced subscale scores were added to this instrument after the training concluded to account for the minimized coverage of these three topics. The reduced subscale score for *improvisation self-efficacy (reduced)* removes four under-covered items (mantra, physical immediacy, and two persona items) from the composite calculation, (items 3, 10, 11 and 14); and the reduced subscale score for *knowledge and application (reduced)* removes three under covered items (mantra, physical immediacy and persona) from the composite calculation (items 21, 28 and 30). All together there are four subscale variable scores for the CSAI.

The second set of dependent variables measured responses to Tschannen-Moran and Hoy's (2001) TSES survey for teacher efficacy. The survey has three factors: teacher efficacy for *classroom management, instructional strategies* and *student engagement* measured on a Likert-type scale (1-9). First items within each factor were tallied for a sum of each factor; finally a cumulative score measuring *overall teacher-efficacy* was calculated. This was the sum of the three individual factors. The TSES survey has four dependent variables associated with it.



The researcher conducted several pilot studies of different parts of the research including the training development, instrumentation, and observation protocol in order to fine-tune the current implementation. Details on these pilot studies are available in Appendix G.

### Training Limitations and Considerations for This Research

There were four limitations specifically related to the improvisation training and its implementation in this study. The first involved decisions about the length and breadth of the training. Improvisational theater performers often train several hours a week for years to be able to learn and maintain the skills of their craft. The improvisational training presented in this study focused on a few key skills the researcher theorized were common to both improvisation and teaching. The short duration of the improvisation training may not truly reflect the nature of improvisation training.

The second limitation involved participant's self-awareness of their performance and how it matched up with an ideal. Participants with minimal classroom experience might over-estimate their preparation for teacher-student interaction. Once in the classroom or having been exposed to training ideals, they might re-evaluate themselves and adjust self-efficacy levels accordingly. Pre-service teachers have been shown to indicate higher levels of self-efficacy prior to entering student teaching and first year assignments.

The third limitation involved the small sample size of participants granting consent to participate. The fourth involved awareness of concerns voiced in prior research about self-efficacy measures. One concern associated with measuring self-efficacy is conceptual and involves concern about self-report biases associated with taking surveys or answering questionnaires. According to Bandura (2006) research findings on self-efficacy "show that people's level of motivation, affective

reactions, and performance attainments are the same regardless of whether they do or do not make prior self-efficacy judgments. The non-reactivity of self-efficacy assessment is corroborated for diverse activities... Nor are efficacy judgments influenced by a responding bias to appear socially desirable...”(p. 315). Even so, this research followed Bandura (2006) suggestions for using standard research protocols such as: eliminating personal identifiers using code numbers rather than names, informing participants that responses were confidential and renaming the inventory using an ondescript title to minimize concerns about social evaluation.

The other part of this concern was philosophical and related to questions about whether people are capable of accurately reporting on their own self-knowledge. In this case since self reflection and self-report are built into the concept of self-efficacy itself, this concern as it relates to survey research on self-efficacy is addressed. Participants, especially pre-service teachers might see themselves as being more self-efficacious than their performance will show due to the fact that they have had limited opportunities to perform in a real classroom. This bias is well known (Bandura, 2006; 1997 and Tschannen-Moran & Hoy, 2007) and was taken into account in the research design by measuring change in self-efficacy and by collecting qualitative data from classroom observations to triangulate the data.

The last area of concern related to whether a person’s self-efficacy in a domain is stable or whether it can show increase or decrease as a result of some sort of change such as: experience, learning, environment or passage of time. Hagen et al., (1998), Redmon (2007), and Tschannen-Moran and Hoy (2007) reported that teacher self-efficacy was subject to change over time among novice teachers due to external influences such as training or experience. However research suggested that at a certain point self-efficacy levels off and become more stable or fixed (Bandura, 1997; Cawthorn & Dawson, 2009; Tschannen-Moran & Hoy, 2007). For this reason, Tschannen-

Moran and Hoy (2007) posited that it is important to reach teachers early in their careers during this window of opportunity to provide needed support and professional development before their self-appraisal of ability stabilizes and may be less responsive to intervention.

The self-efficacy scale being used to measure perceived ability for improvisational communication skills designed by the researcher attempted to mitigate concerns about specificity and factor structure by following Bandura's (1997, 2006) and Tchannen-Moran and Hoy's (2001) guidelines for the creation of self-efficacy scales and by tying the items directly back to skills covered in the improvisation training. Discussion of the implications of these limitations, where necessary, is presented in chapter five.

#### Summary

This chapter presented the research methods employed for this study, which evaluates improvisation training as a technique for changing pre-service teachers' self-efficacy for teaching and improvisation skills. The methodology included a description of the mixed method research design, which was chosen to triangulate the data used to evaluate the effectiveness of the training. Chapter three also presented the specific methods related to the research setting, participant selection and consent, quantitative and qualitative data collection and analysis, instrumentation and variables. Descriptive statistics were presented for the university pre-service teacher participants. Limitations to the research were identified.

## CHAPTER 4 DATA ANALYSIS AND RESULTS

### Introduction

The purpose of this study was to examine whether communications and interaction techniques from improvisation could be taught to pre-service teachers as a means of changing their self-efficacy for teaching and changing teacher communication and interaction skills. This chapter presents the outcome of the analysis and results of the data collected from the mixed methods design outlined in chapter three addressing the three research questions. This study collected and analyzed self-report survey information and qualitative data in the form of videotaped interviews, and coursework artifacts. Parametric statistical analysis was used to evaluate the survey data and grounded theory techniques were used to evaluate the qualitative data collected. The qualitative data is reported in the form of a between subject analysis of interview transcripts, and coursework artifacts to examine participants' reactions to the improvisation training, including applications in the final tutoring session with a child, intentions for future use and training evaluation.

### Research Question 1: Analysis and Results

Research Question 1 asked: Do pre-service teachers who participated in improvisation training showed a change in perception of self-efficacy for communication and interaction skills identified as common to both improvisation and teaching being measured by the Communication Skills Assessment Inventory, (CSAI)?

The CSAI is a self-report measure created by the researcher following Bandura's (1997) guidelines to evaluate the effectiveness of the training. It included thirty questions divided in two categories: seventeen self-efficacy questions related to the training topics and, thirteen knowledge questions about the training topics. The Communication Skills Assessment Inventory (CSAI) sought

to measure if participant self-efficacy changed over the time the improvisation training occurred for specific communication and interaction markers presented in the training. Additionally, the researcher used the CSAI to evaluate if participants' knowledge and application of communication and interaction techniques presented in the improvisation training changed over the course of the training. The CSAI included four scales. The first scale Q1 to Q17 was the sum of the self-efficacy for improvisation skills items, *improvisation self-efficacy (full)*. The second scale Q18 to Q30 was the sum of the knowledge and application for improvisation items, *knowledge and application (full)*. The third and fourth scales correspond to a reduced item analysis for each of the previous variables. Reduced item analysis was conducted since some items were not covered in as much depth as originally planned for in the training due to time limitations. Responses to each item were scored using a Likert-like scale of (1-9). Responses to each item for each scale were tallied for a single score. Specific details of how these variables were calculated are found in chapter three under instrumentation.

Research question 1 was addressed quantitatively with dependent *t*-tests, as survey results were matched between pre-test and post-test administrations. Separate tests were run for each of the subscale scores in their full and reduced forms: *Improvisation self-efficacy*, and *knowledge and application*. Therefore, a total of four dependent *t*-tests were run.

A numerical value was calculated for each of the four dependent variables in each test by summing the scores associated with respective items pertinent to each subscale and dividing by the number of items. The end result was then a continuous score with a possible minimum of 1 and a possible maximum of 9, as all items were on a 9-point Likert scale. Overall comparisons between scales are more straightforward to interpret by forming composite scores in this fashion since the possible minimums and maximums are uniform despite differing numbers of items in the scales.

Full sets of scores (pre-test and post-test for all questions in the subscale) needed to be present for a dataset to be included. This is the reason why some  $N$ 's vary; deviations from the norm are noted in tables.

Due to the small sample size ( $N = 18$ , for the reduced self-efficacy factor or  $N = 19$ , for the remaining three factors), the researcher tested to determine if the observations came from a normally distributed population. The outcome of this test determined whether the researcher could conduct parametric statistical analysis using a  $t$ -test or if non-parametric tests would need to be run. The dependent  $t$ -test is fairly robust with small sample sizes, but ideally this is at least thirty (Pagano, 1994). However if the underlying distribution for the sample can be shown to be normal, the  $t$ -test can be run on less than thirty (Pagano, 1994). Since the sample size was less than thirty, this check needed to be run prior to conducting any further analysis.

Because the dependent  $t$ -test is a test of differences, normality is determined by examining skewness, kurtosis, and the results of the Shapiro-Wilk's formal test of normality. This formal test examines the null hypothesis that the distribution is normally distributed, so it is desirable to have a non-significant ( $p > .05$ ) result. Skewness (symmetry of the distribution) and kurtosis (thickness of the normal curve's tails) values should be between -2 and 2, to be able to conduct parametric statistical analysis on the data.

Results for tests of normality were as follows:

- Improvisation Self-Efficacy (Full)
  - Skewness = -0.13; Kurtosis = 1.20
  - Shapiro-Wilk:  $W(18) = 0.95, p = .47$
- Improvisation Self-Efficacy (Reduced)
  - Skewness = 0.02; Kurtosis = 0.93
  - Shapiro-Wilk:  $W(19) = 0.96, p = .64$
- Knowledge and Application (Full)
  - Skewness = 0.13; Kurtosis = 1.02
  - Shapiro-Wilk:  $W(18) = 0.97, p = .84$
- Knowledge and Application (Reduced)

- Skewness = 0.10; Kurtosis = 0.89
- Shapiro-Wilk:  $W(18) = 0.97, p = .80$

In addition, graphical plots did not suggest non-normality. Therefore normality was assumed for all composite score variables and the parametric dependent *t*-tests were run.

Dependent *t*-tests were run on each of the CSAI composite score variables. The following points summarize the results:

- Improvisation Self-Efficacy (Full)
  - There **was a significant change**,  $t(17) = -3.04, p = .007$ , on the full scale of improvisation skills (i.e. communication and interaction traits) between pre-test and post-test.
  - This change represented an increase between pre-test ( $M = 7.15, SD = 1.08$ ) and post-test ( $M = 7.93, SD = 1.01$ ).

The *improvisation self-efficacy (full) score* consisted of questions addressing pre-service teacher participants' self-efficacy for awareness, listening, fostering agreement, decision-making, persona, establishing relationships, non-verbal communication, vocal prosody, physical immediacy, status and power and mantra. Data showed that the mean for improvisation skills for the *improvisation self-efficacy (full) score* reported after the improvisation training, ( $M=7.93, SD=1.01$ ) was significantly higher than the mean reported prior to the training ( $M=7.15, SD=1.08$ ) ( $t(17) = -3.04, P = 0.007$ ) with a difference of 0.78 (95% CI, 7.43 to 8.43). Full details of this can be found in Tables 3 and 4.

- Improvisation Self-Efficacy (Reduced)
  - There **was a significant change**,  $t(18) = -3.31, p = .004$ , on the reduced scale of improvisation skills (i.e. communication and interaction traits) between pre-test and post-test.

- This change represented an increase between pre-test ( $M = 7.03, SD = 1.13$ ) and post-test ( $M = 7.89, SD = 0.99$ ).

The *improvisation self-efficacy (reduced) score* consisted of questions addressing pre-service teacher participants' self-efficacy for awareness, listening, fostering agreement, decision-making, establishing relationships, non-verbal communication, vocal prosody, and status and power. Data showed that the mean for improvisation skills for the *improvisation self-efficacy (reduced) score* reported after the improvisation training, ( $M=7.89, SD=.99$ ) was significantly higher than the mean reported prior to the training ( $M=7.03, SD=1.13$ ) ( $t(18) = -3.31, P = 0.004$ ) with a difference of 0.86 (95% CI, 7.41 to 8.36). Full details of this can be found in Tables 3 and 4.

- Knowledge & Application (Full)
  - There **was a significant change**,  $t(17) = -4.45, p < .001$ , on the full scale of knowledge and application traits between pre-test and post-test.
  - This change represented an increase between pre-test ( $M = 6.35, SD = 1.23$ ) and post-test ( $M = 7.83, SD = 1.06$ ).

The *knowledge and application (full) score* consisted of questions addressing pre-service teacher participants self-efficacy for awareness, listening, fostering agreement, decision-making, persona, establishing relationships, non-verbal communication, vocal prosody, physical immediacy, status and power and mantra. Data showed that the mean for improvisation skills for the *knowledge and application (full) score* reported after the improvisation training, ( $M=7.83, SD=1.06$ ) was significantly higher than the mean reported prior to the training ( $M=6.35, SD=1.23$ ) ( $t(17) = -4.45, P < .001$ ) with a difference of 1.48 (95% CI, 7.31 to 8.36). Full details of this can be found in Tables 3 and 4.

- Knowledge & Application (Reduced)



- There **was a significant change**,  $t(17) = -4.65, p < .001$ , on the reduced scale of knowledge and application traits between pre-test and post-test.
- This change represented an increase between pre-test ( $M = 6.24, SD = 1.25$ ) and post-test ( $M = 7.85, SD = 1.05$ ).

The *knowledge and application (reduced) score* consisted of questions addressing pre-service teacher participants' self-efficacy for awareness, listening, fostering agreement, decision-making, establishing relationships, non-verbal communication, vocal prosody, and status and power. Data showed that the mean for improvisation skills for the *knowledge and application (reduced) score* reported after the improvisation training, ( $M=7.85, SD=1.05$ ) was significantly higher than the mean reported prior to the training ( $M=6.24, SD=1.25$ ) ( $t(17) = -4.65, P < .001$ ) with a difference of 1.61 (95% CI, 7.33 to 8.37). Full details of this can be found in Tables 3 and 4. Results featuring the paired differences and the outcome of the all the *t*-tests are located in Table 3 for comparison.

Table 3

*Paired Differences with Dependent t-Test Results for CSAI Composite Scores (N=18)*

Scale	<i>M</i>	<i>SD</i>	95% CI		<i>t</i>	<i>p</i>
			<i>LL</i>	<i>UL</i>		
Improv Self-Efficacy (Full)	-0.78	1.08	-1.32	-0.24	-3.04	.007**
Improv Self-Efficacy (Reduced) <sup>a</sup>	-0.85	1.12	-1.40	-0.31	-3.31	.004**
Know & App (Full)	-1.49	1.42	-2.19	-0.78	-4.45	< .001**
Know & App (Reduced)	-1.61	1.46	-2.33	-0.88	-4.65	< .001**

*Note.* CI = confidence interval, *LL* = lower limit, *UL* = upper limit. Know & App = Knowledge & Application.

<sup>a</sup>*N* = 19 for this test.

\**p* < .05. \*\**p* < .01.

Descriptive statistics for pre-test and post-test are located in Table 4. All of the post-test results were nearly identical (an average of nearly 8 out of a 9-point scale) but the *improvisation self-efficacy* averages for the pre-test started at a higher place (over 7 out of a 9-point scale) than did the *knowledge and application* averages (6.24 to 6.35 out of a 9-point scale).

Table 4

*Descriptive Statistics for Pre-Test and Post-Test CSAI Composite Scores (N = 18)*

Scale	<i>M</i>	<i>SD</i>	95% CI	
			<i>LL</i>	<i>UL</i>
Improv Self-Efficacy (Full)				
Pre-Test	7.15	1.08	6.61	7.69
Post-Test	7.93	1.01	7.43	8.43
Improv Self-Efficacy (Reduced) <sup>a</sup>				
Pre-Test	7.03	1.13	6.49	7.58
Post-Test	7.89	0.99	7.41	8.36
Knowledge & Application (Full)				
Pre-Test	6.35	1.23	5.74	6.96
Post-Test	7.83	1.06	7.31	8.36
Knowledge & Application (Reduced)				
Pre-Test	6.24	1.25	5.62	6.86
Post-Test	7.85	1.05	7.33	8.37

*Note.* CI = confidence interval, *LL* = lower limit, *UL* = upper limit.

<sup>a</sup>*N* = 19 for this test.

Table 5 contains results for individual question scores for the CSAI pre-test and post-test, sorted from the highest to lowest value of the mean as of the pre-test. Questions from the *improvisation self-efficacy scale* are denoted by SE, and questions from the *knowledge and application scale* are denoted by K & A. Large gains of over one marker point on the nine-point Likert scale were observed between the pre/post-test means with the following items from the *improvisation self-efficacy (full) scale*: (Q10) use location to direct student behavior ( $\Delta=1.06$ ), (Q16) fill time when lesson is

short ( $\Delta=1.11$ ), (Q4) quick response to a distracting student ( $\Delta=1.21$ ), (Q5) use physical immediacy to guide interaction ( $\Delta=1.29$ ), and (Q2) build on incorrect contributions ( $\Delta=1.48$ ). Large gains of one or more marker points on the nine-point Likert scale were observed between the pre/post-test means with the following items from the *knowledge and application (full) scale*: (Q28) make spontaneous decisions ( $\Delta=1.00$ ), (Q23) use of body language ( $\Delta=1.15$ ), (Q18) foster agreement [*yes, and...*] ( $\Delta=1.31$ ), (Q20) create a professional persona ( $\Delta=1.58$ ), and (Q29) classroom environment awareness ( $\Delta=1.73$ ). Additionally, large gains of over two or more marker points on the nine-point Likert scale were observed between the pre/post-test means with the following items from the *knowledge and application (full) scale*: (Q26) use social status in interaction ( $\Delta=2.00$ ), (Q25) use room location for social interaction [physical immediacy] ( $\Delta=2.15$ ), and (Q23) the role of body language ( $\Delta=2.37$ ). Gains of less than half of a marker point on the nine-point Likert scale were detected for four *improvisation self-efficacy (full) scale* items out of thirty total CSAI items: (Q3) maintain personal and professional self separate ( $\Delta=.32$ ), (Q15) determine difference between sad and angry student ( $\Delta=.32$ ), (Q9) use voice to tell an engaging story ( $\Delta=.42$ ), and (Q7) note non-popular students ( $\Delta=.53$ ). Although the size of the gain varies, all thirty items on the CSAI for both scales *improvisation self-efficacy (full)* and *knowledge and application (full)* showed a gain in means in the positive direction.

Table 5

*Descriptive Statistics for Individual CSAI Scores (N = 19)*

Scale	Survey Question	Pre-Test		Post-Test		Difference in Means
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
SE	Separate personal from professional w/students (Q3)	7.79	1.55	8.11	1.24	0.32
SE	Determine difference between sad and angry (Q15)	7.68	1.25	8.00	1.11	0.32
SE	Note non-popular children (Q7)	7.63	1.26	8.16	1.12	0.53
SE	Use voice to tell engaging story (Q9)	7.53	1.54	7.95	1.08	0.42
K & A	Teacher awareness (Q22)	7.42	1.12	8.00	1.16	0.58
SE	Hide frustration w/student non-progress (Q11)	7.32	0.89	7.84	1.07	0.52
SE	Note changes in student appearance (Q6)	7.26	1.76	7.95	1.43	0.69
K & A	Importance of vocal prosody (Q24) <sup>b</sup>	7.26	1.37	8.22	1.06	0.96
K & A	Good listening strategies (Q21)	7.21	1.69	8.16	0.96	0.95
SE	Spontaneity (Q13)	7.16	1.64	7.79	1.23	0.63
SE	Rephrase misunderstood instructions (Q14)	7.16	1.39	7.84	1.07	0.68
SE	Establish relationship and converse w/new student (Q1)	7.05	1.13	7.95	1.47	0.90
K & A	Listen and repeat back student story (Q17)	7.05	1.51	7.68	1.16	0.63
SE	Motivate no or low-response children (Q8)	7.00	1.37	7.68	1.20	0.68
SE	Direct student behavior w/changed location (Q10) <sup>a</sup>	6.89	1.81	7.95	1.18	1.06
SE	Make decisions in high-stress (Q12)	6.89	1.45	7.79	1.23	0.90
SE	Fill 45 min class when lesson runs 20 min short (Q16)	6.89	1.33	8.00	1.05	1.11
K & A	Decide when to maintain or change a goal (Q27)	6.74	1.33	7.53	1.39	0.79
K & A	Using body language for communication (Q30)	6.74	1.88	7.89	1.20	1.15
K & A	Creating and maintaining professional persona (Q20)	6.68	1.64	8.26	1.15	1.58
SE	Quick response to distracting students (Q4)	6.63	1.57	7.84	1.26	1.21
SE	Guide student interaction w/environmental cues (Q5) <sup>a</sup>	6.50	1.38	7.79	1.18	1.29
SE	Build on incorrect student lesson contributions (Q2)	6.47	1.47	7.95	1.27	1.48
K & A	Making spontaneous decisions (Q28)	6.47	1.58	7.47	1.47	1.00
K & A	Fostering agreement to promote elaboration (Q18)	6.32	1.67	7.63	1.42	1.31
K & A	Developing awareness of environment (Q29)	6.11	1.56	7.84	1.12	1.73
K & A	Narrative structure to establish new relationships (Q19)	5.84	2.17	7.95	1.18	2.11
K & A	Personal location for social interaction (Q25)	5.74	2.08	7.89	1.41	2.15
K & A	Recognize and use social status in interaction (Q26)	5.74	1.82	7.74	0.87	2.00
K & A	Importance of body language (Q23)	5.42	2.22	7.79	1.44	2.37

Note: SE = improvisation self-efficacy, K & A = knowledge and application

<sup>a</sup>Pre-Test *N* = 18. <sup>b</sup>Post-Test *N* = 18.

Table 6

*Effect Size for CSAI Scores*

CSAI Scale	Effect Size	
	Cohen's d	Pearson's r
Improvisation Self-Efficacy (Full)	.75	.35
Improvisation Self-Efficacy (Reduced)	.81	.37
Knowledge & Application (Full)	1.29	.54
Knowledge & Application (Reduced)	1.40	.57

Post-hoc tests of effect size were calculated due to the small sample size of the study. Effect sizes for the CSAI results are shown in Table 6. Results for Cohen's d that are greater than .8 are considered to be large, while effects above .3 for Pearson's r are considered to be medium and effect sizes above .5 for Pearson's r are considered to be large. Results shown in Table 6 indicate that effect sizes are strong which in addition to the significant change observed in the pre-/post-test means indicates a very small likelihood that the observed changes occurred as a result of chance.

The first research question is included to validate the effectiveness of the training. It asked: Do pre-service teachers who have participated in improvisation training show a change in perception of self-efficacy for communication and interaction topics presented in the improvisation training and did their knowledge about the training topics change. Results show significance for all four dependent variables for this scale: Improvisation Self-Efficacy (original and reduced) and Knowledge and Application (original and reduced).

The results show that university pre-service teacher participants became more aware of and knowledgeable about certain communication and interaction strategies as a result of the improvisation training and also felt they were more capable of using the strategies (increased self-efficacy). These results are in line with Hagen et al.'s (1998) and Redmon's (2007) prior research on pre-service teacher education and training that shows that pre-service teachers respond favorably to

professional development training. It also substantiates prior research showing pre-service teachers' self-efficacy as developmental and open to change (Glickman & Tamashiro, 1982; Hagen et al. 1998; Ng et al., 2010; Redmon, 2007; Tschannen-Moran & Hoy, 2007).

### Research Question 2: Analysis and Results

Research Question 2 asked: Do pre-service teachers who participated in improvisation training showed a change in perceived self-efficacy for teaching as measured by the Tschannen-Moran and Hoy's (2001) Teacher Sense of Efficacy Scale (TSES) 24-item long form?

The 24-item form has three subscales: Efficacy in Student Engagement, Efficacy in Instructional Strategies, and Efficacy in Classroom Management. Factor analysis on the instrument reveals the validity of these three subscales (Tschannen-Moran & Hoy, 2001). Results of factor analysis on this instrument were presented in chapters two and three. The subscale scores for each factor are calculated by taking the mean of the composite scores. The following items were used to calculate the composite scores for each of the three factors. Scoring used the procedures outlined by Tschannen-Moran and Hoy (2012) in their instructions for using the instrument (<http://mxtsch.people.wm.edu/ResearchTools/ScoringDirectionsforTSES.pdf>).

#### *Items in Each Factor for the Teachers' Sense of Efficacy Survey (TSES)*

- Efficacy in Student Engagement: Items 1, 2, 4, 6, 9, 12, 14, 22
- Efficacy in Instructional Strategies: Items 7, 10, 11, 17, 18, 20, 23, 24
- Efficacy in Classroom Management: Items 3, 5, 8, 13, 15, 16, 19, 21

Research question 2 was addressed quantitatively with dependent *t*-tests, as datasets were matched between pre-test and post-test administrations. Separate tests were run for each of the subscale composite scores, Student Engagement, Instructional Strategies, Classroom Management, and for the total Teacher Self-Efficacy score. Therefore, a total of four dependent *t*-tests were run.

The dependent variable was calculated for each test by summing the scores associated with respective items pertinent to each subscale and dividing by the number of items. The end result was then a continuous score with a possible minimum of 1 and a possible maximum of 9, as all items were on a 9-point Likert scale.

Full sets of scores (pre-test and post-test for all questions in the subscale) needed to be present for a dataset to be included. This is the reason why some  $N$ 's vary; deviations from the norm are noted in tables.

As with research question 1, because the small sample size ( $N=19$ ) was less than 30, the main assumption that needed to be tested prior to running the  $t$ -test involved determining whether the observations came from a normally distributed population. The Shapiro-Wilk test for normalcy was run and results for these tests were the same as for research question 1.

Results for normality tests were as follows:

- Student Engagement
  - Skewness = -0.16; Kurtosis = 0.87
  - Shapiro-Wilk:  $W(19) = 0.96, p = .60$
- Instructional Strategies
  - Skewness = 0.06; Kurtosis = -0.18
  - Shapiro-Wilk:  $W(18) = 0.98, p = .94$
- Classroom Management
  - Skewness = 1.07; Kurtosis = 1.55
  - Shapiro-Wilk:  $W(18) = 0.93, p = .19$
- Overall Score
  - Skewness = 0.82; Kurtosis = 0.24
  - Shapiro-Wilk:  $W(18) = 0.93, p = .20$

In addition, graphical plots did not suggest non-normality. Hence normality was assumed for all composite score variables.

Dependent  $t$ -tests were run on each of the four TSES composite score variables as well as 95% confidence intervals (CI) for the mean difference. The following points summarize the results:

- Student Engagement
  - There **was a significant change**,  $t(18) = -2.47, p = .024$ , on the scale of student engagement traits between pre-test and post-test.
  - This change represented an increase between pre-test ( $M = 7.14, SD = 1.10$ ) and post-test ( $M = 7.76, SD = 1.27$ ).

The *student engagement* factor included items that addressed getting through to difficult students, helping students think critically, motivating students, fostering belief in oneself, valuing learning, fostering creativity, helping struggling students, and getting families involved. Data showed that the mean for teacher self-efficacy for the *student engagement* factor reported after the improvisation training, ( $M=7.76, SD=1.27$ ) was significantly higher than the mean reported prior to the training ( $M=7.14, SD=1.10$ ); ( $t(18) = -2.47, P = 0.024$ ) with a difference of 0.64 (95% CI,  $M=7.17$  to  $8.35$ ). Specific results can be found in Tables 7 and 8.

- Instructional Strategies
  - There **was a significant change**,  $t(17) = -3.57, p = .002$ , on the scale of instructional strategies traits between pre-test and post-test.
  - This change represented an increase between pre-test ( $M = 6.88, SD = 1.33$ ) and post-test ( $M = 7.74, SD = 1.33$ ).

The *instructional strategies* factor included items that addressed how well teachers could respond to difficult questions, gauge student comprehension, craft good questions, individualize lessons, use various assessments strategies, rephrase responses, implement alternative strategies, and challenge capable students. Data showed that the mean for teacher self-efficacy for the *instructional strategies* factor reported after the improvisation training, ( $M=7.74, SD=1.33$ ) was significantly higher than



the mean reported prior to the training ( $M=6.88$ ,  $SD=1.33$ ); ( $t(17) = -3.57$ ,  $P = 0.002$ ) with a difference of 0.86 (95% CI,  $M=7.11$  to 8.37). Specific results can be found in Tables 7 and 8.

- Classroom Management
  - There **was a significant change**,  $t(17) = -3.83$ ,  $p = .001$ , on the scale of classroom management traits between pre-test and post-test.
  - This change represented an increase between pre-test ( $M = 6.98$ ,  $SD = 1.25$ ) and post-test ( $M = 7.83$ ,  $SD = 1.18$ ).

The *classroom management* factor included items that addressed whether teachers could control disruptive behavior, make behavior expectations clear, establish classroom routines, get children to follow rules, calm disruptive students, establish a group management system, address problem students and respond to defiant students. Data showed that the mean for teacher self-efficacy for the *classroom management* factor reported after the improvisation training, ( $M=7.83$ ,  $SD=1.18$ ) was significantly higher than the mean reported prior to the training ( $M=6.98$ ,  $SD=1.25$ ); ( $t(17) = -3.83$ ,  $P = 0.001$ ) with a difference of 0.85 (95% CI,  $M=7.27$  to 8.39). Specific results can be found in Tables 7 and 8.

- Overall Score: Teacher Self-Efficacy
  - There **was a significant change**,  $t(16) = -3.98$ ,  $p = .001$ , on the total TSES scale between pre-test and post-test.
  - This change represented an increase between pre-test ( $M = 6.96$ ,  $SD = 1.23$ ) and post-test ( $M = 7.83$ ,  $SD = 1.22$ ).

The *overall teacher self-efficacy score* included all items on the scale. Data showed that the mean for teacher self-efficacy for the *overall teacher self-efficacy score* reported after the improvisation training,

(M=7.83, SD=1.22) was significantly higher than the mean reported prior to the training (M=6.96, SD=1.23); ( $t(16) = -3.98, P = 0.001$ ) with a difference of 0.87 (95% CI, M=7.23 to 8.43). Specific results can be found in Tables 7 and 8. Results featuring the paired differences and the outcome of the  $t$ -tests for all the factors and the overall score are located in Table 7.

Table 7

*Paired Differences with Dependent  $t$ -Tests Results for TSES Composite Scores (N = 18)*

Scale	<i>M</i>	<i>SD</i>	95% CI		<i>t</i>	<i>p</i>
			<i>LL</i>	<i>UL</i>		
Student Engagement <sup>a</sup>	-0.62	1.10	-1.15	-0.09	-2.47	.024*
Instructional Strategies	-0.87	1.03	-1.38	-0.35	-3.57	.002**
Classroom Management	-0.85	0.95	-1.33	-0.38	-3.83	.001**
Total Score <sup>b</sup>	-0.87	0.91	-1.34	-0.41	-3.98	.001**

*Note.* CI = confidence interval, *LL* = lower limit, *UL* = upper limit.

<sup>a</sup>N = 19 for this test. <sup>b</sup>N = 17 for this test.

\* $p < .05$ . \*\* $p < .01$ .

Descriptive statistics for pre-test and post-test are located in Table 8. All of the post-test results were nearly identical (an average of 7.74 to 7.83 out of a 9-point scale). Pre-test scores varied from a low of 6.88 (*instructional strategies*) to a high of 7.14 (*student engagement*) out of a 9-point scale.

Table 8

*Descriptive Statistics for Pre-Test and Post-Test TSES Composite Scores (N = 18)*

Scale	M	SD	95% CI	
			LL	UL
Student Engagement <sup>a</sup>				
Pre-Test	7.14	1.10	6.61	7.67
Post-Test	7.76	1.27	7.15	8.37
Instructional Strategies				
Pre-Test	6.88	1.33	6.21	7.54
Post-Test	7.74	1.33	7.08	8.40
Classroom Management				
Pre-Test	6.98	1.25	6.36	7.60
Post-Test	7.83	1.18	7.25	8.42
Total Score <sup>b</sup>				
Pre-Test	6.96	1.23	6.33	7.59
Post-Test	7.83	1.22	7.21	8.46

*Note.* CI = confidence interval, LL = lower limit, UL = upper limit.

<sup>a</sup>N = 19 for this test. <sup>b</sup>N = 17 for this test.

Table 9 contains results for individual question scores for pre-test and post-test, sorted from the highest to lowest value as of the pre-test. Large gains of over one marker point on the nine-point Likert scale were observed between the pre/post-test means for six items on the TSES scale with data from the following items from the *classroom management factor*: (Q15) calm disruptive student ( $\Delta=1.05$ ), (Q21) respond to defiant students ( $\Delta=1.11$ ), and (Q16) establish classroom management system ( $\Delta=1.15$ ). Large gains of over one marker point on the nine-point Likert scale were observed

between the pre-/post-test means from the following items from the *instructional strategies factor*: (Q18) use a variety of assessment strategies ( $\Delta=1.05$ ), and (Q23) implement alternative class strategies ( $\Delta=1.11$ ). A large gain of more than one marker point on the nine-point Likert scale was observed between the pre-/post-test means for the item (Q22) assist families in helping children ( $\Delta=1.27$ ) from the *instructional strategies factor*.

Eight items showed gains of less than half a marker point on the nine-point Likert scale between the pre/post-test means for the TSES scale. This represented the following four items from the *student engagement factor*: (Q9) help students value learning ( $\Delta=.21$ ), (Q4) motivate low-interest students ( $\Delta=.21$ ), (Q6) get students to believe they can do well ( $\Delta=.26$ ), and (Q2) help students think critically ( $\Delta=.47$ ); three items from the *classroom management factor*: (Q5) make clear student behavior expectations ( $\Delta=.26$ ), (Q8) establish routines ( $\Delta=.37$ ), and (Q3) control disruptive behavior ( $\Delta=.43$ ). The pre/post-test means for one item from the *instructional strategies factor* also fell below the half marker gain point on the nine-point Likert scale, (Q10) gauge student comprehension of teaching ( $\Delta=.47$ ).

Although the size of the gain varies, all of the 24-items on the TSES survey showed gain in the positive direction between the pre-/post test administrations of the survey.

Table 9

*Descriptive Statistics for Individual TSES Scores (N = 19)*

Factor	Question	Pre-Test		Post-Test		Difference in Means
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
S-Eng	Get students to believe they can do well (Q6)	7.79	1.13	8.05	1.22	0.26
CM	Make clear student behavior expectations (Q5)	7.74	1.28	8.00	1.29	0.26
CM	Establish routines (Q8)	7.63	1.07	8.00	1.16	0.37
S-Eng	Help students value learning (Q9)	7.53	1.07	7.74	1.24	0.21
S-Eng	Motivate low-interest students (Q4)	7.37	1.12	7.58	1.43	0.21
CM	Get children to follow classroom rules (Q13)	7.32	1.16	8.05	1.22	0.73
S-Eng	Foster student creativity (Q12)	7.26	1.41	8.11	1.24	0.85
IS	Gauge student comprehension of teachings (Q10)	7.16	1.64	7.63	1.61	0.47
IS	Adjust lessons for individual students (Q17)	7.11	1.63	7.79	1.32	0.68
S-Eng	Help students think critically (Q2)	7.00	1.45	7.47	1.58	0.47
IS	Use a variety of assessment strategies (Q18)	6.95	1.62	8.00	1.37	1.05
CM	Control disruptive behavior (Q3)	6.89	1.56	7.32	1.38	0.43
IS	Craft good questions for students (Q11) <sup>a</sup>	6.89	1.61	7.68	1.57	0.79
IS	Provide alternative examples for confused students (Q20)	6.89	1.29	7.79	1.23	0.90
IS	Challenge very capable students (Q24)	6.89	1.45	7.84	1.30	0.95
IS	Implement alternative class strategies (Q23)	6.84	1.46	7.95	1.18	1.11
S-Eng	Improve failing student understanding (Q14)	6.79	1.36	7.66	1.55	0.87
CM	Establish classroom mgmt system (Q16) <sup>b</sup>	6.79	1.69	7.94	1.21	1.15
CM	Keep problem students from ruining lesson (Q19)	6.74	1.37	7.63	1.34	0.89
S-Eng	Get through to difficult students (Q1)	6.68	1.60	7.53	1.39	0.85
S-Eng	Assist families in helping children do well (Q22)	6.68	1.46	7.95	1.18	1.27
CM	Calm noisy/disruptive students (Q15)	6.63	1.42	7.68	1.38	1.05
IS	Respond to difficult student questions (Q7)	6.47	1.50	7.32	1.60	0.85
CM	Respond to defiant students (Q21)	6.47	1.84	7.58	1.35	1.11

*Note:* S-Eng = student engagement, IS = instructional strategies, CM = classroom management

<sup>a</sup>Pre-Test *N* = 18. <sup>b</sup>Post-Test *N* = 18.

Table 10 shows reported post-hoc effect sizes for the three factors of the TSES and the *overall teacher self-efficacy* score. Effect sizes for Cohen's  $d > .50$ ; and for Pearson  $r > .30$  are considered to be medium. The effect size shows the size of the difference between the two groups' means and is useful for interpreting the data without addressing the sample size.

Table 10

*Effect Size for TSES Scores*

TSES Composite Score	Effect Size	
	Cohen's $d$	Pearson's $r$
Student Engagement	.52	.25
Instructional Strategies	.65	.31
Classroom Management	.70	.33
Overall Score: Teacher Self-Efficacy	.71	.33

The second research question evaluates the relationship of the improvisation training and teacher self-efficacy. Research question two inquires: do pre-service teachers who have participated in improvisation training show a change in perceived self-efficacy for teaching as measured by the Tschannen-Moran and Hoy's (2001) Teacher Sense of Efficacy Scale (TSES) long form? Results as shown above indicate significance for all four dependent variables, indicating a change in teacher self-efficacy in the positive direction did occur for the pre-service teacher participants between the first and second administrations of the survey, before and after the improvisation training.

Outcomes of this research are in line with Tschannen-Moran and Hoy (2007) and Glickman and Tamishiro's (1982) research showing that pre-service teacher self-efficacy is open to change. Additionally while these results cannot confirm the improvisation training as the sole reason for the change in teacher self-efficacy due to its situation in the methods course, when evaluated alongside the results from research question one, results from question two do show support for the benefits

of including improvisation training as part of a pre-service teacher methods course. Teacher self-efficacy rests on a solid foundation of prior educational research which links high teacher self-efficacy to more positive teacher-child relationships, as a mediator of burnout and stress, increased professional longevity, greater teacher willingness for self-reflection, correlations to emotional intelligence, better classroom management and other beneficial outcomes (de la Torre-Cruz & Cassanova Arias, 2007; Di Fabio & Palazzeschi, 2008; Lambert et al., 2009; Runhaar et al., 2010; Schwarzer & Hallum, 2008; Schwerdtfeger et al., 2008; Siwatu, 2007; Skaalvik & Skaalvik, 2007, 2010; Smylie, 1988; Yoon, 2002). The benefit of measuring a well-established construct such as self-efficacy is that it allows linkages to be drawn with from prior research to current findings, using a common logical thread. These results contribute to the body of research on teacher self-efficacy and show preliminary research-based evidence supporting the theoretical benefits of providing pre-service teachers with training in improvisation skills (DeZutter, 2011; Sawyer, 1999, 2004a, 2004b, 2011; Beghetto & Kaufman, 2011).

### Research Question 3: Qualitative Analysis

Research question 3 asked: How did the pre-service teacher participants evaluate the improvisation training, to the extent that they used the improvisation skills in their interaction with students during their service-learning project?

Qualitative methods were used to evaluate research question three and to triangulate the data from research questions one and two. Pre-service teacher participants' coursework artifacts and post-training interviews conducted after participants interacted with students during service-learning were examined to evaluate responses to the training and to examine whether participants reported using training related skills in their interaction with students.

### Qualitative Data Analysis Procedure

Multiple sources of qualitative data were collected from university pre-service teacher participants to evaluate the third research question. Data taken from the university pre-service teacher participants' interviews with the researcher immediately following each tutoring session held with a child, as well as participant reflections during the training, text versions of their final reflective Teachers in Action PowerPoint presentation for service-learning and final exam responses helped to triangulate the data to corroborate findings from the quantitative analysis.

The twenty-two interview videos (pre-training and post-training) from the eleven participants who granted consent to be interviewed on videotape were downloaded onto the computer and sorted. The researcher used Transana, qualitative video coding software, to transcribe, time-code and identify themes for the university participant interviews. Video transcripts were reviewed several times for accuracy. Once the transcripts were complete, time code was entered for each transcript. Transcripts of the interview session were provided to the participants for review and editing.

The videotapes of the university participant interviews on instructional strategies prior to the improvisation training and post-training, were used in their entirety. Video clips that referenced participants using improvisation techniques from the training, which referenced participants' evaluations of the training or that mentioned other relevant information were coded and collected into common themes. The same process was completed for the written material in the course artifacts. While the researcher looked for training related references, the themes for the qualitative analysis were not established prior to examining the data. As common references emerged between participants, these were formed into categories. Categories were also established for unique observations by participants. Each time a theme was identified by the researcher the data set was



reviewed again to make sure all references were identified. The researcher followed the guidelines for establishing emergent themes using grounded theory techniques (Quinn Patton, 1987).

### Qualitative Data Results

This question helped to validate the improvisation training as a method for instructing pre-service teachers by further substantiating the results from question one and two. The researcher conducted a between subject analysis of the qualitative data to identify what university pre-service teacher participants felt about the improvisation training and to determine if they reported using it in their interaction with students or intended to use it with students. The participants made statements indicating that the improvisation training was a positive addition to the methods class and contributed to their learning and preparation as teachers. Naomi, a research participant, exemplifies these types of responses stating:

Through working with him I was able to examine my own teaching skills in the first session then learn and incorporate the improvisation techniques I learned to better help him with my final session with him. (Naomi, research participant, class reflection).

Two participants indicated they would have liked for role-playing to have been included in the training.

Two general categories emerged as a result of the qualitative data analysis: 1) self-reported personal beneficial outcomes, which were indicative of increased agency and 2) self-reported beneficial student outcomes. Generalized themes representing participant statements reflective of both categories identified above that emerged from the qualitative data analysis are included in Table 11.

Table 11

*Beneficial Personal and Student Outcomes and Indicators of Each*

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*How Pre-Service Teachers' Valued the Training from Coursework Artifacts and Interviews*

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1) Self-report of beneficial personal outcomes:

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1. Feelings of increased ability to empathize with students;
  2. Participants' own feelings of increased self-confidence for interacting with students;
  3. The role the teacher plays in establishing a positive classroom climate;
  4. The teacher's willingness to act goofy or silly and how that can put students at ease and let them know it is ok to make mistakes;
  5. Feelings of increased awareness and the ability to think on their feet;
  6. The importance of spontaneity and being ready for anything;
  7. The role of body language and vocal prosody in delivery and interaction;
  8. Techniques for co-teaching;
  9. Techniques for classroom management;
- 
10. The importance of play in learning;
- 

2) Self-report of beneficial student outcomes:

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11. Adaptations of the improv games for classroom use;
12. Fostering student rapport and minimizing bullying;
13. Strategies for getting students involved and interacting in the classroom;
14. The role of optimal frustration/challenge in learning and what frustration can teach you.

The researcher examined transcripts of participants' final interviews after their last teacher-child interaction, as well as classroom artifacts to see what they learned from the training. Specific examples are presented below to exemplify the categories presented in Table 11

The participant known as Geneva presents an example of how she connected the improvisation training to her methods coursework, emphasizing the importance of *in-flight* decision-making shown in theme (6): *being ready for anything*. She wrote:

Creating a safe, friendly environment for students. This will help with future studies because I learned to think on my feet and adapt which is what teacher[s] of Exceptional Students need to learn in order to succeed in the classroom! (Geneva, research participant, class reflection).

She also references an awareness of theme (3) *the role of the teacher in establishing the classroom climate*. In her initial reflection Geneva also added:

I was not excited about doing the improv training at first because I am typically shy in these types of settings. However, after playing some of the games I got really into them. I think the games were important to help us practice patience and learn to think quickly on your feet. These strategies that we are learning will also help with classroom management skills because sometimes things come up and you will have to improvise. Overall, I am excited to attend next week's session. (Geneva, research participant, class reflection).

She connected the interaction techniques from the training back to theme (9) *classroom management*.

The participant known as Naomi also provided an example of the connections university pre-service teacher participants made between the training and teaching in one of her reflections.

She stated:

Vocal prosody made me understand better my English Language Learners (ELLs) and made me understand that even if they don't understand my words they could understand me through my vocal prosody and my body language. (Naomi, research Participant, class reflection).

Her statement exemplifies theme (7), *the role of body language and vocal prosody*. This meta-level awareness of how to control and use personal characteristics, such as voice and body language in social situations demonstrates increased agency and opens up control of a new channel of

communication for teacher-child interactions, especially for children with language difficulties such as English language learners or children with disabilities. As Naomi illustrates, this can be particularly useful with second language learners or children with disabilities.

Several participants referenced *Yes, and...* as an important tool they had either used in their tutoring sessions with the elementary charter school students or planned to use in future teacher-child interactions. This was the improvisation technique mentioned most often. References to *Yes, and...* fit both categories of beneficial teacher and student outcomes addressing theme (3) *establishing a positive classroom climate* and theme (13) *strategies for getting students involved in the classroom*. Comments referencing *Yes, and...* ranged from those simply stating they used it, to more descriptive examples. Renee exemplifies this from her interview stating:

Let's see, specific techniques I used would definitely be positive reinforcement. I did a lot of the 'Yes, and,' like 'Yes, that is a B.' (Renee, research participant, post-training interview).

Renee worked with a child with Cerebral Palsy. While the student was very interactive with her, many of his communications were vocalizations; he used change in vocal prosody to communicate when he was unable to form words. Renee was able to *close* on the meaning of these vocalizations and reflect back his contributions in words, by being open to accepting his offers. Implications for using the *Yes, and...* technique will be further discussed in chapter five.

In addition to some of the more common references that the researcher expected, participants also made their own unique observations about what they learned from the training. Brian made the unique connection about the role of frustration in fostering empathy with students and in challenging students to do their best. His words exemplify theme (1) *increased ability to empathize with students*, theme (3) *the role of the teacher in establishing a positive climate*, and theme (14) *the role of optimal frustration in learning*. He wrote:

When I first heard that the goal of the games was to get ourselves frustrated, I was a little upset. Why would you ever play a game to frustrate yourself? And worse, when would we ever use a game like this with our students? Frustration is not an easy emotion and getting your students get frustrated and confused did not seem like a plausible idea to me in the beginning. However, I soon discovered that not only did the frustration come with a level of fun for the group, but it also came with a lesson.

The game was a simple reminder that doing two simple things at the same time can still be difficult. When we are teaching our students, we must remember this because even if we think the instructions are simple or the task is easy, it may not be. We cannot throw two elements into a lesson at the same time if they are going to collide with each other. If we see students getting frustrated or confused, we know that something is not working and we must stop and reevaluate the situation. If anything came from the lessons of the day, this is what I learned. That and even the most frustrating of games can be fun when you are with the right kind of people. (Brian, research participant, class reflection).

Based on the research that discussed characteristics of novice and experienced teachers (Borko & Livingston, 1989; Byra & Sherman, 1993; de la Torre-Cruz & Cassanova Arias, 2007; Henry, 1994; Kohler et al., 2008; Schempp et al., 1998; Stough & Palmer 2001; & Tschannen-Moran & Hoy, 2007), Brian's mindset is more in line with teachers capable of *satisficing*, which LeMaistre and Pare (2010) show to be associated with experience and longevity. His ability to put himself in his students' shoes also demonstrates empathy, which is a hallmark of social intelligence (Goleman, 2007). Such personal reflection also shows an awareness of the role of formative evaluation in teaching (Heritage et al., 2009) and an understanding of the difference between what Beghetto and Kaufman (2011) call "curriculum-as-planned" and "curriculum-as-lived" (p. 94), both skills, which are atypical of novice teachers (Borko & Livingston, 1989). Brian's willingness to monitor student progress, and stop the lesson and change plans if necessary is representative of theme (5) *increased awareness and ability to think on one's feet*. It shows a strong student-centered orientation.

An additional participant known as Tanya, who worked with a child who had Cerebral Palsy, demonstrated an important personal development. She concluded:

Before the first learning service training I was a little clueless in how to interact with students in a way that will get each and every individual student involved with learning. I think that it is very important to get all students up and out [of] their seats interacting among one another

because it is a very important way of them learning. (Tanya, research participant, reflection on final teacher-child interaction).

Her observation supported the importance of scaffolding teachers' learning as they develop the skills to promote positive teacher-child interaction in the classroom and is representative of theme (13) *strategies for getting student involved* and theme (2) *participants' own feelings of self-confidence*. Tanya's identification of her own need for additional skills was important. As research noted, teachers with higher self-efficacy are more likely to engage in self-reflection and seek out feedback (Runhaar et al., 2010). Research showed that even well prepared student teachers scale back student interaction in a lesson if they feel like they are unable to control the exchange (Borko & Livingston, 1989). As Tanya indicated it is important to provide opportunities for pre-service teachers to explore interactive approaches prior to entering their own classroom to give them the opportunity to try out interaction techniques in a safe environment where failure and reflection lead to revised practice, and not to diminish self-concept, as can occur in a real classroom context.

In addition to Brian several other participants showed increased ability to empathize with students. Kadwell (personal communication, March 4, 2010) theorizes that what improvisation training changes most is players' ability to empathize. The participant known as Amber describes this in a reflection, writing:

During this particular training session, I was reminded of how uncomfortable one can feel in new situations. I don't know any of the people in my class so to interact with them was a quite uncomfortable. I think this is important to note because as I grow older, I will forget how children feel when asked to do group activities or present in front of their peers. Being aware of how children can feel will allow me to make accommodations for those children and will encourage me to research ways to help make those children feel more comfortable around their peers. (Amber, research participant, class reflection).

Her reflection exemplifies theme (1) *increased ability to empathize with students*, theme (3) *establishing a positive climate* and theme (12) *fostering rapport in the classroom*. Goleman (2007) links empathy and theater (p. 57) and makes a similar connection to Kadwell's (personal communication, March 4,

2010) observation about empathy showing the bi-directionality of how people's understanding of their own feelings informs their understanding of other people's feelings and vice-versa. Cultivating the ability to share another person's feelings is especially important when working with students with disabilities, as Jasmine states after working with a student with ADHD:

I also wanted him to teach me and make him feel like he was teaching me something... I let him know that it's really good that he is working... And I know that his mind works a little differently and I know that having some structure on his paper will let him know like ok, 'I already did one word, and I have two more numbers left, there are two left.' (Jasmine, research participant, post-tutoring interview).

Her comments reference theme (1) *empathy* and theme (5) *awareness*. She also makes a general realization about the teacher's responsibility to establish positive social interaction with students, referencing themes (3), (7) and (13), writing:

We must also keep in mind that when we don't receive eye contact from a student, it doesn't always mean they are not paying attention, but sometimes they are completely uncomfortable with the situation. It is then up to us to take them to comfort level where they can then function on their own. (Jasmine, research participant, class reflection).

The participant called Marta indicated how she incorporated affective strategies from the improvisation training into the second interaction she had with the student she tutored. The student she worked with had Autism but was high functioning. However he tended to be quite unresponsive and distant with Marta. She stated:

This was my second and final meeting with my student. I remember the first time I worked with him I felt uneasy and frustrated. My student really did not like to talk and I found it difficult to keep him on task. One strategy I tried to use [during] this session that I would have not known to use before was mirroring emotions. When he first came in he looked kind of shy and hesitant, so I tried to lean back in my chair and act less forward and outgoing. Slowly as the lesson went on I leaned forward and leaned in when speaking to my student. I feel like he spoke a lot more during this lesson than he did before. Another strategy I used when trying to teach him was to allow 'play'. When I was trying to have him alphabetize the set of words I would tell that he was getting irritable and wanted to play. So instead of constantly asking to him to pay attention like I did before, I allowed him to draw pictures that pertained to the words we were trying to sort. I do not think I got as much done as I did last time, but I feel like I connected with my student much more. (Marta, research participant, reflection on final teacher-child interaction).

Her reflection references theme (7) *the role of body language and vocal prosody*, theme (10) *the importance of play in learning*, theme (3) *role of the teacher in establishing classroom climate* and theme (9) *techniques for classroom management*; as well as theme (13) *strategies for getting students involved and interacting*, and theme (12) *fostering student rapport*.

Participants words also referenced theme (4) *it's ok to be silly and goofy in front of students and to make mistakes*. Deena provides an example of this writing:

The Improv games (“Where Have My Fingers Been” and “Yes and...”) boosted my confidence for sure, which is a quality I continue to improve. While playing them, I was reminded that as a teacher or in a similar setting where you are a leader to children, you can't be worried about being silly, even if it puts you in an embarrassing spot. If you act silly and take chances, your students or children you are trying to inspire will take chances too and you will find their confidence growing, too. (Deena, participant, class reflection).

As her reflection indicates she also felt the improvisation techniques changed her *self-confidence*, theme (2).

Participants also referenced the importance of seeing good co-teaching in action either referring to the improvisation training which was co-taught by the researcher and their methods instructor, or referencing the Hines and Hines (2008) DVD on improvisation skills for co-teaching that they were given after completing the post-surveys. Jasmine provides one example of this for theme (8) *techniques for co-teaching* stating:

I enjoyed this week. It was a great way to introduce us to how teaching is very much like improvisation. I found myself relating the activities we were doing to previous experiences in the classroom as well as my current experiences in the classroom. Seeing co-teaching in action was very helpful; I never noticed how important it is to be in sync not only with the classroom material, but also in the physical sense (Jasmine, participant, class reflection).



Only two concerns with the training were mentioned. Two students mentioned that while the improvisation training was fun, it should have been tailored to a teaching context, using teacher/student role-playing. Cheryl stated:

This session was interesting to say the least. I definitely had a lot of fun with all the activities, and I can certainly see the benefits of using these strategies in the classroom. With that said, it might have been helpful for us to have roll-played student-teacher scenarios vs. adult-adult scenarios, e.g., have one person be the 'student' and the other be the 'teacher' and then have them improv a scenario that my actually happen between a student and teacher (Cheryl, research participant, class reflection).

The researcher considered this during the planning stages, but decided that at least initially, the trainings needed to focus on personal growth and development and minimize domain related performance stress or anxiety. Because the training used a constructivist approach, the researcher asked the participants to draw their own conclusions between the training and teaching at the end of each session. Participants were asked to maintain a journal or written reflections about each session. The researcher also wanted to leave open the possibility that pre-service teachers would adapt the improvisation strategies to classroom contexts to use with their students in instruction. Evidence supports that some participants did adapt the technique for student interaction as is shown below. For this reason, the improvisation games and activities were left open for participants to initiate the context of the scenes. Longer trainings or more advanced trainings might take the approach of embedding the context in teacher or education specific scenarios once players feel more comfortable with the techniques and have some classroom experience. However by making this decision to keep the context open, the researcher risked pre-service teachers missing the connection between the two domains and feeling like the activities were not meaningful to their goals for the class. One student voiced feeling like initially she could not see the connection, but by the end of the training was able to tie the activities back to her praxis as shown in the following example. The participant known as Amber writes:

I must admit that after my first lesson, I thought I had just wasted valuable time. Perhaps I thought this way because I felt embarrassed to be playing games with my peers. However, that weekend, I found myself introducing a few of those games to my friends! We all had fun playing them! By my last session, I was sad to leave the class. I learned a great deal with going with the flow of things and ‘yes and-ing.’ (Amber, research participant, class reflection).

Despite her initial misgivings, Amber’s reflection provides an example of theme (10) *the importance of play in learning*.

Lipsker’s (2005) approach to training nursing students used a context-based approach at the end of the student’s program of studies. The improvisation technique of Playback Theater was used to conduct debriefing and reflection sessions while students were completing their internships. In this context, nursing students had the opportunity to relive specific interactions they wanted to explore using the improvisation techniques. This is an advanced use of improv as a tool for self-reflection. This type of interaction might have been the type of interaction Cheryl was requesting.

The researcher’s goal of presenting generalized improvisation training for general interaction and communication skills was substantiated by participants indicating that they intended to adapt the improvisation games for classroom use. The participant known as Naomi elaborated on this at length in her final interview, exemplifying theme (11) *adaptations of the improv games with students*. She describes one idea she has for using a warm up game to teach phonics. She says:

Ok, well with one of our games that we played with you was Zip, Zap, Zoom. I would incorporate that into my classroom as a phonics game. I would write a word and have the kids figure out how to break down the word into a game. So instead of saying ‘Zip,’ ‘Zap,’ ‘Zoom,’ [sic] it would be ‘Se’-‘re’-‘nade.’ or ‘Sen’- ‘ten’-‘ce.’ You know have them break down all the words and make it fun for them. (Naomi, research participant, post-training interview).

Naomi further describes how she used this strategy in her last tutoring session.

One of the games that we did, that it was that we had to remember the person before us with the sounds that they made, so I tried get him to remember first the first sound, the

second sound and then put them all together, so that's the way I used it. (Naomi, research participant, post-training interview).

The researcher found this and her other suggestions to be very creative uses of the games. A body of creativity and gifted and talented research exists that advocates for the use of improvisation games in the classroom to foster elaboration and interaction (Loomans & Kolberg, 2002). One implicit goal of using improvisation to deliver the training was to model an interactive teaching technique for participants. The data showed that participants did attempt to *adapt the improvisation skills for classroom use*, theme (11).

### Summary

The global goal of this research was to evaluate the outcomes of using improvisational training for pre-service teachers. Since the construct of improvisation is somewhat ephemeral and the context of its application is in a social setting, a mixed mode research design was chosen by the researcher to approach the hypothesis from multiple angles. This design permitted triangulation of the data. The research measured changes in participants' teacher self-efficacy, a well-established construct in education research. It also measured changes in participants' awareness of and self-efficacy for using skills presented in the improvisational training. This was one piece of establishing the validity of the training. Finally the research examined how participants felt about the training and whether they applied or intended to apply the information from the training in their teacher-child interactions. Analyzing multiple types of participant data including self-reflections and participant interviews provided additional support for the quantitative data results reported for research questions one and two showing preliminary support for the beneficial outcomes of the improvisation training.

Results from the *t*-tests used in this study demonstrated pre-service teacher self-efficacy increased using two measures: a researcher generated tool to measure self-efficacy for improvisation skills; and Tshannen-Moran and Hoy's (2001) TSES measure of teacher self-efficacy for student engagement, instructional strategies, and classroom management.

Prior research on teacher self-efficacy showed how high teacher self-efficacy linked to positive teacher outcomes. Di Fabio and Palazzeschi (2008) and Siwatu (2007) showed teacher self-efficacy correlated with the intrapersonal and interpersonal components of emotional intelligence. Teacher self-efficacy is linked to positive classroom relationships; as well as with classroom management skills (de la Torre-Cruz & Cassanova Arias, 2007; Lambert et al., 2009); which is often an important consideration in inclusive classrooms (Olson et al., 2008). Runhaar et al., (2010) showed that teachers with higher self-efficacy are more apt to reflect and seek feedback. Multiple studies have shown how high self-efficacy mediates against teacher stress and burnout and is correlated with teacher longevity (Lambert et al., 2009; Schwarzer & Hallum, 2008; Skaalvik & Skaalvik, 2007, 2010; Schwerdtfeger et al., 2008; Yoon, 2002). Since high teacher self-efficacy links to so many important teacher outcomes, professional development or training programs that can foster teacher self-efficacy are very important. Results from this study showing an increase in pre-service teacher self-efficacy lend support for including improvisation skills in teacher training programs.

Since the improvisation training was embedded within an existing methods course for pre-service teachers, changes in teacher self-efficacy reported for question two may be due to the training or aspects of the methods class or classroom experiences. To account for the role of the classroom context in the improvisational training, the researcher used the (CSAI) instrument from question one to examine participant's self-reported aptitude for specific improvisation skills being

presented in the training. Results from CSAI instrument validate the effectiveness of the improvisational training quantitatively. Due to the difficulties with measuring an ephemeral construct such as improvisation, the three research questions were designed to support each other and triangulate the data to enclose the construct.

Data from the qualitative part of this research shows that participants felt the improvisation training was beneficial and that some of them were consciously aware of using strategies from the training in their interaction with students during their second tutoring session. The positive feedback strategy of *Yes, and...* used to foster student interaction and participation was cited by participants most often. However participants also referred to being aware of controlling their vocal prosody and body language to establish a better relationship with the child they worked with as examples of implementing the improvisation strategies. The improvisation training afforded participants the opportunity to test out encouraging their classmates to respond and interact with them in a “sandbox” type environment (i.e. a context that is safer than the real-life context). Participants became more aware of important communications and interaction techniques through the training. Although changes in all factors for the CSAI were significant, results from the descriptive data analysis of the CSAI survey show greater gains in participants’ knowledge of improvisation skills averages (from 6.24 initial to 7.85 final on the reduced scale; and from 6.35 initial to 7.83 final on the full scale out of a 9-point scale) than for self-efficacy for improvisation skills.

Lending additional support to the researcher’s theory that improvisation and teaching share a common skill set, analysis of the method’s course textbook, Olson et al.’s (2008) *Teaching Children and Adolescents with Special Needs*, revealed commonalities. There were strong similarities between teaching and improvisation in the communication section presented in Olson et al.’s (2008) Chapter three (pp 59-65) and the feedback section presented in Chapter five (Olson et al., 2008, pp 155-156). The text

talks about the need to use affective immediate communication strategies with students and provide ongoing positive feedback as often as possible. The improvisation training allowed the pre-service teachers to experiment with some of these techniques in a safe non-threatening environment, rather than just reading about them. In this instance, by including the improvisation training in the methods course, pre-service teacher participants were exposed to three of Bandura's (1997) suggested sources of increased self-efficacy: a mastery experience (albeit simulated) in the form of the student actively trying out the improvisation skills; vicarious experience in the form of watching the researcher and the methods instructor demonstrate the improvisation skills; and finally through verbal persuasion by reading about some of the strategies in the course textbook.

A principle goal of this study was to validate the effectiveness of the improvisation training. The established methods of Backwards Design and ADDIE from instructional design were used to prepare the training. Improvisation was the instructional delivery method within a constructivist instructional strategy. The CSAI instrument designed by the researcher was created to complete the final evaluation portion of the ADDIE instructional design model. This instrument evaluates two aspects of the training. Participant self-efficacy for improvisation skills related to communication and interaction; and participant's declarative knowledge of the skills presented in the training. The self-efficacy construct was measured because of its theoretical linkage to performance outcomes (Bandura, 1997). The researcher followed Bandura's (1997, 2006) guide for constructing self-efficacy scales. Since Cawthorn and Dawson's (2009) prior self-efficacy research on drama-based professional development had not shown significant change, the researcher also included questions in the CSAI to measure change in declarative knowledge for the improvisation skills presented in the training. The rationale for this was: even if the improvisation training did not affect participants self-efficacy (perhaps due to time limitations) the training may still have shown benefit in terms of

participants' exposure to and awareness of important social interaction and communication skills. Since design and development research typically utilizes multiple forms of participant feedback for formative evaluation, and because the CSAI was developed by the researcher and has not undergone factor analysis (due to the small sample size of this study); a mixed mode research design was used to collect participant feedback on the training. Although it is not possible to completely isolate the improvisation training as the cause of the change in pre-service teacher participants' self-efficacy for teaching in this research (research question two), results from the analysis of the CSAI data (research question one) and the pre-service teachers' qualitative reports about the benefits of the training and how they implemented it (research question three), indicate that the training was effective. Including it as part of the pre-service teacher methods course, allowed students to be exposed to communications suggestions as part of the course text book and curriculum, and then to experiment with using these strategies as part of the improvisation training in a safe non-threatening fun environment. The fact that participants reported using strategies such as *Yes, and...* to encourage student participation, and described an awareness of the impact their body language and vocal prosody may have had on students substantiates Bandura's (1997) theory that self-efficacy is a strong predictor of future action given the right context.

According to Bandura's (1997) Social Cognitive theory, increased self-efficacy should produce a complementary change in behavior given the right context. Qualitative results from this study substantiate this, showing that pre-service teacher participants reported using the skills presented as part of the improvisation training in their interactions with students following the training. This links back to Smylie's (1988) research showing self-efficacy determines participant implementation for professional development activities and Siwatu's (2008) study confirming Bandura's (1997, 2006) assertion that self-efficacy can be a predictor of outcome expectancies.

## Conclusion

Chapter four addressed the results of the three research questions. It presented the analysis and results of the inferential statistical tests conducted on data from the two self-efficacy measures. A detailed description of the data collection and analysis process for the qualitative data evaluated by question three was presented; as are the results of the qualitative analysis. Results from the first two research questions showed statistical significance; and data from the qualitative analysis showed that participants felt the training was beneficial and tried to implement techniques while working with students. The triangulation of the data using a mixed methods design showed support for use of improvisation training in pre-service teacher education programs. Chapter five examines the implications of these results.



## CHAPTER 5 DISCUSSION AND IMPLICATIONS

### Introduction

Chapter five presents a summary of findings. The implications of including improvisation training in pre-service teacher education programs are discussed, including linkages to the conceptual framework presented in chapter one, and general observations about the research. Limitations, implications for praxis and suggestions for future research are also presented. A final section, *Yes, and...* uses teacher voices to tie the research to the greater context of what improvisation means to pre-service teacher training for inclusive classrooms.

### Purpose of the Study

The purpose of this dissertation was to examine the outcomes of including improvisation training in a pre-service teacher methods course. The researcher theorized that participation in improvisation training would effect a change in teacher self-efficacy and knowledge of the improvisation skills presented in the training; and would result in teachers using the skills for communication and interaction in their teacher-child interaction. To further evaluate the effectiveness of the training and triangulate the data, coursework artifacts and pre-service teacher interviews were conducted to determine participants' feelings about the improvisation training and examine implementation. The research questions posed were:

1) Do pre-service teachers who participated in improvisation training show a change in perception of self-efficacy for improvisation skills (i.e. communication and interaction skills identified as common to both improvisation and teaching) as measured by the Communication Skills Assessment Inventory, (CSAI). This self-report measure was researcher generated to evaluate the effectiveness of the training. It includes:

a) Self-efficacy Questions for training topics

b) Knowledge Questions about the training topics

2. Do pre-service teachers who participated in improvisation training show a change in perceived self-efficacy for teaching as measured by the Tschannen-Moran and Hoy's (2001) Teacher Sense of Efficacy Scale (TSES) long form?

3. How did the pre-service teacher participants evaluate the improvisation training, to the extent that they used the improvisation skills in their interaction with students during their service-learning project?

### Summary of Findings

Quantitative results for research question one indicated a statistically significant change in pre-service teachers' perceived self-efficacy for improvisation skills. A matched pairs *t*-test was used to evaluate the direction and magnitude of potential change in self-efficacy for improvisation skills (i.e. communication and interaction skills common to both improv and teaching) presented in the training as well as the direction and magnitude of declarative and application knowledge for skills presented in the training as reported using the CSAI survey. The results from the study show there was a significant change in the means for self-efficacy for improvisation skills on both the full  $t(17) = -3.04, p = .007$ , and reduced measures  $t(18) = -3.31, p = .004$ . Additionally significant change in the means was also shown for the knowledge of improvisation skills measure for both the full,  $t(17) = -4.45, p < .001$ ; and reduced  $t(17) = -4.65, p < .001$  scales. A reduced scale was calculated to account for some skills receiving less emphasis in the training due to time limitations. These findings indicate that the training was effective. Participants showed increased self-efficacy for specific skills identified by the researcher as common to both improvisation and teaching. Additionally the

researcher included knowledge based questions on the CSAI survey to examine declarative learning, in the event that the self-efficacy items did not show change.

Quantitative results for research question two indicated a statistically significant change in the means for teacher self-efficacy for pre-service teacher participants. A matched pairs *t*-test was used to evaluate the direction and magnitude of potential change in participants' self-efficacy for teaching as measured by the Tschannen-Moran and Hoy (2001) TSES. The research results show there was a significant change in the means for teacher self-efficacy for student engagement  $t(18) = -2.47, p = .024$ ; instructional strategies  $t(17) = -3.57, p = .002$ ; and classroom management  $t(17) = -3.83, p = .001$ . Additionally the final composite self-efficacy score composed of the three subscales, also showed significant change in the means  $t(16) = -3.98, p = .001$ . These results combined with the results shown above from the first research question and the findings of the qualitative data, make a strong case for the effectiveness of including improvisation training in a pre-service teacher methods course. These findings are considered in greater depth in the discussion of results.

Due to the small sample size, ad hoc tests of normality were conducted to ensure that parametric statistical analysis was possible with the data from both self-efficacy measures. All datasets met the criteria for normality. An outside statistician reviewed the statistical methods and results for validity.

Qualitative results for research question three indicated that participants felt the improvisation training was beneficial and reported using techniques with students. To triangulate the data from research question one on the effectiveness of the training and close in on the results from research question two with the embedded nature of the training, qualitative data from coursework and interviews was collected from the participants and analyzed. Participants' responses to the training were positive. However two indicated that they would have liked more role-playing that was

domain focused. So the concern that was voiced was not against the value of the training, it only served to push for greater depth of implementation of the improvisation into the course than the researcher had planned. Results from the between subject analysis on participant beliefs about improvisation showed that participants thought the training was beneficial with several indicating they had used techniques from the training in their follow-up tutoring session with a child. The *Yes, and...* technique was cited most often. Additional responses included participants indicating they would use the techniques while working with summer camp students, in future collaborations with colleagues and by adapting them for use with students in the classroom. Participants who worked with children with disabilities indicated they felt better prepared to work with their student after the training. Self-reported affective changes included increased patience, greater ability to empathize with students, better understanding of the role of frustration in learning, and the need to accept student input. Additionally participants reported more self-awareness of how they are perceived by students in the classroom and the need to monitor body language and vocal prosody. Participants also discussed a renewed appreciation for the role of play and fun in learning. These results corroborate the quantitative findings from the first two questions and lend support for the theoretical relationship between self-efficacy and outcome expectancies. Implications for these results are discussed below.

### Implications

Since results for the three research questions posed in this research suggest the benefit of using improvisation training for pre-service teachers, this section discusses the potential implications for this practice. One of the main implications of this research is that it contributes research-based support for the strong theoretical justifications that exist for using improvisation in teaching. The results demonstrated by the data suggest that improvisation skills can be taught to pre-service

teachers as a means of fostering development of affective communication and interaction skills with beneficial outcomes such as increased empathy with students, feelings of increased agency, and the ability to establish a positive classroom climate, among others. Such outcomes are important because improvisation and teaching represent a crossroads where art intersects education; an area that Eliot Eisner (1990) believes is marginalized in educational research. He suggests the need for a paradigm shift in education moving away from standardized testing and evaluation practices. Eisner believes that practitioners find what they measure, and strongly advocates for arts-based research, and arts-based evaluation processes as a means of evaluating deeper level constructs like critical and creative thinking. David Berliner, former president of the American Educational Research Association, and Keith Sawyer, two advocates for improvisation in teaching, have similar beliefs. Berliner (2011) draws the connection between current educational reform movements focused on high-stakes testing and counter-intuitive outcomes in his forward to Sawyer's (2011) collection, *Structure and Improvisation in Creative Teaching* stating:

The imposition of structure and efficiency approaches to schools is resulting in what I call *creaticide* [emphasis in the original]. "Creaticide" is a national movement to kill literary, scientific, and mathematical creativity in the school-age population of the United States of America, particularly among impoverished youth. While all of public education feels the impact of accountability policies and policies that promote business models to improve education, it is the schools with the most impoverished students that feel these pressures the most. Schools with poor children often have the lowest test scores, and so policies thought to improve test performance are implemented with greater fervor. [This] has resulted in four outcomes: curriculum narrowing, narrowing of the assessments used to judge the quality of schooling, narrowing of the school's conceptions of what it means to be smart in school, and narrowing of the ways we judge teacher competency. With a few notable exceptions, policies designed to improve schools... have resulted in a diminution of those classroom activities that are more likely to promote higher levels of thought, problem solving, and creativity in academic areas (pp. xiv-xv).

Sawyer (2004b) cites one example of this *narrowing* which is the trend towards scripted curriculums and uniformity as a means of *teacher-proofing* classrooms. He states:

Underperforming schools are faced with two very different visions for reform. Scripted approaches attempt to teacher proof the curriculum by rigidly specifying teacher actions, and essentially removing all creativity and professional judgment from the classroom. Creative teaching suggests a very different vision: teachers are knowledgeable and expert professionals, and are granted creative autonomy in their classrooms. Our economy is increasingly based on knowledge workers and a 'creative class,' and these economic trends seem to require creative teaching that emphasizes learning for deeper understanding, rather than mastery of lower-order facts and skills (Sawyer, 2004b, p. 12).

Berliner (2011) believes these approaches towards down-skilling the teaching profession take the joy out of teaching and Sawyer (2004b, 2011) and Berliner (2011) see them as counter-productive for educating competent critical and creative thinkers. What is needed instead is a way to up-skill the teaching profession, to produce expert teachers who can diffuse difficult classroom management situations, who can foster lively discussions, who can harness their content area knowledge to respond on the fly to teachable moments, who can interact with and engage students. The researcher strongly agrees with the need for a paradigm shift away from current practices emphasizing standardized measurements of teacher and student performance. Arts-based practices such as adapting improvisation for teaching evaluated by this research have the potential to revolutionize aspects of teacher training. The data from this investigation provides research-based evidence supporting that this approach produced noticeable changes in teacher behavior in the context of this research.

Throughout the course of this investigation, the researcher came to understand that improvisation intersects with many diverse fields and domains, including theater, dance, music, communication, cognitive science, neuroscience, education, psychology, modeling and simulation, organizational science and training, creativity, and business among others. In addition to using a mixed-method approach, this study is interdisciplinary. The literature review presented in chapter two and implications section presented in chapter five show that multiple fields are searching for strategies for affective development, including ways to foster empathy and develop emotional, social

and interpersonal skills; how to restructure learning environments to foster expertise and how to develop problem solving and interaction strategies for dealing with ambiguous ill-defined contexts. Improvisation provides strong theoretical justification for application in all these contexts. A few examples illustrate the interdisciplinary connections that can be drawn to the findings from this research. Improvisation training is an interactive, whole body approach to learning. Results from Jensen's (2008) brain-based learning research showing the benefits of interactive learning techniques parallel Bandura's (1997) research on mastery experiences. Both Jensen (2008) and Wilson (2002) believe interactive strategies like those found in improvisation exemplify embodied cognition, which cognitive scientists describe as the role the body plays in shaping the mind and cognition. Improvisation also emphasizes fostering agreement. Current neuroscience research corroborates prior educational research such as Conroy et al. (2009) on the role of positive feedback in learning. van Duijvenvoorde, Zanolie, Rombouts, Raijmakers, and Crone (2008) present fMRI evidence showing that children (8-9 years old) performed better on tasks in response to praise and positive feedback than to negative feedback. Additionally, neuroscience research by Limb and Braun (2008) has observed differences in fMRI brain scans of jazz musicians engaging in improvised performance. The role of interpersonal skills development such as that presented in the improvisation training is an ongoing research focus for organizational scientists in their examination of education and training for industry (Bedwell, Fiore & Salas, 2012). This research contributes an additional aspect to evaluating improvisation's actual effectiveness in the context of training pre-service teachers in effective communication and interaction techniques. The ongoing challenge is for each of these fields to establish common terms and to share their research findings.

Improvisation training in contrast to many commercial professional development programs is cost effective and provides a high return on investment. Since many games and activities are in the

public domain, improvisation training can be implemented for little to no cost other than a time investment. For those seeking more advanced improvisation training, most medium sized cities offer improvisational comedy theaters that often offer classes and there are numerous books, like Halpern, Close and Johnson's (1994) *Truth in Comedy* on how to get started. Research shows the emergence of programs tailoring improvisation training programs to teachers (Cawthorn & Dawson, 2009; Burnard, 2011; Dawson et. al., 2011 & Lobman, 2011).

A value of improvisation training is that it provides simulated mastery experiences. Bandura (1997) describes four sources of self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological arousal. Since Bandura (1997) does not directly address where role-playing or acting fits in these four categories, the researcher posits that improvisation as a theater technique is a type of simulated mastery, which may incorporate elements of the other three categories. Simulated mastery experiences using improvisation are easier to set-up and orchestrate than are professional on-site mastery experiences in schools for instructing teachers. Improvisation lessons typically involve a small group (~5-10) of people who agree to a simple set of rules for a game or role-playing session or other similar type of interactive activity (Halpern et al., 1994; Kadwell, personal communication, March 4, 2010; & Kadwell, Fall 2009-Spring 2010). Players choose a scene setting or topic and begin. Most games or activities last well under 10-minutes each and can be done in virtually any location with sufficient space. By contrast, gaining access to a classroom setting in which to practice requires overcoming several hurdles that potentially include being fingerprinted and undergoing a background check, locating a willing in-service teacher with whom to share a classroom and receiving school or district approval. Most teacher education programs work with pre-service students to provide such opportunities at least a few times during training but are not usually able to make such experiences available on an ongoing basis.



Improvisation training affords pre-service teachers the opportunity to engage in simulated mastery experiences in which they have the opportunity to try out and develop communications and interaction skills similar to those in a classroom in a safe environment; potentially more often than they might otherwise with professional mastery experiences. Bandura (1997) elaborates on the need for opportunities to constructively fail, stating that “procedural knowledge alone will not convert novices into proficient” actors (p. 25). He continues:

Activities requiring the construction and adept execution of complex skills call for additional mechanisms to get from knowledge structures to proficient action... In social cognitive theory the mechanism for transforming thought into action operates through a conception-matching process... Conceptions are rarely transformed into appropriate performances without error on initial attempts. Skilled performances are usually achieved by repeated corrective adjustments (Bandura, 1997, pp. 25-26).

Improvisation activities can be incorporated throughout teacher preparation programs without sacrificing existing content. Creative implementation can use improvisation as the delivery method to present existing pre-service education content. The benefit of this is the on-going demonstration of interactive constructivist methods for teachers to imitate in the classroom, and the value of on-going experience with *in-flight* decision-making. The ability to have a safe “sandbox” (Reiber, 1996, p.46) in which to practice such skills should not be underrated. Too often novice teachers “cut their teeth” in classrooms, because they are learning as they go. There is the real possibility that their communications and interactions may cause harm to children, especially while under timing and high stakes testing constraints. Children with disabilities are often a more fragile population. They may struggle to fit in and may be more sensitive to the subtleties of communication and interactions. Novice teachers entering an inclusive classroom without the skills to provide high quality teacher-child interactions for children with disabilities may do more harm than good. As a general rule of thumb, strategies that work for children with disabilities are typically beneficial for typically developing students as well. The example shown by Tanya in chapter four where she states, “Before

the first learning service training I was a little clueless in how to interact with students in a way that will get each and every individual student involved with learning,” shows the importance of providing on-going opportunities for simulated mastery for pre-service teachers to try out interaction strategies in sand-box environments. Pre-service teachers need the opportunity to develop their behavioral repertoire in situations that will not have adverse effects on students. Improvisation training provides such a context.

Since two of the participants indicated that they thought the improvisation training should have focused on role-playing specific teacher-oriented scenarios, the researcher reviewed her rationale for keeping the improvisation focus general. The researcher’s Masters degree in modeling and simulation informed the decision to keep the improvisation training situated in a general context. The researcher theorizes that improvisation can be considered a form of simulated mastery. Fidelity is always a consideration when designing a simulation. It might seem like the more the simulation replicates the target environment the better training environment it provides. This is reductionist because there are many types of fidelity: i.e. environmental, procedural, degree of difficulty, etc... Increasing the fidelity in one area may distract the user from the intended goals of the simulation. Cook and Fiore (2009) discuss the role of fidelity in simulations stating:

Discussions center on the construct of fidelity within simulations and how certain elements of the learning must be similar to the target environment. Importantly, research highlights how only some components of the simulation need to be faithful to the operational setting being simulated in training. Researchers have noted that the use of simulations with high physical fidelity had little, if any, impact on the actual operational job tasks. Others have shown how low-fidelity PC-based simulations can be used to train complex skills at the individual and team levels. Most generally, fidelity needs to be determined by the behavioral and cognitive requirements of the task. As can be seen, this notion of fidelity aligns with what we suggested regarding context. Further, fidelity researchers argue that it is the mental process to which we must be faithful as opposed to only emphasizing the physical environment. Cognitive or psychological fidelity is the term used to describe a requirement for the learning environment to faithfully reproduce the mental processes necessary for a given task (Cook & Fiore, 2009, p.185)

The researcher chose to keep the improvisation game contexts general so that the participants did not focus on the details of role playing scenarios and become distracted by whether they considered the context to be accurate or not. The researcher posits that improvisation and teaching share a common underlying communications and interaction skill set (See Appendix B for details). As such from the fidelity description presented above based on Cook and Fiore's (2009) description, keeping the improvisation context general maintains the cognitive or psychological fidelity of the mental process. This is especially true for using improvisation in an undergraduate methods course where pre-service teachers may or may not have prior experience working in classrooms to be able to envision realistic classroom scenarios. The researcher also used the general improvisation strategies to demonstrate effective classroom interaction techniques and a constructivist approach. At the end of each training session the researcher asked participants to reflect on how they could connect the training to their practice as teachers. This also allowed the participants to construct their own meaning from the workshop. Qualitative analysis shows that pre-service teachers built on this, stating their desire to adapt these strategies for classroom use.

The researcher strongly suggests that Lipsker's (2005) model of using the improvisation technique of Playback Theater to foster deep-level reflection in students during a nursing internship could be adapted as a reflection process during student teaching as well. Implementing this type of improvisation form, Playback Theater, during student teaching would ground the context of improvisation in specific personal teaching experiences, maximizing the cognitive or psychological fidelity of the simulation and permit deep-level reflection.

Improvisation shows promise for acting as an instructional strategy to teach affective skills to adult learners. Emphasis on affective development is strongest in early childhood education and elementary school. Middle schools often compartmentalize programs to target specific development

issues like peer pressure. However, as students enter high school and college explicit affective education efforts decrease. Instructional programs assume, except in rare cases, that skills for teamwork, collaboration, conflict resolution, interpersonal engagement, and emotional and social development have already been developed. For example, skills for teamwork are often expected to *emerge* as students interact with each other on a project, and in some cases this alone is sufficient for the development of these skills, however it is not the most efficient way of teaching teamwork and collaboration; and for students who do not come by effective strategies on their own, it can be an exercise in frustration. The importance for teaching adults and older students effective affective and interpersonal skills is demonstrated by research on bullying (Salas, 2005; Socherman, Horne & Dagley, 1998), resilience (Welch Knox, 1998) and customer service training (Feldman, 2008).

Instructional strategies for affective development are limited in comparison to cognitive strategies. Reigeluth's (1999) encyclopedia of *Instructional Design Theories and Models* includes sixteen instructional strategies for cognitive development, one strategy for psychomotor development, and six strategies for affective development, one of which is directed specifically at children. The number of affective strategies presented is less than half of those given for cognitive development. The National Academy of Sciences includes development of strong interpersonal skills to be a crucial 21<sup>st</sup> century skill (Bedwell, Fiore, & Salas, 2012). This shows how important it is to develop affective instructional strategies that are successful for working with adults. A crucial result from the qualitative data analysis of this study shows that pre-service teachers report being better able to empathize with students after the improvisation training. They provide enough detail in their reports to suggest that this is a result of activities from the training. Improvisation was used as the instructional delivery strategy for imparting certain communications and interaction skills as part of this training. Improvisation as described by Sawyer (1997, 1999, 2004a, 2004b, 2011) has potential to

be used as an organizing structure in classrooms and might be used as an instructional strategy for affective development in older children and adults to help develop better interpersonal skills.

### Limitations of the Study

This study has three main limitations, the small sample size; the sample population, and because it is quasi-experimental in an applied setting, the unknown degree to which elements of the methods course or other factors such as the charter school population contributed to changes in pre-service teacher self-efficacy for teaching instead of the improvisation training. Although statistical analysis showed that the sample data met the criteria for parametric statistical analysis using matched pair *t*-tests, the sample size remains small, which limits the ability to generalize the results. *T*-tests however are useful for working with small samples and measuring change in specific conditions (Pagano, 1994). However *t*-tests are not as robust as other inferential statistical measures such as ANOVA (Pagano, 1994). Given the pre-/post-training conditions of this design with the training embedded in the methods course, and the small sample size, *t*-tests were the best measure of choice (Pagano, 1994). The researcher used the mixed method design to account for this concern. The CSAI measure and qualitative data were used to focus specifically on the effectiveness of the training and to *box-in* the training outcomes, even if the changes in participants' self-efficacy for teaching could not be directly attributed to the training. These measures provide indirect evidence that since the training was effective and pre-service teachers reported applying strategies from the training in their interaction with children, that at least partial responsibility for the changes in self-efficacy for teaching measured in research question two can be attributed to the improvisation training. Additionally the researcher calculated effect sizes for both self-efficacy measures and found most scales on the CSAI measure to indicate a large effect size; and most factors on the TSES scale to indicate a medium effect size. Since effect size calculations measure the difference in the

distributions without regard to sample size, they are useful for interpreting the practical results of this research. The medium to large effect sizes observed for the results of the self-efficacy measures indicate that the post-test distribution (the mean and the measured spread (standard deviation)) shifted in a noticeably positive direction, without the limiting effect of the sample size on the interpretive statistical data. So although the sample size was small, which might affect the interpretation of the t-test calculations, the practical effect shown with the effect size results helps to demonstrate that positive change was not likely due to chance. However, replication of the study with a larger sample size is still encouraged to confirm the results of this study.

The population of pre-service teachers used for this research is also a limitation. A majority of the participants (18/19) were females under the age of 30 (16/19). They were primarily studying exceptional education or early childhood/elementary education, which may have affected their pre-disposition or motivation to engage in the improvisation activities. Future research should include populations with more diverse gender, age and educational foci. One of the students did not consent to participate, although she did participate in the class activities. Her data was excluded from the study and might have presented a differing viewpoint.

Since this study was conducted in an applied setting, the improvisation training was embedded within a pre-service teacher education course, and it is not possible to distinguish to what extent teacher self-efficacy measured as part of research question two changed as a result of instruction presented in the methods course or as a result of the improvisation training or as a result of the interaction of the two. For this reason the researcher included the self-efficacy and knowledge of improvisation scale (CSAI) used in research question one to evaluate specific training related changes in the participants' beliefs. Factor analysis was not possible on the CSAI due to the small sample size. However, data from the qualitative observations of the teacher-child interactions also

supports the effectiveness of the training and pre-service teacher's use of improvisation techniques. The qualitative data was included to triangulate the quantitative results and provide additional information on the effectiveness of the training in addition to data from the CSAI instrument. Replication of this study with a control is suggested to determine the effects attributable to the methods class.

One other observation about the quasi-experimental nature of the study is the possibility that some observed changes, such as participants self-report of increased empathy might be due to the interaction participants had with students with disabilities. While this is a possibility, not all participants worked with children with disabilities, and many specifically referenced material presented in the improvisation as the impetus for their self-reported realizations. Brian, who reported being able to empathize with students after playing the improv games with frustrating instructions, is an example of this (see chapter four for details). Brian tutored a high achieving typically developing child for service-learning, and reported working at the science center for his prior experience with children. Demographics on prior teaching experience were collected with the last surveys, and Brian did not report prior experience working with exceptional populations, or extra hours volunteering at the charter school. Due to the context of his statements specifically referencing the improvisation game as the trigger for his observations about frustration and empathy, it appears that his reported changes were due to the improvisation training and were not connected to the student population. Other participants present similar cases in their qualitative responses. However, because it is possible that the exceptional education students in the charter school population may have influenced pre-service teacher participants' affect, the researcher recommends replicating the study in other settings with different populations of children, such as English language learners, or a homogenous typically developing student group.

The two other potential limitations discussed in chapter three, the concern about the length of the training and breadth of the training, and the concern about how the participants' self-awareness matched up against an ideal of performance did not appear to be limitations after data analysis was conducted. The researcher theorized that if significant change was not found in the self-efficacy measures it might be due to the validity of the training. Results show this did not prove to be true. However additional research is warranted on how much improvisation training is needed to effectively impart improvisation skills to participants.

Although not specifically a limitation to this research, one consideration is presented for discussion. It involves discussion of how to best capture the emergent, ephemeral nature of improvisation. Research on the use of improvisation in education is a fairly recent phenomenon. Vera and Crossan's (2005) measure of improvisation and innovation is the only quantitative instrument identified in the literature review. Qualitative research is typically regarded as the best approach for constructs like improvisation that are ill-defined (Patton, 1987; Glesne, 2006; Wolcott; 1994; Miles & Huberman, 1994; Merriam, 1992). For this reason qualitative analysis of participant coursework artifacts and interviews were included to triangulate the data. The transferability of qualitative research results is limited by the degree to which future implementations are similar to the original research setting (Merriam, 1992).

### Implications for Praxis

One of the benefits that improvisation training provides for teaching interaction is that it presents a minimal heuristic framework for maximum flexibility (Barrett, 1998). Pianta and Hamre (2009) report that teachers benefit from examples of specific teacher-child interactions on which they can model their own interactions. The MyTeachingPartner program that accompanies their



CLASS interaction instrument provides a video library of teacher-child interactions for teachers to watch. Lemov's (2010) taxonomy also focuses on specific interaction strategies. However, instead of teaching specific interaction techniques, which may be hard to remember, improvisation provides a broader framework of heuristic techniques that can be adapted to a variety of environments and contexts. A simple example of this is the *Yes, and...* strategy that fosters agreement, and is an overarching structure that can be adapted to specific circumstances. The participant known as Denise provides a description of how she used *Yes, and...* with the student she worked with who has a cognitive disability:

After all the improv training, I got to work with Tammy again. This time was much better and easier than the first time. The first time I was frustrated and kept asking Tammy to sing the alphabet to try and put the words in order. This didn't work too great because Tammy did not know her alphabet very well, but I did not know what else to do. The second time around, Tammy realized that all the words we have to put in order started with the letter S. She said oh that is like my friends Sam and Shannon. Instead of having Tammy work on the list of words, I asked her to put Sam and Shannon in abc order. She actually got it correct. (Denise, research participant, reflection from TIA PowerPoint).

This shows a teacher who does not just recognize a *teachable moment*, but one who fosters the *teachable moment* by using *Yes, and...*

The minimal framework of *Yes, and...* begins with the teacher choosing to agree to engage the students and accept the *offers* they make. The challenge for the teacher becomes how to incorporate the students' offers into the lesson at hand and make an adaptation; the challenge for the student is to explain his/her thinking. This simple act enables a teachable moment, which is the flexibility of the framework. Establishing an overarching structure that is student-centered and focused on adaptation is crucial in successful inclusive classrooms.

Students' offers are typically grounded in how they make sense of the current instructional context offer; this may be within the academic task structure or the social participation structure of the class, to use Erickson's (1982) terms. The teacher in turn must identify to which part of the

student's offer he/she responds and how best to incorporate that offer back into the lesson. This is especially relevant given the ongoing adaptations that may be necessary in inclusive classrooms to meet each child's needs (Olson et al., 2008). The parallels are especially salient in Paul Berliner's (1994) description of "improvisation," which he says "involves reworking pre-composed material and designs in relation to unanticipated ideas conceived, shaped, and transformed under the special conditions of performance, thereby adding unique features to every creation" (p. 241).

Improvisation training appears to foster agency. Through improvisation training participants learn how to present a professional self in the form of establishing a persona by exploring how the *character* they create in a performance as an actor or player differs from their personal identity. This helps to maintain a healthy distance during classroom management situations. Rathel et al. (2008) describe the feedback loop that often happens in teacher-child interaction. They cite prior research showing that:

[S]tudents often have more influence on teachers' behavior than teachers have on students' behavior. For example... when teachers work with students who display problem behaviors, they often limit instructional demands to escape or avoid students' misbehavior. Students are likely to repeat disruptive behaviors because it may enable them to escape or avoid task demands (i.e., aversive circumstances), whereas teachers' behaviors (e.g., limiting instructional demands, removing the student from class) may also be influenced because they avoid students' negative behavior. Researchers have shown that teachers' use of increased positive statements may attenuate this negative-reinforcement cycle between teachers and students... and thus increase learning opportunities for students (Rathel et al., 2008, p. 68).

By assuming a *teacher persona*, teachers can achieve some emotional distance between the interactions they have with children and their personal feelings about these situations. This is especially true in classroom management situations. Creating a teacher persona allows teachers to act appropriately while deflecting some of the emotional strain and stress that can result from classroom management. Developing such an awareness of interactional agency can help to break the feedback loop described by Rathel et al. (2008).

Participants became aware of body language and vocal prosody as a communication technique. They also learned techniques to foster interaction, as well as techniques to control that interaction. Marta describes her newfound self-awareness:

It's not that, it's not that he's challenging, it's more just like I'm not used to kids that are just distant. Like I've dealt with behavioral issues or just really outgoing or anything, but I've never dealt with like really a introverted child. Like it's kind of a challenge for me in itself. Since I'm not, I'm very overt and outgoing, I guess. (Marta, Research participant, post-training interview).

She follows up describing how she tried out using improvisation technique such as mirroring emotions and found that it put her student more at ease.

Skills such as these are what were missing in Borko and Livingston's (1989) investigation of the differences between effective experienced teachers and highly qualified novices. The ability to foster, control and direct student interaction was especially crucial in the classrooms that Borko and Livingston (1989) observed that used inquiry-based and constructivist teaching strategies. Borko and Livingston (1989) attributed the differences in performance to experienced teachers' greater ability to improvise. Although their study was conducted more than twenty years ago, no follow-up research was conducted to evaluate whether pre-service teachers could be taught the improvisation skills demonstrated by the effective veterans. Preliminary results from this study support the researcher's premise that pre-service teachers can learn to use improvisation communication and interaction strategies similar to those found in effective veteran teachers.

The skills presented as part of the improvisation training also afford pre-service teachers a greater sense of agency in the classroom. They can choose how to use their voice, their gestures and body language to engage the students. When these become conscious decisions, teachers are more able to respond to situations like those described by Rathel et al. (2008) in ways that break the negative feedback loop.

### Implications for Future Research

As the body of research on improvisation and its application to teaching increases future research should move beyond research questions focusing on *Does it work?*, redirecting the focus away from examining whether it is effective; and towards specific details about its implementation. For example, a more micro-level analysis could consider what constitutes a student *offer* in the *Yes, and...* strategy. Future research should examine when does an offer start and stop, and to which student offers teachers should best respond. Future studies should extend the correlation drawn between teacher self-efficacy and improvisation by evaluating its potential relationship to other related, important constructs in educational research such as affect, emotional intelligence, play, creativity, and possible mediators such as personality orientation. Although improvisation and teaching share many common skills, differences are also present. While the improvisation training presented as part of this research focused on skills that were similar to improv and teaching, the researcher was curious about how significant the differences were and whether this informed the research in any way.

After considering the rich interactions that took place as a part of this training, the researcher suggests including data collection and analysis of the trainings in future studies of improvisation in the classroom. The improvisation training used interactive activities and debriefing sessions to encourage participants to connect the improvisation skills to their practice. Using personal reflections and notes provided an outline and overview of the interactions, but the actual transcript would allow for more detailed analysis of participants' thought processes and contribute to the extension of improvisation research suggested above.

Sawyer (1997, 1999, 2004a, 2004b, 2011) theorizes about the potential for improvisation to be used as an organizing structure in classrooms, as an interactive instructional strategy. This

research used improvisation as the delivery method for fostering the development of communication and interaction skills in pre-service teachers. Future research should examine whether improvisation meets the criteria to be considered as more than just a delivery method for affective learning and whether it can be considered an instructional strategy for affective development.

The request voiced by two participants seeking more domain-focused improvisation activities should be investigated further. Based on experience with this research and the pilot studies, the researcher theorizes that including a Playback Theater component to reflection exercises during the student teaching phase of pre-service teacher development would be beneficial. The researcher suggests replicating Lipsker's (2005) study, which implemented Playback Theater for reflection during a nursing internship in the domain of teacher education.

Additionally, while this research shows support for including improvisation training as part of a pre-service teacher methods course, future research needs to examine how long and at what depth such training needs to be to retain effectiveness. This training had the benefit of taking place over three class periods for approximately six hours. Instructional time in pre-service teacher training programs is at a premium, and not all programs may be able to offer class time for such a lengthy period. This is an opportunity for replication in another study.

Questions about interaction emerged during the course of this research. As the researcher participated in the training she reflected on how similar or different the *Yes, and...* technique was to active listening. Rephrasing and repeating back speech is a common technique for active listening, so the researcher was curious about to what extent the two techniques paralleled each other and what their value was in relation to each other. Additionally in contrast to teaching where questions are a staple, in improvisation questions are discouraged because they do not typically offer information

for the other players to respond to and responses can vary widely (Sawyer, 2004a). Research on teacher immediacy (Merhabian, 1971; Witt, Wheelless, & Allen, 2004) makes the assumption that approach type interactions known as positive immediacy result in positive outcomes. However immediacy is a toolset, for instance time-outs are an example of distancing that can be used for classroom control. To help evaluate these observations about specific aspects of interaction, the researcher consulted the work of Jeff Wirth, a noted improviser and one of the founders of Interactive Theater (Wirth, 1994). Wirth is the architect for the pre-service teacher training simulation called TeachMe Lab, that uses an inter-actor trained in improvisation and other acting techniques to provide challenging scenarios for pre-service teacher training to foster experience. While improvisation is one component of Interactive Theater, among other techniques the goals of Interactive Theater are explicitly to involve the audience in the performance and to provoke interaction (Wirth, personal communication, September 6, 2012; Wirth, 1994). The additional tools present in Interactive Theater, taken from dance and other theater types may provide a better one-to-one mapping with teaching (Wirth, personal communication, September 6, 2012). Future research should examine whether the teaching as interactive performance metaphor is a better fit than Sawyer's (2011) teaching as improvised performance metaphor.

One final suggestion is to follow the interdisciplinary connections identified by this research about neuroscience research on improvisation. Future research should examine whether the brain differences attributed to improvisational performance observed by jazz musicians in Limb and Braun (2008) apply to improvised performance in teaching and if so how these findings connect to prior neuroscience research on the brain. Specifically examining the qualitative reports by some participants of being able to empathize with students associated with certain improvisation activities would be an interesting future research topic from a neuroscience perspective.

### Implications for Training Pre-Service Teachers for Inclusive Classrooms

The conceptual framework for this research was teacher communication and interaction as teachers acquire expertise with a focus on the development of affective skills, like self-efficacy, empathy, social and emotional intelligence and agency. The data appears to show that improvisation training can be used to foster affective skills development in adult learners. As Deena, one of the research participants expresses, “Whoever thought that silly games could be so enlightening?”

Of particular note, findings from this study offer insight into the potential for improvisation to prepare teachers of students with disabilities both in inclusive and non-inclusive settings. Teaching students with special needs can be a stressful job that challenges teachers and is no longer limited to special classrooms. Today inclusive classrooms are the norm to ensure that all children get the same educational advantage. This advantage depends on highly trained staff of general and special education teachers who can work with children who have Autism, students in wheelchairs, children with learning disabilities, children with 504 plans, children with cognitive delays, and twice-exceptional children. It is important to create warm welcoming climates where students with disabilities feel *included*. In this study the pre-service teacher known as Tanya who worked with a child with significant disabilities who is nonverbal, exemplifies this practice stating:

Tanya: It was... even though she was there with a disability I was able to still talk to her and pretend like she's, you know... Just make her feel as if she's just as the other students. So I just talked to her in the same manner that I will talk to any other student. Just make it seem like she's just a normal student. Just work with her even though she wasn't able to like comprehend on everything I was doing or I just helped her out. And I just flowed with it. You know how we talked about speaking in a certain way [This is a reference to the vocal prosody activities presented in the improvisational training]. I tried to speak so that she could understand me. And speak loud and clear. Instead of like ‘huhn’ (Tanya, research participant, post-training interview).

Training teachers to communicate with and teach children who are nonverbal or those who do not have reciprocal language can be a challenge for teachers in any setting, and using improvisation

techniques may help establish basic skills working with this population. In Tanya's follow-up tutoring session with her child, she used the improvisation technique called *comping* or making the other player look good. Joanna, the child Tanya worked with, often uses vocalizations (vocal prosody) to communicate rather than words. Tanya often had to interpret the vocalization to be able to communicate. She also to *carry* the conversation conducting an interactive monologue, acting *as if* Joanna were fully participating. In doing so Tanya created an environment that encouraged Joanna to respond and interact where and when she could. In the second tutoring session, Tanya made more of an effort to establish a narrative relationship with Joanna, which resulted in more interaction between the pair, despite the fact that Tanya often struggled to understand the actual words Joanna used. A portion of her interview is included below describing these changes:

Researcher: Did you find her [Joanna] responsive?

Tanya: Sort of. She understood exactly what I was talking about cause she replied. When you walked out that door a couple of times, she was talking and I was like, "what did you say, honey?" "ok" I was like asking questions. "So did you have fun? Did you like it?" I said, "Do you have six?" [blocks]. You know, I was just going a little deeper and she was talking. She understands and I know she hears and she understands. [Tanya's voice is emphatic and excited].

Tanya: I just felt more comfortable this time...

Tanya's willingness to center the instruction around the child's needs, and to structure an on-going conversation that permitted the child to enter and leave at will, helped to demonstrate what Joanna's capabilities were, rather than emphasize her limitations. Tanya's excitement was palpable as she realized that she could get through to a student who presented significant communication and interaction challenges. Tanya's realization that Joanna *did* understand and *wanted* to participate motivated her to make an increased effort.

One of the most important results from the qualitative research was the identification of pre-service teacher statements showing that they connected improvisation-training activities with the



ability to better empathize with students. Referencing the data from chapter four, Amber makes an explicit connection between how uncomfortable she initially feels participating in the improvisation games with how students may feel when put on the spot. Brian also makes an explicit connection between the frustrations he felt trying to follow two conflicting directions as a result of an improv game with how students may feel when trying to follow directions they do not completely understand. Additional respondents drew more implicit connections between how the improv techniques for mirroring emotions and body language changed their ability to understand another's point of view. These examples, which reference specific examples from the improvisation training, support the researcher's belief that improvisation techniques help to foster empathy. This is important in the context of teaching because it is often very difficult for normal to high functioning adults to put themselves in the shoes of even typically developing children, much less to be able to see things from the viewpoint of a student with disabilities. While humans are equipped to be able to empathize with each other, this is a skill that can be deepened and developed with practice. The fields of drama and dance emphasize the development of empathy in practitioners as a means of connecting with the audience and appearing authentic in performance. Instructional strategies like improvisation training that have the ability to foster the development of these skills in teachers can help strengthen teacher-child relationships, which are linked to positive student outcomes.

Improvisation training prepares teachers for the unpredictable nature of today's inclusive classrooms. The participant known as Brian shows his understanding of how *in-flight* decision-making and *Yes, and...* can influence practice in his final exam response. He states:

One tool that I will take away from the improv training is the tool of spontaneity. You never know what is going to happen in a classroom or what is going to befall you that day. You should be ready for anything and embrace the challenges that come to you. You should never be discouraged by an event by make[ing] the most of it. (Brian, research participant, final exam response).

His response illustrates how the combination of *Yes, and...* and *in-flight* decision making can be used to foster *teachable moments*.

As an educational tool, improvisation techniques involving play can also be used to establish a base for constructing new learning. Many games and strategies presented in the training can be adapted for improvisational communication in the classroom. This study's results indicate that those pre-service teachers who learned the play strategies saw them work with their students. The pre-service teacher known as Naomi gives an example of adapting a rhythm game. She asserts:

One of the games that we did. That it was that we had to remember the person before us with the sounds that they made, so I tried get him to remember first the first sound, the second sound and then put them all together, so that's the way I used it. (Naomi, research participant, post-training interview).

One of the main contributions of this study is how improvisation training can be used to address the attrition rate for novice teachers, which is an ongoing national problem. A prospective teacher will spend four years getting their degree and licensure and often because of the demands of the classroom, will exit teaching for a less demanding career within five years. Improvisation training holds strong theoretical promise for helping new teachers to be more at ease in their classrooms, be better able to establish rapport with all children, be able to improvise a teachable moment to minimize a classroom distraction and be able to have fun in lesson presentation; this study presents compelling research-based evidence, both quantitative and qualitative that supports those theoretical claims. Training pre-service teachers in improvisation skills can help novices master effective interpersonal skills quicker and ease the transition into the teaching profession by focusing on strategies for implementing planned lessons and adapting material on the fly to meet students needs, what Beghetto and Kaufman (2011) call “curriculum-as-lived” (p. 94). Fostering response-in-the-moment skills, where teachers embrace what is possible can help novice teachers love their

profession. The researcher likens classroom interaction to surfing, to learning to read the waves and the environment and enjoying the thrill of riding the waves of student contributions. However this cannot be left up to chance, effective interaction and communication skills that allow teachers to experience the thrill of successfully managing the unknown on a daily basis must be explicitly taught, and scaffolded. This is what Sawyer (2004b) means by *disciplined improvisation*. Although from a research standpoint, it is difficult to completely separate the beneficial effects expressed by participants due to the improvisation training from those produced by the methods class, the researcher does not see this as a practical problem. The goal with incorporating improvisation into teacher training is not to send pre-service teachers to the local comedy club for classes, it is to fuse improvisational performance techniques with teacher training methods, much like occurred in the actual research setting for this study. The participant Naomi expresses this succinctly stating:

Overall I think this improvisation class should go hand-in-hand with [class name] because they both teach you how to fit your lesson to your students not the other way around. Exceptional students need extra help and guidance from their teachers, and their teachers need to be aware of [how] they portray themselves verbally (vocal prosody) as well as physically (body language). They need to be able to do things they wouldn't normally to act silly and get down to their students levels in order to reach them (persona). (Naomi, research participant, class reflection).

Amber corroborates this, attributing feeling more comfortable with her student to the training:

I did feel much more comfortable this time with him after all the training. I think it was more natural than conscious. (Amber, research participant, post-training interview).

Lastly, the key concept in improvisation is fostering agreement through *Yes, and...* This study indicates that receiving from children with the *Yes* portion of that statement builds on what they know so they can elaborate and construct new knowledge. We are told that building on prior knowledge is good practice in the classroom, but building on prior knowledge is more than asking what students know about a subject, saying *Yes* is clearly agreeing to begin dialogue with a child.

Marta who worked with a child with Autism reflects:

But like when, I was trying to make con[nect]... like make dialogue with him ...So like “What do you want to do?” and like before I would never have done that. I would have kept saying let's do this ...But like this time I was like “How about we try to draw, and then we do a little bit of my stuff, and then we can do yours.” ...I saw his eyes go OK and he was ready to work...I kind of, I don't think we got as much done with this, this time, but [he] was much more willing to communicate with me.... I was like, “what do I want to say to him?” and I was like “what will he say back to me?”... but I tried to kind of start like “Oh how was your day?” [She gestures to indicate holding an internal dialogue with herself] (Marta, research participant, post-training interview).

This reflection shows an emerging highly qualified pre-service teacher with prior experience in inclusive classroom settings, who discovers her agency, her control over a whole new set of interaction skills. To paraphrase Deborah Lowenberg Ball from chapter one, Marta discovers that teaching is about what children think. Unless teachers can engage students, no amount of content knowledge is transferable. The collection of beneficial personal themes (1-10) established through the qualitative data analysis can be described as indicators of teachers' developing agency.

The benefit of improvisation training for pre-service teachers is that they are students themselves. Their self-concept as a teacher is still malleable and they are open to trying new things. Using improvisation as the delivery method for presenting communication and interaction skills demonstrates a successful interactive teaching method grounded in at least three sources of self-efficacy: mastery [albeit simulated], vicarious experience and verbal persuasion (Bandura, 1997). Leaving the context open allows the facilitators to demonstrate, and the participants to experiment with responding in the moment to the unknown in a safe fun environment. Too often teacher education courses advocate for interactive strategies while using direct instruction, which does not model effective interactive delivery and problem solving for beginning teachers.

One of the tenants of complex systems theory is that there are critical points in a dynamic system where the system is open to change and that may have unexpected linkages to other parts of the system (Bar-Yam, 2004). The butterfly effect theory is an example of this, where a small change

in one part in an interconnected system has a large effect elsewhere. Although the communication and interaction skills of improvisation training were presented to individual teachers in this study, those individual teachers will interact with numerous children over the course of their careers. Providing novice teachers with an effective communication and interaction skill set may produce a large effect over time. Prior research on teacher-child interaction shows that children who have more positive experiences at school do better academically and stay positive about school longer than children who do not have positive school experiences (O’Conner, 2007; O’Conner & McCartney, 2010). Downer et al. (2010) state, “it is abundantly clear that children learn and develop in large part as a function of their interactions with adults and peers” (p.703). Teacher-child interaction research advocates for professional development for teachers that is “active, [and] collaborative,” (p. 745) and which takes place within a non-judgmental supportive environment (Mashburn et al., 2008). The improvisation training presented as part of this study fits that description and the data shows through the quantitative results reporting increased self-efficacy and the voices of pre-service teachers’ self-reflection and interviews to potentially change teacher-child interaction for the better.

Pre-service teacher education programs should send novices out into the field with the best preparation possible. This study suggests a means by which pre-service teachers can gain the affective skills necessary to enter their classrooms confident in themselves, capable of communicating with *all* children and able to foster a positive environment for both themselves and their students.

## APPENDIX A: IRB APPROVAL LETTERS



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Approval of Exempt Human Research

From: UCF Institutional Review Board #1  
FWA00000351, IRB00001138

To: Theresa Becker

Date: February 01, 2012

Dear Researcher:

On 2/1/2012, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: UCF Initial Review Submission Form  
Project Title: Evaluating Improvisation as a Technique for Training Pre-Service Teachers for Inclusive Classrooms  
Investigator: Theresa Becker  
IRB Number: SBE-12-08174  
Funding Agency: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Janice Turchin on 02/01/2012 02:43:56 PM EST

IRB Coordinator



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
www.research.ucf.edu/compliance/irb.html

### Approval of Exempt Human Research

From: **UCF Institutional Review Board #1  
FWA00000351, IRB00001138**

To: **Theresa Becker**

Date: **May 11, 2012**

Dear Researcher:

On 5/11/2012, the IRB approved the following minor modifications to human participant research that is exempt from regulation:

Type of Review: Exempt Determination  
Modification Type: The researcher will interview the UCF class instructor and three Improvisation instructors to get their feedback and observations on the impact and use of the training. Two additional questions have been added to the demographic questionnaire. The revised consent document has been approved for use.

Project Title: Evaluating Improvisation as a Technique for Training Pre-Service Teachers for Inclusive Classrooms  
Investigator: Theresa Becker  
IRB Number: SBE-12-08174  
Funding Agency:  
Grant Title:  
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 05/11/2012 01:01:37 PM EDT

IRB Coordinator



APPENDIX B: COMMUNICATION SKILLS ASSESSMENT INVENTORY  
(CSAI), TEACHER SELF-EFFICACY SCALE (TSES) AND DEMOGRAPHIC  
SURVEY

## Communication Skills Assessment Inventory

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

**Directions:** Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your **current ability, resources, and opportunity to do each of the following in your present position.**

	None at all	Very Little	Some Degree	Quite A Bit	A Great Deal				
1) How readily can you establish a relationship with a student you have just met and engage him or her in conversation?	1	2	3	4	5	6	7	8	9
2) How readily are you able to accept and build on student contributions to the lesson even when they are wrong?	1	2	3	4	5	6	7	8	9
3) How readily are you able to separate your personal feelings about students from your professional behavior toward the students?	1	2	3	4	5	6	7	8	9
4) How readily can you come up with a quick response to a student trying to distract others from the lesson?	1	2	3	4	5	6	7	8	9
5) How readily are you able to use environmental and social cues to guide your interaction with students?	1	2	3	4	5	6	7	8	9
6) How readily are you able to note when a student has changed something about his or her appearance like a new haircut?	1	2	3	4	5	6	7	8	9
7) How readily are you able to note which children are not considered to be popular?	1	2	3	4	5	6	7	8	9
8) How readily can you motivate and/or engage a non-responsive or minimally responsive child?	1	2	3	4	5	6	7	8	9
9) How able are you to use your voice to tell an engaging story?	1	2	3	4	5	6	7	8	9
10) How able are you to direct student behavior by selecting your location in the classroom?	1	2	3	4	5	6	7	8	9
11) How readily are you able to hide your frustration when students do not make the progress you believe they are capable of making?	1	2	3	4	5	6	7	8	9
12) How able are you to make decisions in high stress situations?	1	2	3	4	5	6	7	8	9
13) How able are you to be spontaneous?	1	2	3	4	5	6	7	8	9
14) How able are you to rephrase your instructions for a lesson when students repeatedly seem to misunderstand?	1	2	3	4	5	6	7	8	9
15) How readily can you determine the difference between a sad child and an angry child?	1	2	3	4	5	6	7	8	9
16) How able are you to fill the time left in a 45 minute class when the lesson is 20 minutes short?	1	2	3	4	5	6	7	8	9
17) How readily can you listen and repeat back a story a student has told to you?	1	2	3	4	5	6	7	8	9
18) How much do you know about fostering agreement to promote elaboration in communication?	1	2	3	4	5	6	7	8	9
19) How much do you know about using narrative structure to establish a relationship with new people?	1	2	3	4	5	6	7	8	9
20) How much do you know about the importance of vocal prosody (the sound and tone of a person's voice other than the words)?	1	2	3	4	5	6	7	8	9
21) How much do you know about creating and maintaining a professional teacher persona?	1	2	3	4	5	6	7	8	9
22) How much do you know about good listening strategies?	1	2	3	4	5	6	7	8	9
23) How much do you know about teacher with-it-ness or awareness?	1	2	3	4	5	6	7	8	9
24) How aware are you of how to use body language for communication?	1	2	3	4	5	6	7	8	9

## Communication Skills Assessment Inventory

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

**Directions:** Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.

	None at all	Very Little	Some Degree	Quite A Bit	A Great Deal				
1) How readily can you establish a relationship with a student you have just met and engage him or her in conversation?	1	2	3	4	5	6	7	8	9
2) How readily are you able to accept and build on student contributions to the lesson even when they are wrong?	1	2	3	4	5	6	7	8	9
3) How readily are you able to separate your personal feelings about students from your professional behavior toward the students?	1	2	3	4	5	6	7	8	9
4) How readily can you come up with a quick response to a student trying to distract others from the lesson?	1	2	3	4	5	6	7	8	9
5) How readily are you able to use environmental and social cues to guide your interaction with students?	1	2	3	4	5	6	7	8	9
6) How readily are you able to note when a student has changed something about his or her appearance like a new haircut?	1	2	3	4	5	6	7	8	9
7) How readily are you able to note which children are not considered to be popular?	1	2	3	4	5	6	7	8	9
8) How readily can you motivate and/or engage a non-responsive or minimally responsive child?	1	2	3	4	5	6	7	8	9
9) How able are you to use your voice to tell an engaging story?	1	2	3	4	5	6	7	8	9
10) How able are you to direct student behavior by selecting your location in the classroom?	1	2	3	4	5	6	7	8	9
11) How readily are you able to hide your frustration when students do not make the progress you believe they are capable of making?	1	2	3	4	5	6	7	8	9
12) How able are you to make decisions in high stress situations?	1	2	3	4	5	6	7	8	9
13) How able are you to be spontaneous?	1	2	3	4	5	6	7	8	9
14) How able are you to rephrase your instructions for a lesson when students repeatedly seem to misunderstand?	1	2	3	4	5	6	7	8	9
15) How readily can you determine the difference between a sad child and an angry child?	1	2	3	4	5	6	7	8	9
16) How able are you to fill the time left in a 45 minute class when the lesson is 20 minutes short?	1	2	3	4	5	6	7	8	9
17) How readily can you listen and repeat back a story a student has told to you?	1	2	3	4	5	6	7	8	9
18) How much do you know about fostering agreement to promote elaboration in communication?	1	2	3	4	5	6	7	8	9
19) How much do you know about using narrative structure to establish a relationship with new people?	1	2	3	4	5	6	7	8	9
20) How much do you know about the importance of vocal prosody (the sound and tone of a person's voice other than the words)?	1	2	3	4	5	6	7	8	9
21) How much do you know about creating and maintaining a professional teacher persona?	1	2	3	4	5	6	7	8	9
22) How much do you know about good listening strategies?	1	2	3	4	5	6	7	8	9
23) How much do you know about teacher with-it-ness or awareness?	1	2	3	4	5	6	7	8	9
24) How aware are you of how to use body language for communication?	1	2	3	4	5	6	7	8	9

## Teacher Beliefs - TSES

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

**Directions:** Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

**Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.**

	None at all	Very Little	Some Degree	Quite A Bit	A Great Deal				
1. How much can you do to get through to the most difficult students?	1	2	3	4	5	6	7	8	9
2. How much can you do to help your students think critically?	1	2	3	4	5	6	7	8	9
3. How much can you do to control disruptive behavior in the classroom?	1	2	3	4	5	6	7	8	9
4. How much can you do to motivate students who show low interest in school work?	1	2	3	4	5	6	7	8	9
5. To what extent can you make your expectations clear about student behavior?	1	2	3	4	5	6	7	8	9
6. How much can you do to get students to believe they can do well in school work?	1	2	3	4	5	6	7	8	9
7. How well can you respond to difficult questions from your students?	1	2	3	4	5	6	7	8	9
8. How well can you establish routines to keep activities running smoothly?	1	2	3	4	5	6	7	8	9
9. How much can you do to help your students value learning?	1	2	3	4	5	6	7	8	9
10. How much can you gauge student comprehension of what you have taught?	1	2	3	4	5	6	7	8	9
11. To what extent can you craft good questions for your students?	1	2	3	4	5	6	7	8	9
12. How much can you do to foster student creativity?	1	2	3	4	5	6	7	8	9
13. How much can you do to get children to follow classroom rules?	1	2	3	4	5	6	7	8	9
14. How much can you do to improve the understanding of a student who is failing?	1	2	3	4	5	6	7	8	9
15. How much can you do to calm a student who is disruptive or noisy?	1	2	3	4	5	6	7	8	9
16. How well can you establish a classroom management system with each group of students?	1	2	3	4	5	6	7	8	9
17. How much can you do to adjust your lessons to the proper level for individual students?	1	2	3	4	5	6	7	8	9
18. How much can you use a variety of assessment strategies?	1	2	3	4	5	6	7	8	9
19. How well can you keep a few problem students from ruining an entire lesson?	1	2	3	4	5	6	7	8	9
20. To what extent can you provide an alternative explanation or example when students are confused?	1	2	3	4	5	6	7	8	9
21. How well can you respond to defiant students?	1	2	3	4	5	6	7	8	9
22. How much can you assist families in helping their children do well in school?	1	2	3	4	5	6	7	8	9
23. How well can you implement alternative strategies in your classroom?	1	2	3	4	5	6	7	8	9
24. How well can you provide appropriate challenges for very capable students?	1	2	3	4	5	6	7	8	9

### Demographic Survey

Please answer the questions below to help the researcher understand the background you bring to this study. This will help with the data analysis of the survey data.

- 1) Have you taken any previous classes with Dr. Hines or Dr. Grillo at UCF?

No  
 Yes, If so which classes \_\_\_\_\_

- 2) Have you had any formal theater or acting training?

No  
 Yes, Please describe your prior training or classes.

- 3) Have you had any prior experience with Improvisation?

No  
 Yes, Please explain:

- 4) What is your major? \_\_\_\_\_

- 5) Circle the word that best fits:

This class is a REQUIREMENT / ELECTIVE for my degree program.

- 6) Circle the word that best fits:

I am MALE / FEMALE.

- 7) My age is:

<input type="checkbox"/> 18-21	<input type="checkbox"/> 34-37
<input type="checkbox"/> 22-25	<input type="checkbox"/> 38-41
<input type="checkbox"/> 26-29	<input type="checkbox"/> 42-45
<input type="checkbox"/> 30-33	<input type="checkbox"/> 46-49

- 8) My class standing is:

Freshman  
 Sophomore  
 Junior  
 Senior  
 Graduate Student

APPENDIX C: PERMISSION TO USE THE TSES INSTRUMENT

From: mxtsch@wm.edu  
To: theresa.becker@knights.ucf.edu  
Subject: RE: Request to use the TSES instrument for dissertation  
Date: Sun, 11 Sep 2011 21:21:21 -0400

Theresa Becker,

You have my permission to use the Teacher Sense of Efficacy Scale (formerly called the Ohio State Teacher Sense of Efficacy Scale) that I developed with Anita Woolfolk Hoy in your research. You can find a copy of the measure and scoring directions on my web site at <http://wmpeople.wm.edu/site/page/mxtsch> . The scoring directions are provided there as well. Please use the 2001 Teaching and Teacher Education article as the proper citation (even though the earlier name was used in that article).

I will also attach directions you can follow to access my password protected web site, where you can find the supporting references for this measure as well as other articles I have written on this and related topics.

Your work sounds very interesting. I would love to receive a brief summary of your results when you complete your study.

All the best,

Megan Tschannen-Moran  
The College of William and Mary School of Education  
PO Box 8795  
Williamsburg, VA 23187-8795  
Telephone: 757-221-2187  
<http://wmpeople.wm.edu/site/page/mxtsch>

From: Theresa Becker [mailto:theresa.becker@knights.ucf.edu]  
Sent: Wednesday, August 24, 2011 3:18 PM  
To: mxtsch@wm.edu  
Subject: Request to use the TSES instrument for dissertation

Hi Dr. Tschannen-Moran,

I am a doctoral candidate at UCF in the College of Education. I will be evaluating the strength and direction of a potential relationship between Improvisation training and pre-service teacher self-efficacy for classroom management in my dissertation research coming up this fall and spring.

I have read about the Teacher Sense of Self-Efficacy measure and believe it would be the best teacher self-efficacy measure to use. I would like to use it to evaluate one of my research questions. If you would consider granting me permission to use your survey I would highly appreciate it. I was also curious about the scoring of the instrument to make sure that I am using it correctly.

Thanks

Theresa Becker



APPENDIX D: COMMON SKILLS BETWEEN IMPROVISATION AND  
TEACHING

## Improv and Teaching: Common Skills

Prior to designing the improvisation training, the researcher used the analysis step in the ADDIE model to evaluate commonalities between improvisation and teaching. Once these commonalities were identified, the list was condensed to those skills thought to be most relevant to teaching while considering the time limitations for the training. The list of commonalities between improvisation and teaching are shown in Table 12.

Table 12

### *Commonalities Between Improvisation and Teaching*

<b>Commonalities Between Improvisation and Teaching</b>	
1	Social Intelligence and Interpersonal Communication
3	Listening
4	Persona: Actor/Character and Teacher/Person Teacher persona
5	Soft Focus/With-it-ness: Awareness
6	Pattern Recognition
7	Positive Framing/ Positive Teacher-child Interaction
8	Status/Power/Stereotypes
9	Mantra Learning Goals and Objectives
10	Humor
12	Tolerance for Ambiguity/Uncertainty; Comfort with the Uncomfortable
13	Flexibility/Adaptation/Openness/"Satisficing" (Le Maistre & Pare, 2010)
14	Timing
15	Decision Making/Acting with Intentionality
17	Narrative Structure/Sequencing/Creating Relationships/ "Assume a relationship" (Hines & Hines, 2010)
18	9 Viewpoints including Body Language/Proxemics/Blocking/Physical Immediacy/Prosody

### Social and Emotional Intelligence

Both teachers and improvisers demonstrate social and emotional intelligence as part of their craft. As examined previously social and emotional intelligence are key characteristics of effective teachers (Stronge, 2002; Goleman, 2007). Moe et al.'s (2010) research on Italian teachers shows that using effective instructional strategies alone is not a good predictor of teacher satisfaction. Good instructional praxis is mediated by high self-efficacy and positive affect (Moe et al.'s, 2010).

Goleman's (2007) research on Social Intelligence and its use for teachers shows the importance of

being able to know others and act effectively on this knowledge. Di Fabio and Palazzeschi (2008) and Chan (2008b) have initiated research into the role that Emotional Intelligence plays in teacher behaviors. Moe et al (2010) state, “research has shown the central role of emotions in shaping a teacher’s identity and adjustment to school challenges. Teaching is an emotional practice and emotions have been defined as the ‘heart of teaching’” (p.1146).

For improvisation, Halpern et al. (1994), describe these skills as “Being human in a community” (p.25). Players are able to tap into the human condition such that, “no matter how banal the suggestion from the audience may seem, the players will make it profound” (p. 32). Improvisation games and activities teach players how to do this by tapping into their humanity (Kadwell, personal communication, March 4, 2010). Kadwell (personal communication, March 4, 2010) believes that improvisation training teaches empathy. Players need to empathize to establish credible characters and to be able to anticipate actions (Kadwell, personal communication, March 4, 2010). Goleman’s (2007) review of empathy research suggests that “empathetic accuracy” is what “distinguishes... the most successful teachers” (p.89). He posits that this might be “*the* essential expertise in social intelligence” (p. 88).

### Listening

Arcavi and Isoda (2007) describe what they term “productive ways of listening” (p.111). They advocate for the development of this skill in teaching stating, “thus, as a competence which may serve a number of professional development purposes, listening should become a central teaching capability to be learned, developed and continuously nurtured. However, listening is not an easy task” (Arcavi & Isoda, 2007, p.113). Experts often compress or “package” (p. 113) knowledge in ways that erase traces of how the information was learned (Arcavi & Isoda, 2007). Teachers need to be able to expand this compressed knowledge, to take into account how students are learning and to listen for cues to monitor progress. Arcavi and Isoda (2007) discuss how “decentering” (p. 113) is an

important listening strategy for teachers. They cite Deborah Lowenberg Ball's (1988) research to support this, stating:

As teachers, sometimes we may not only need to set aside our own knowledge and ways of knowing, but we also have to develop a capacity to 'read through' idiosyncratic ways of expression and learn to appreciate their underlying logic and potential. In other words, 'Making sense of children's ideas is not so easy. Children use their own words and their own frames in ways that do not necessarily map into the teacher's ways of thinking.' ... 'The ability to hear what children are saying transcends disposition, aural acuity, and knowledge, although it also depends on all of these (Arcavi & Isoda, 2007, p.113-114).'

In a personal communication, improvisation instructor, Stephen Kadwell (March 4, 2010), describes how listening is a foundation of improvisation. He says listening involves "understanding not only what people say, but what they mean" (Kadwell, personal communication, March 4, 2010). Halpern et al. (1994) theorize that "some of the best improvisers are those that listen and remember" (p.63).

#### Agreement & Positive Teacher-child interaction

"Yes, and..." (Halpern et al., p.46, 1994) is the golden rule of improvisation (Kadwell, improvisation curriculum, Fall 2009 – Spring 2010). Halpern et al (1994) refer to this as agreement. In improvisation, agreement between players is the foundation of scene generation and furthers the action (Halpern et al, 1994). Halpern et al (1994) exemplify this stating, "real humor is not the result of someone trying to steal laughs at the expense of his partner, but of generosity – of trying to make the other person (and his ideas) look as good as possible" (p.16). This is referred to in improvisation as "comping," meaning to compensate for or support fellow players (Barrett, 1998, p. 619; Kadwell, personal communication, March 4, 2010). Players must be aware of each other and if someone is seen to be struggling with the scene, other players must be ready to jump in and take the lead. Additionally once a player makes an offer in a scene, the other players must be open to expanding on that theme and developing it by making their own offers (Kadwell, improvisation curriculum, Fall 2009 – Spring 2010; Halpern et al 1994). Halpern et al (1994) state this is like constructing the

scene, “one step at a time, each player provides a building block, until they have easily, painlessly, constructed a scene” (p.47). They suggest,

This is a very relaxing way in which to work. A player knows that anything he says on stage will be immediately accepted by his fellow player, and treated as if it were the most scintillating idea ever offered to mankind. His partner then adds on to his idea, and moment by moment, the two of them have created a scene that neither of them had planned (Halpern et al, 1994 p. 47).

The benefit to this is that players agree ahead of time to create and maintain a positive working environment. The supportive environment fosters communicative risk taking and diminishes the fear of failure.

Positive Teacher-child interaction is especially important in the elementary grades when modeling social skills. Good and Brophy (1987) state that young children may not know appropriate approach behaviors for teachers and may interrupt. Teachers need to be especially careful how they handle these situations to avoid a tone of voice and body language that might give the impression that approach is unwelcome (Good & Brophy, 1987). They recommend “the teacher should speak in a soft, gentle tone, use the student’s name, and include a positive statement about when the problem will be handled, ‘Not right now, Sally. Come back when reading group is over.’ This short statement recognizes the student individually, shows concern for her problem, and states a willingness to deal with it at a specific time” (Good & Brophy, 1987, p. 197). Although not overtly obvious, this is an example of the *Yes, and...* approach from improvisation. The *Yes* part is the act of recognition and acceptance of what the other person is offering (or in Sally’s case requesting). Although the teacher says, “*Not right now, Sally,*” (p.197) she is accepting and acknowledging Sally’s request. The *and...* part furthers the interaction in some way. In the Good and Brophy (1987) example cited above, the teacher follows up with a counter-offer, “*Come back when reading group is over*” (p.197) which maintains the connection and furthers the interaction between the teacher and

child. The *Yes, and...* technique does not mean that the players always concur, but it does mean that all offers are acknowledged and accepted; and that the interaction between the players is furthered as a result of the initial offer and response. Teachers using the *Yes, and...* approach do not need to agree with students offering incorrect answers either, as the example from Green (2010) in the chapter 1 introduction illustrates. However, by acknowledging the child's contribution (the *Yes*, part) and trying to listen and take the child's perspective as Arcavi and Isoda (2007) suggest; and then trying to redirect the child's thinking in the right direction or further examine the problem (the *and...* part) as Deborah Lowenberg Ball showed when talking to Sean about the number six; a deeper level of interaction is achieved than just stating *wrong answer* and moving on to the next student. This deep level interaction is more characteristic of constructivist classrooms.

#### Persona: Actor/Character; Teacher as Person/Teacher as Leader

Teachers and improvisers create personas in the course of their interactions (Phillips, 2008). Naftulin et al.'s (1973) Dr. Fox study highlights the need for the teacher to create a performance persona. According to Kadwell, (personal communication, March 4, 2010) in improvisation, the need to establish believable meaningful characters means the player has to establish two identities – *Me, the person* and *Me, the actor*. The person needs to be aware of the characteristics necessary to successfully portray the character in the scene. The only way this can happen is if the improviser can empathize with the character or someone like the character. Similarly, teachers need to create a persona that allows them to go beyond their personal feelings for the good of the class. For example, a shy teacher may need to appear upbeat and enthusiastic even though he or she is not naturally extroverted (Green, 2010). Self-awareness is one of the first steps to doing this. Good and Brophy (1987) assert that self-awareness is a crucial skill for teachers. Bandura (1997) notes that individuals often may not be aware of their problems to be able to correct them. He states, "the problem of performance ambiguity arises when important aspects of one's performance are not

personally observable” (p. 66). Because both improvisation and teaching make use of the persona technique, improvisational training may afford a safe way for teachers to reflect on their performance and practice establishing a teacher persona.

Moe et al. (2010) examine differences in how teachers perceive themselves and actual performance in their research, through examining the role of teacher affect and self-efficacy on job satisfaction. They state:

Matching the ideal self with the actual self is not simply rational: self-representations are not pure cognitive representations, but are filled with emotions, desires, hopes, willingness to achieve some personal standards, fear of, perceptions of ability to reach one's ideals and perhaps more (Moe et al., 2010, p. 1151).

Yoon's (2002) research also asked questions on negative affect in teaching examining to what extent teachers were able to hide their actual negative emotions from students and the effect this might have on student-teacher relationships.

#### Awareness/With-it-ness/Soft-Focus

For the purpose of this research, *With-it-ness*, uses the definition given in Wise and Sundstrom (2009): “*With-it-ness* refers to remaining ‘with it’ (aware of what is happening in all parts of the classroom at all times) by continuously scanning the classroom, even when working with small groups or individuals” (p. 26). They continue, referencing “*versatility* – a teacher’s ability to move from student to student, activity to activity, and to/from mode, module, or technique in ways that best facilitate student behavior and drive achievement” (p. 26). Bogart and Landau (2005) articulate the corresponding construct in improvisation, which they call *soft focus*. “Soft Focus is the physical state in which we allow the eyes to soften and relax so that, rather than looking at one or two things in sharp focus, they can now take in many” (p.31). They continue, “with focus softened in the eyes, the individual expands the range of awareness, especially peripherally” (p. 23). For Bogart and Landau (2005) and Kadwell (personal communication, March 4, 2010), soft focus

includes letting information come in from all the senses, not just the eyes. Bogart and Landau (2005) define a related concept, *feedforward*, as “an outgoing energy that anticipates the necessity for action” (p.34). Kadwell (personal communication, March 4, 2010) describes *soft focus* and *feedforward* as states a person takes while driving; that sense of overall awareness of the environment, of reading and interpreting input signals coupled with a potential for immediate action as necessary. Halpern et. al. (1994) call this being “environmentally aware” (p. 101). The improvisation performer cultivates this so as to be comfortable with the unknown and look for opportunities to connect to the other players. The teacher uses this set of states to monitor class-wide behavior, conduct formative assessment of students and react to *teachable moments*, or to prevent or respond to disruptions in learning. Improvisation uses a variety of games and activities to promote the development of awareness or soft focus (Kadwell, Improvisation Curriculum, Fall, 2009 – Spring 2010).

### Pattern recognition

Bandura (1997) theorizes that recognizing the familiar in new tasks is key to being able to adapt to new situations. He says, “attending to what is strange in new tasks, rather than to what is familiar about them and clearly within one’s capability, may similarly hinder the effective use of skills. Rigid mind-sets impede generative use of one’s knowledge and skills in new situations in which they would be useful” (p. 18). This type of pattern recognition is useful for novice teachers to acquire expertise. Teachers also use pattern recognition during the process of formative assessment. Being able to recognize commonalities in student errors and act appropriately on them is a key skill for teachers (Heritage et al., 2009).

Pattern recognition is also a key skill in improvisation. As Halpern et al. (1994) state,

The most effective, satisfying laughs usually come from an actor making a connection to something that has gone before... Making a connection generates energy for that scene; as connections are discovered, they perpetuate themselves, raising the scene to a level, which could never be reached by just telling jokes (pp. 26-27).



They continue stating:

Making connections is as easy as listening, remembering, and recycling information... Connections are a much more sophisticated way to get laughs. When an audience sees the players start a pattern, they finish the connections in their own minds. They are forced to think just a tiny bit, and when they have to work along with the players to recognize the laugh, it is much more gratifying for the audience, which has had its intelligence flattered in the bargain (Halpern et al., 1994, p.29).

Jafferries Kovalik and Rasp McGeehan (1999) tie this idea back in to brain based learning for their instructional strategy stating, “the brain’s search for meaning is a search for meaningful patterns” (p. 377).

#### Power and Social Status

Merabian (1971) characterizes power as one of the three main metaphors addressed by communication; the other two being immediacy and responsiveness. He details ways in which both verbal and non-verbal language subtly convey power or dominance cues. Improvisational players use representations of these cues to establish characters and examine relationships. For teachers the ability to recognize and respond to these cues is important especially in today’s climate where bullying can often impact school performance (Newman, 1999; Salas, 2005).

Rosalind Wiseman (2002) brought the complexities of adolescent communication to the forefront by examining how girls communicate and interact in her distinctive book, Queen Bees and Wannabes, later adapted for the film, Mean Girls. She details the covert communications that girls often use to establish power within social networks (Wiseman, 2002). Such communications often rely heavily non-verbal communications with emphasis on body language and vocal prosody (Wiseman, 2002). Many adults do not take seriously complaints such as “she looked at me funny,” when in fact a simple glance amongst adolescents may signal something very ominous (Wiseman, p. 200). Many of these communications are so subtle or covert as to be missed by adults; the layers of subtext being too complex; and even when they are overt, adults may often not know how to react

appropriately (Newman, 1999). Even worse, adults may reinforce status designations and harmful stereotypes with their own verbal and non-verbal stereotypes (Stanulis & Manning, 2002). Good and Brophy (1987) cite their own and additional research that shows “that teachers’ affective reactions (attachment, concern, indifference, rejection) influence their behavior toward pupils” and result “in uneven attention” (p.31). Jensen (2008) cites the need for teacher congruency of verbal and non-verbal communications. School administrators and teachers have been implicated in being aware of bullying in the classroom and having failed to act in such noteworthy cases such as the deaths of Phoebe Prince, Eric Mohat and twelve year old, Brandon Myers, to name just a few (Kennedy, 2010; Donaldson James, 2009; Scher Zagier, 2009). As surprising as it may seem, many of these issues are addressed in the training players receive for improvisation. Issues such as status, power, body language and subtext are key recurrent themes in improvisation (Halpern et al., 1994; Bogart & Landau, 2005; Kaldwell, 2010). In fact a specific improvisation technique known as Playback Theater has been successfully used as a bullying countermeasure (Salas, 2005).

Interestingly one of the goals of the Drama for Schools program in Texas that provides dramatic training for teachers is to use techniques from “Augusto Boal’s *Theatre of the Oppressed* arsenal” (Boal, 2002; Cawthorn & Dawson, in review, p. 5) to make teachers aware of their own role in school based power hierarchies. Drama for Schools also trains teachers to use “Heathcote’s *mantle of the expert* role-playing techniques. Mantle of the expert shifts the experience of the learner in that invites [the learner] to take on the role of individuals with knowledge about the situation to be solved” (Cawthorn & Dawson, in review, pp.5-6). Both the role-playing technique and Boal’s (2002) *Theatre of the Oppressed* are based on improvisation.

#### Decisiveness: acting with intentionality

Teachers make a lot of decisions each day (Kohler et al., 2008; Byra & Sherman, 1993). In improvisation, every decision is intentional, even if it occurs accidentally (Kadwell, personal

communication, March 4, 2010). In improvisation the players have to *own* their decisions and take responsibility for them. This intentionality gives the player the ability to be more comfortable with the decisions they make (Kadwell, personal communication, March 4, 2010). Halpern et al. (1994) described this as being in the moment.

Byra and Sherman (1993) found that expert teachers make a greater number of decisions than novice teachers and are better at knowing when to make adaptations. Le Maistre and Pare (2010) state that novice teachers have difficulty adapting “to the number and scale of the decisions they are called upon to make instantaneously and simultaneously without the benefit of experience to guide them” (p. 561). Kohler et al. (2008); Henry (1994) and Stough and Palmer (2001) have also examined the importance of teacher decision-making.

### Humor

Humor is often the result of improvisation in theater settings. Humor that arises from Improvisation is an emergent phenomenon that results from a juxtaposition of elements, development and recognition of patterns and the incongruities of unplanned contributions (Halpern et al. 1994; Reisz, 2011).

Humor often arises in classroom settings as well, either intentionally or unintentionally. Although humor can be used negatively in the classroom (Wanzer & Frymier, 1999) and some teacher observation instruments such as the Flanders Interaction Analysis System score teacher use of humor negatively (Freiberg, 1981); others advocate for its use (Loomans & Kolber, 2002; Evans Palmer, 2010; Reisz, 2011). Wanzer and Frymier, (1999) found three reasons that teachers use humor, “to put students at ease, to gain their attention, and to show that the teacher is human.” (p.50). Their research found that

Humor oriented individuals report that they are able to adapt to various people and situations more effectively and are more ‘other’ or reward oriented in their communication

attempts. Humor oriented individuals attempt to make others feel positive through eliciting laughter and smiles (Wanzer & Frymier, 1999, p. 52).

Wanzer and Frymier (1999) examined Gorham and Christophel's research, which "noted that the total number of teachers' humorous enactments were positively correlated with the frequency of verbal and nonverbal immediacy behaviors. Humor and immediacy behaviors can involve similar mannerisms such as smiling, exaggerated facial expressions and body movements, and changes in rate, pitch, and volume of one's voice" (p. 52). They suggest that one-reason students perceive teacher use of humor as being effective is because it focuses attention. "The attention-gaining explanation indicates that a variable such as immediacy is arousing, which is related to gaining and keeping students' attention, which is related to memory, which in turn is related to cognitive learning" (Wanzer & Frymier, 1999, p49).

#### Mantra/Goals & Objectives

Performers often establish a mantra or goal for the scene and they use this to guide the offers that they make to the other players (Kadwell, *Improvisation Curriculum*, Fall 2009-Spring, 2010). This is similar to the goals and objectives that teachers establish for lessons (Good & Brophy, 1987).

#### Tolerance for ambiguity and uncertainty

Improvisers in theater, music and dance practice their craft of improvisation enough that they develop a level of comfort with uncomfortable situations (Kadwell, personal communication, March 4, 2010). Kohler et al. (2008) cite Dewey's observation that "much of teachers' work is uncertain and requires deep and foundational reflective practices. Dewey... further suggested that the process of reflection begins when a teacher experiences a difficult or unexpected problem in the classroom. Prompted by a sense of uncertainty and unease, the teacher steps back to analyze the situation" (p 2109). Hines and Hines (2010), in their application of improvisation to collaborative teaching, recognize this concept in improvisation and suggest that teachers shouldn't try to control the

situation. Lewis's (2007) research on improvisation for team training also mentions improvisations' ability to help players conquer their fear of the unknown.

### Establish Narrative Relationships

Byra and Sherman (1993) characterize expert teachers as having flexible routines that "required little monitoring and needed little explanation. In contrast... novice teachers' lessons [had] a greater amount of time spent explaining to students their roles and expectations" (p. 7). In improvisation this technique amounts to *Do, Don't Tell...*, (Kadwell, *Improvisation Curriculum*, Fall 2009-Spring 2010) meaning act out or demonstrate what you want the audience to imagine rather than just describe it.

A similar rule in improvisation is to avoid transaction type of relationships. Transactions are relationships such as buying something. Not only are these relationships boring for the audience to watch, they do not further the scene. As Halpern et al. (1994) state:

When an actor gives the unspoken message, 'watch this, folks, it's going to be funny,' the audience often reads this as 'this is going to be so funny, I'm going to make you laugh whether you want to or not.' Human nature being what it is, many audience members respond to this challenge with 'Oh, yeah? Just go ahead and try, because I'm not laughing,' to the performer's horror (p. 23).

Instead all relationships in improvisation should be based on narrative structure. Halpern et al. (1994) state, "a relationship must exist between the characters in the stage" (p. 81). Players must plan to establish who, what, why and where within the first few lines of the scene (Kadwell, *Improvisation Curriculum*, Fall 2009-Spring 2010; Halpern et al., 1994). Hines and Hines (2010) call this "act as if..." meaning act as if you were friends and had known each other for years. Halpern et al. (1994) suggest to start the scene in the middle of the interaction as a means of establishing these narrative relationships.

### Body language and Vocal prosody

Body language and vocal prosody are key tools used in improvisation. Bogart and Landau (2005) discuss this in depth in their Viewpoints framework of nine physical and five vocal elements of composition. Halpern et al. (1994) also discuss how the player must often be the sound effects, the scenery and the choreographer of the scene. Body language or non-verbal communication includes gesture, facial expression and proximity (Merabian, 1971). Vocal prosody for this research will refer to Bogart and Landau's (2005) three vocal viewpoints including "pitch, dynamic, acceleration/deceleration, silence and timbre" (p. 6). A recent study highlights the implications of Merabian's (1971) communication research by showing that listener's can correctly categorize whether a physician has been sued in court or not, simply by listening to a voice recording in which the words are faded out and only the vocal prosody of the physician is presented (Dutton, 2010).

Non-verbal communication and vocal prosody are also key in education. Jensen (2008) discusses the importance of congruity in teacher communication. Teachers must make sure that their verbal and nonverbal signals are sending the same message. (p. 1086-1101). Stanulis and Manning (2002) concur in their research on teacher contributions for a positive verbal and non-verbal learning environment.

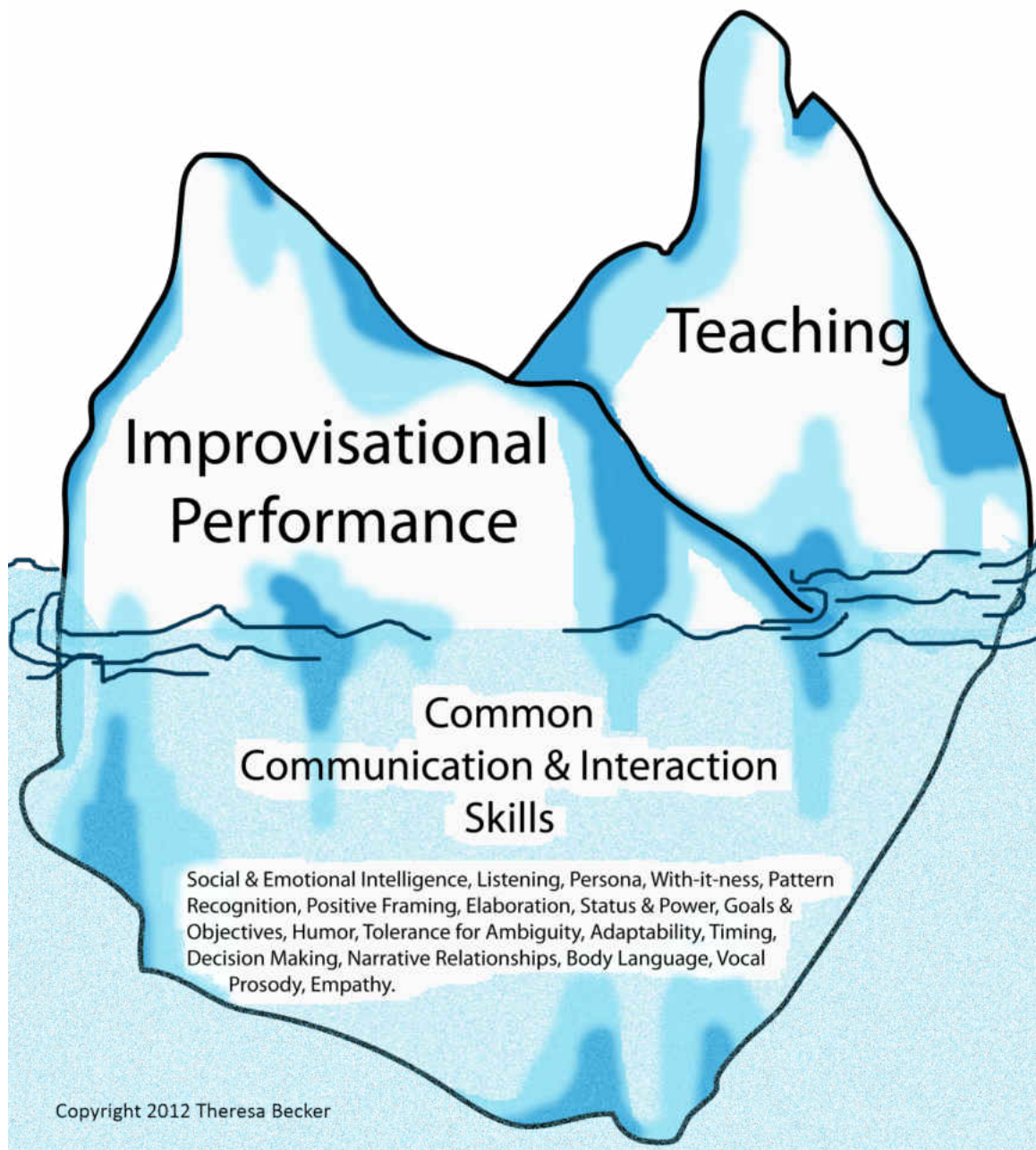


Figure 1: Commonalities between improvisation and teaching

## APPENDIX E: DESIGNING THE TRAINING



## Using Backwards Design to Develop the Training

The researcher's background is in Instructional Design. Therefore, the design, development and evaluation of the training are important elements of the research in their own right. For this research study, two design models informed the development of the improvisation training, Backwards Design and the ADDIE model. The ADDIE model will be discussed as part of the research design in Chapter 3.

Backwards design is a process where “one starts with the end - the desired results (goals or standards) - and then derives the curriculum from the evidence of learning (performances) called for by the standard and the teaching needed to equip students to perform” (Wiggins & McTighe, 2005, p. 8). Wiggins and McTighe (2005) suggest that for skill oriented goals, the end goal should focus on: the value of the skill; underlying concepts; issues of strategy (such as when to use the skill); or theoretical justification (explaining why the skill works). The Backwards Design model has three stages. The first is establishing the end goal. This should be a grand idea, a big question or something noteworthy that demands to be understood (Wiggins & McTighe, 2005). The researcher established as a target goal enhancing verbal and non-verbal communication skills in pre-service teachers by examining how improvisation and teaching share a common skill-set. The training asks the question: How is teaching an act of improvisation? A review of teacher education and improvisation literature suggested commonalities. The second stage is determining what will count as evidence of understanding, learning or change; and the third is selecting and organizing the experiences and knowledge to promote understanding, interest and success (Wiggins & McTighe, 2005). For this study, the research instruments play a role in setting the standards for showing that learning or change has occurred due to the training. The data from the self-report surveys, specifically the survey evaluating self-efficacy for communication skills, if directional and positive,

will be taken as evidence that the communication skills presented in the training were acquired by the pre-service teachers. Evidence of a positive directional change in data from the self-report survey on self-efficacy for teaching will also be accepted as showing the effectiveness of the training. Additionally if the pre-service teachers' show change in behaviors and discourse during the classroom observations that can be classified by the communication skills presented in the training, this will be taken as evidence that skills transferred from the improvisation training to the classroom. These three tools will be used to evaluate the effectiveness of the training. As part of the third stage in the Backwards Design process a list of communications strategies was developed that characterized both good teaching and necessary components of improvisation. The list was examined for similarities in the two constructs and grouped conceptually. From these lists the researcher identified communications skills common to both improvisation and teaching.

The common communications skills and associated improvisation activities can be thought of as modular in nature. The skills can be combined in mix-and-match fashion depending on the emphasis desired in a particular training. For this research, since the professional development training for the pre-service teachers was limited in time and could not the full range of improvisation techniques, common communications *subskills* were selected to focus specifically on those core improvisation skills thought to have the greatest potential for changing classroom discourse and influencing teacher behavior. A short but representative list of common communications skills and techniques was then chosen as goals for the training. Interactive activities and games representative of these target behaviors and strategies were then selected for inclusion in the training, along with an overview of improvisation and its simple yet flexible framework. Both the classroom observations of the pre-service teachers conducting tutoring sessions and the self-report self-efficacy survey on communications skills will serve as means by which to conduct summative evaluation of the

effectiveness of the training.

#### Adult Learners and Play as an Instructional Strategy

Improvisation was chosen as the delivery strategy for enhancing verbal and non-verbal communications skills for pre-service teachers. Improvisation uses learning through play to teach players the strategies, skills and techniques. Improvisation classes are based around interactive games, role-playing, movement, singing, and personal and group reflection (Kadwell, personal communication, March 4, 2010; Kadwell, improvisation curriculum, Fall 2009-Spring 2010).

Learning through play is a powerful instructional strategy (Reiber, 1996; Loomans & Kolberg, 2002). Bandura (1997) and Tschannen- Moran & Hoy (2007) advocate for mastery experiences as the best source of self-efficacy. Improvisation, with its use of interactive games and role playing can be thought of as a type of simulated mastery, where a make believe world represents or simulates the actual world often with reduced complexity and a “safe” environment for testing options and making failure fun. As Lobman (2003b) says, “Improvisation is an activity that can be taught... improvisation, similar to play, creates a low-risk learning environment where people are not afraid of being wrong or seeming stupid” (p. 141). Huffaker and West (2005) call this, shutting off the “internal critic” (p. 854). This “sand box” (Rieber, 1996, p.46) type environment is important for adult learners because it affords a measure of the complexity found in the actual environment but takes into account the adult learner’s “need for control and involvement, both in decision-making and in learning-related processes” (Lipsker, 2005, p.2). For Lipsker (2005), who conducted a study on using improvisation for nursing training, the challenge “was to link the nurses' theoretical knowledge with their professional experience. The convergence point took place in the realm of experiential learning through play, which establishes systems for conscious experiential reflection using dramatic-theatrical instruments” (p. 5).

Loomans and Kolberg (2002) posit that play and humor can be applied to classrooms of all age levels, including adults; and that such learning environments result in increased student engagement. Reiber (1996) concurs for the use of play. Reiber (1996) suggests that many misconceptions about the role of play in learning exist especially for adults. Beliefs that “play is irrelevant or inconsequential” or “easy,” belie the fact that adults commonly engage in activities that are “challenging and difficult” (pp. 43-44) such as sports and games. Research upholds “that play is an important mediator for learning and socialization throughout life” (Reiber, 1996, p. 44). If improvisation succeeds in changing teacher communication behavior it may partially be due to the fact that learning takes place in the course of play. Reiber (1996) examines two potential theories of how such change may take place, the independent stage of Piaget’s Theory of Cognitive Development and Csikszentmihalyi’s theory of *flow*. Piaget’s theory involves “three properties: epistemic conflict, self reflection and self regulation. Epistemic conflict denotes an ongoing cognitive ‘balancing act’ by each individual. One on hand, we seek an organized, orderly world, but we are continually confronted with an ever-changing environment” (Reiber, 1996, p.47). The processes of self-reflection and self regulation allow individuals to assess the situation and find a resolution resulting in either assimilation - fitting the problem into “an established mental structure,” accommodation – creating a “new structure,” or the problem may remain unsolved” (Reiber, 1996, p.47). Csikszentmihalyi’s theory of *flow* is often applied to adult activities. It is characterized as “a peculiar state of extreme happiness and satisfaction. [Individuals] are so engaged and absorbed by certain activities that they seem to ‘flow’ along with it in a spontaneous and almost automatic manner--being ‘carried by the flow’ of the activity” (Reiber, 1996, p.48). In the *flow* state individuals have a need for both “differentiation and integration. Differentiation is the need for the individual to remain unique from others whereas integration is the need to feel connected to other people and

other ideas. These seemingly opposite processes work together to achieve a state of balance between goals and expectations” (Reiber, 1996, p.48). Reiber (1996) states that “one result of flow is psychological growth; that is, the individual becomes more complex or elaborate” (Reiber, 1996, p.48). This is not unlike what Bandura (1997) characterizes as “powerful mastery experiences,” which he says:

provide striking testimony to one’s capacity to effect personal changes [and] can produce a transformational restructuring of efficacy beliefs... manifested across diverse realms of functioning. Extraordinary personal feats serve as transforming experiences (Bandura, 1997, p. 308).

Play, rather than being irrelevant can serve as a powerful learning strategy for effecting social and psychological change in a relatively safe environment.

#### Constructive Failure

Bandura (1997) notes the need for failure during learning stating, “conceptions are rarely transformed into appropriate performances without error on initial attempts. Skilled performances are usually achieved by repeated corrective adjustment of enactments to the guiding conception, as the skills are being behaviorally constructed and improved” (p. 26). However people must be motivated enough and willing to persist, to make multiple attempts. Being able to explore in a safe environment is crucial to taking risks. Csikszentmihalyi characterizes the *flow* state as the optimal mix of challenge and risk (Reiber, 1996). Participants in a game seek to avoid extremes of “anxiety and boredom” (Reiber, 1996 p48). Novice teachers are not playing a game. When they *fail* there are very real consequences, some of which may affect their decision to leave the field or may affect the development of their pupils. The benefit that learning through play offers is that “failure is fun” (Hirumi, Unpublished course material, 2007). Reiber (1996) reports on the anthropological context of play citing John Robert’s “concept of conflict enculturation” which “describes the way people in

a culture use games to provide nonthreatening ways to practice conflicts typical to that culture. Games become models or enactments of real-life dramas. According to this theory, games provide a socially acceptable means of rehearsing the necessary skills and anxieties that may be needed later in real life.” (Reiber, 1996, pp.53-55). In his instructional design coursework Hirumi (2007) calls this “constructive failure” (Hirumi, Unpublished course material, 2007). Constructive failure “can greatly increase the effectiveness of instruction and enhance learning” by making “failure fun in training and educational settings” (Hirumi, Unpublished course material, 2007). Hirumi (2007) and Squire (2004) and Ross (2010) theorize that play and games encourage learners to keep trying and to persist through repeated failures because they find the failure fun and are encouraged to try again, rather than become discouraged that they did not succeed. This in turn promotes risk taking and learning from failures. Hirumi (2007) advocates for making “failure fun (or at least constructive)” (Hirumi, Unpublished course material, 2007). Improvisation training for teachers offers the possibility of learning new social interaction and communications techniques through play in an environment that encourages positive risk taking in a safe environment. Halpern et al. (1996) in their improvisation Guide, *Truth in Comedy*, provide several examples of how failure in improvised performance can be just as funny as success; and believe that even when things go wrong the audience is usually able to take something from the scene. Adult play encourages participants to let their guard down so that they can test out ideas that may be useful in their teaching practice. Play is a good instructional strategy for teaching pre-service teachers improvisation techniques, while also encouraging them to model such techniques later in their classrooms.

APPENDIX F: THE IMPROVISATION TRAINING WORKSHOP

Improv Training  
Collaborative Team Teaching during the Training Workshops

The instructor for the Methods for Academic Skills for Exceptional Students course and the researcher were acquainted with each other having taken a graduate class together a few years prior. Most of the planning for this research project took place over the phone and by email. In addition to allowing the researcher access the students in the class, the instructor agreed to assist in the improvisation training workshops so that the students could complete some improvisation activities in smaller groups of ~10 people. The Methods instructor was familiar with improvisation techniques. She was very familiar with the *Yes, and...* technique. The researcher sent the instructor the outline for the first Improvisation training a few days prior to the session with students. The two instructors were only able to meet face to face for about twenty minutes prior to conducting the first session to prepare and had never taught or presented with each other prior to this experience. Even without a well-established personal relationship, the two instructors were able to use their own knowledge of improvisation techniques to be able to create a successful collaborative pairing for delivering the improvisation training to the undergraduate research participants. Both approached the workshop with a positive attitude assuming that it would go well (Hines & Hines, 2010). Both demonstrated the use of *Yes, and...* by supporting each other's contributions to the workshop and building on them (Hines & Hines, 2010). Both took turns contributing, taking the lead and following. Barrett (1998) refers to this as "taking turns soloing and supporting" (p. 606). This type of collaborative interaction leads to what Barrett (1998) calls the "distributed task: continual negotiation and dialogue toward dynamic synchronization" (p. 606). The Methods instructor was a little concerned about the difficulty of some of the initial improvisation activities because two of the undergraduate students had paperwork on file with the university for their own disability identifications (504 classification) as suffering from anxiety, memory problems and reading



difficulties. She agreed to let the researcher proceed as planned but wanted her to be aware of the potential need to make modifications.

#### First Improvisation Workshop

The first workshop used the second half of the 3-hour campus meeting time. To prime the students for the improvisation activities and encourage ongoing reflection, the researcher asked the students about the importance of play in learning; its role in the classroom and whether as adults they played, and if so how. The class discussion also examined how play changes as people get older and changes from children to adults. The researcher made sure during the course of the discussion to go around the room and allow each pre-service teacher at least one opportunity to participate, asking if he or she plays, and if so how. The goal of the class discussion of play was to come up with a description of play, consensus on the importance of play in learning, priming the pre-service teachers' willingness to engage in *play* with the improvisation activities and an understanding of how failure is viewed differently in play situations than in many academic situations. The researcher sought to model good improvisation techniques as part of the class discussion and included relevant research-based facts to support and guide the direction of the discussion. Towards the end of the discussion of play the Methods instructor asked the pre-service teachers how they felt about the class discussion and to consider a meta-level analysis. She asked them to recognize that everyone's opinion had been asked for and incorporated into the discussion. She asked them to consider how often that happens in most educational settings. She pointed out that together they had globally constructed a definition of play and were modeling constructivism in the classroom. The two instructors used this teachable moment to discuss collaborative teaching tips such as being open and positive, and assuming a relationship (Hines & Hines, 2010); and using body language and position the room (Bogart & Landau, 2005) effectively. This also acted to preview for the students some of the upcoming improvisation topics in future workshops.

The training workshop continued using some simple improvisation warm-up games to foster empathy with students. The games, although simple, can improve awareness and decision making skills, but also frustrate participants in a fun way. The games highlight how difficult simple directions can be to follow, how hard it is to remember things under pressure and the challenges of cross-lateral movement and thinking or multi-tasking. It is often difficult for normal to high functioning adults to truly empathize with the learning challenges that even typically developing children face. The use of these improvisation games in the training allows pre-service teachers to catch a glimpse of the frustration that students sometimes feel while learning, in a fun, safe environment. Participants discussed this in debriefings after different game sessions. The researcher also noticed the participants helping each other to remember information in an ice-breaker game designed to help learn each other's names by matching the name to a movement and an attribute. The class discussed whether this *helping* was *cheating* or whether it was an example of *cooperative learning*. This game also allowed for a brief discussion of memory and whether participants' best remembered names, attributes, actions or combinations, which prompted a short discussion of brain-based learning research. The researcher designed the first training to target the soft skills or teaching skills of with-it-ness, decision-making, listening and openness to new experience. As a result of the first training, participants practiced the improvisation games and gained experience with the target skills. However the class, and the instructors made use of teachable moments to make additional connections between the improvisation games and important teacher skills. The Methods instructor also made connections where possible between the improvisation material and the course material the pre-service teachers were learning that semester. The improvisation training lasted roughly 1.5 hours.

### Second Improvisation Training

The researcher began the second improvisation training after the Methods instructor had time to present class related information to the pre-service teachers and clarify questions about upcoming assignments. This training also lasted roughly 1.5 hours. This training began with two warm-up activities. One was designed to push the players to their limit in terms of observation, listening and multi-tasking. The other was to draw their attention to listening, timing and patterns. Both games were designed to frustrate players and failure was a fun part of the game. Teams did their best and when they hit their limit, it was obvious. This usually resulted in laughter and a resolve to try again and start over.

This training session also introduced more challenging elements of improvisation such as the importance of establishing a narrative relationship of who, what, where, why and how as soon as possible in a scene and how this translated into classroom applications and interpersonal communications. Students were provided with communications tips on what to do if they couldn't think of anything to add in an exchange. A class discussion about these tips talked about how these communications tips can help build rapport and trust. The training introduced students to the concept of "*Yes, and.....*" and allowed students several opportunities to practice starting a scene by agreeing with each other and adding to each other's offers to promote elaboration. The Methods instructor pointed out the similarities between this technique and the feedback tips presented in the text (Olson et al., 2008, pp.155-156).

The last topic for this training was non-verbal communication and body language. This training ran short on time to be able to complete all the activities, so the researcher chose to have the students complete one full activity together in pairs where they mirrored and distorted or amplified each other's emotions; and then had a smaller group of volunteers complete the last

activity in front of the whole group. Participants in the smaller group used improvised sign language to enact a scene told by another player.

### Third Improvisation Training

The third training also lasted 1.5 hours. It consisted of reinforcing skills developed during the first two trainings and introducing some more advanced skills through games and activities. Participants engaged in more advanced icebreakers to warm-up and prompt awareness. After the icebreakers, participants reinforced “*Yes, and...*,” skills and examined the role of vocal prosody and body language in communication. The first activity enacts a “crisis situation,” and is done in pairs. One participant starts by establishing a crisis, their partner offers their own crisis in return and the first player has to offer a resolution that solves both problems. In another activity, participants examined the communication power of vocal prosody. Working in pairs again, one partner selected an emotion and portrayed that emotion using gibberish. Their partner had to pick up on the emotion and mirror it with their own gibberish, after 10 seconds partners switched. A small group of participants also demonstrated the game “foreign movie” where one person narrates a story in gibberish and another person “translates” this to English. Participants also examined the role of power and status in communication. In pairs players select a card from a deck of playing cards and put in on their forehead. This establishes their “status” and is visible only to other players. The participants did this in pairs and were instructed to treat each other according to the number on their card with lower numbers indicating lower status. Games such as these are fun ways to examine how stereotypes and power and status are conveyed through communication.

### University Student Reflections

All class members regardless of their participation in the research were asked to write reflections on their experience after each training session. These reflections were to be used as part of the university students’ final projects reflecting on their service-learning experience by creating a

Teachers in Action Powerpoint presentation. Research participants were asked to share these with the researcher.

## APPENDIX G: PILOT STUDIES

### Pilot Studies

The researcher initially developed the training and implemented it in 2008 as part of a staff development program for a college mathematics program to increase teacher immediacy and rapport and foster a positive learning environment. This was in response to student critiques indicating student perceptions that some mathematics instructors and lab staff were distant, unapproachable, mocking, arrogant and unsympathetic. These perceptions further contributed to students' math anxiety issues and affected achievement rates in the department and classroom management. Many staff members came from pure math and science backgrounds and did not have teacher training or experience. The researcher attempted to create a safe environment for staff role-playing to encourage staff to "stand in the students' shoes." At the time the researcher did not have a significant background in theater or improvisation and used the expertise of two trained improvisers from other campus departments to collaborate on improvisation games that would address particular issues the researcher noticed in class observations, topics such as status and power; positive relationships and language, thinking on one's feet and using common sense, team collaboration and addressing hecklers or distractions. The benefits of the training were such that it prompted the researcher to undertake a year's worth of improvisation training herself.

The success of this training at the college level led the researcher to theorize that similar training could also be of benefit to k-12 classroom teachers and prompted her to design this research study to evaluate the effectiveness of the improvisation training. She tailored the training program for an elementary pre-service teacher population in preparation for this research study.

Prior to implementing it with elementary pre-service teachers for this research cohort, a shortened version of the improvisation training was presented for a teacher preparation class at a Western university. Feedback from the pre-service teachers was collected in the form of written

reflections and verbal debriefing. Responses were generally positive and the experience allowed the researcher to make minor adjustments to the timing, delivery and order of certain topics and games for final training curriculum presented as part of this research.

Two additional pilot studies tested parts of the research design in preparation for its implementation with an elementary pre-service teacher population.

The first pilot evaluated the proposed one-on-one observation configuration in two parts, A and B. For part A, the researcher initially intended to observe the pre-service teachers interacting with a large (12-20) group of students. The researcher discussed the typical daily interaction of students with the participating elementary charter schools' two main 2<sup>nd</sup>/3<sup>rd</sup> grade teachers. Students from these teachers' classrooms will be participating in the research. The researcher got feedback on the projects that a previous group of pre-service teachers interning in the school were completing and discussed the possible interaction configurations for the upcoming research to establish what the best observation configuration would be for the new group of pre-service teachers. The main classroom teachers indicated their preference for small group or individual one-on-one interaction, citing the different pullout groups that students attended each day for skills development or enrichment as well as the potential benefits such one-on-one interaction provides for students with special needs. The researcher herself tested this method while observing at the school. She spent 15-20 minutes working one-on-one with a student diagnosed as autistic who was completing a storyboard for a short story. She noticed herself using improvisation skills from her training to keep the student focused on the task. She deemed a short one-on-one tutoring session to be an effective instructional and interactive context in which to measure the possible effects of the improvisation training.



Part B of establishing the observation configuration involved testing the communication and interaction behavior of a professional improviser with a student during a tutoring session. A performer from the comedy club downtown who also trained at a well-known improvisation school in Chicago interacted one-on-one with a student from the charter school for 15 minutes. The participant had no prior formal teaching experience. The researcher observed to see how the performer would engage the student without having a planned lesson. The one-on-one observation setting allowed the researcher to focus in on specific verbal and behavioral interactions. Despite no formal teaching experience the overall teacher-child interaction observed in this pilot was positive. The trained improviser also indicated he had used techniques from his improvisation training with the student when answering open-ended questions in a follow-up interview with the researcher.

Based on these two scenarios the researcher decided to use one-on-one teacher-child interactions for the observation configuration of the research design. While the teacher is not demonstrating classroom management or instructional strategies for the whole class in a one-to-one interaction, he or she still must be able to manage the behavior and focus the attention of the individual student. This can still be a challenge, especially when working with the students with disabilities or special needs students in inclusive classrooms. This configuration also provides the researcher with the ability to focus in on the specific behaviors and the dialogue of the student and teacher.

The second pilot involved testing an alternative to the Tschannen-Moran and Hoy (2001) TSES survey. The researcher initially intended to evaluate just self-efficacy for classroom management in research question two. The researcher evaluated the possibility of using Socherman, Horne & Dagley's (1998) Teacher Efficacy and Attribution Measure, (TEAM) to evaluate self-efficacy for classroom management in research question two. This instrument uses short descriptive

vignettes based on Kamphaus et al.'s BASC student archetypes (O'Neill, & Stephenson, 2011; Newman, 1999). \*(The survey is incorrectly attributed to Howard et al. (2001) in the O'Neill and Stephenson (2011) article). The pilot survey was administered to 30 pre-service teachers at a small Western college. Results showed that this survey could be used as an instrument in the current research. However further review of the literature for Chapter two opened the possibility that the improvisational Training might show change in teacher self-efficacy for student engagement and instructional strategies; the two additional factors in Tschannen-Moran and Hoy's (2001) TSES measure. Tschannen-Moran and Hoy's (2001) survey of self-efficacy was also chosen because it is a well-established measure of the self-efficacy construct and its factor structure is well validated (O'Neill & Stephenson, 2011; Tschannen-Moran & Hoy, 2001).

## APPENDIX H: TABLES OF IMPROV RESEARCH

### Tables Exemplifying Prior Improvisation Research

Forty-two articles/media examining improvisation used in education, training or professional/personal development were reviewed. Table 15 shows twenty-three articles classified as theoretical/prescriptive or descriptive; and Table 13 shows three used quantitative methods with explicit research questions and could be classified as quantitative research. Two of the three quantitative studies, present concerns; Anderson (2008) has methodological issues; and Cawthon and Dawson (2009), evaluated the self-efficacy of in-service teachers, a population thought to be less responsive to changes in self-efficacy than pre-service or novice teachers (Bandura, 1997; Hagen, et al., 1998; Redmon; 2007; Tschannen-Moran & Hoy, 2001, 2007). Table 14 shows sixteen articles presented varying degrees of qualitative data analysis ranging from implicit research questions and anecdotal material to full-fledged qualitative analysis with coding, emergent themes and explicit research questions. Of the sixteen, only five (Dawson, Cawthon, & Baker, 2011; Knox, 1998; Lewis, 2007; and Lobman, 2003b, 2006) met the rigorous standards of presenting explicit pre-defined research questions with solid qualitative data analysis methods advocated by Denzin (1978), Glesne (2006), Merriam (1992), Patton (1987), and Wolcott (1994). Four others, (Borko & Livingston, 1989; Erickson, 1982; DeZutter, 2011; and Lipsker, 2005) present solid research methods but only include implicit research questions in their written publications. (Lipsker's (2005) may be an exception to this. However only a summary of her research was available in English. Her complete dissertation is in Hebrew at the University of Haifa). Three research tables organizing the studies reviewed as part of this literature review are provided in below

Table 13

*Improv Articles with Quantitative Research Methods (3-ordered by date)*

<b>Domain</b>	<b>Explicit Research Questions?/ Method</b>	<b>Article</b>
Team performance, Innovation, Business	Yes/ Regression Analysis	Vera, D., & Crossan, M. (2005). Improvisation and innovative performance in teams
Team Dynamics	Yes/ Repeated measures ANOVA	Anderson, J. R. (2008). "Yes, and...!": Assessing the impact of theatre-based Improvisational training and a simulation on work group behavior.
Education	Yes/ Matched Pairs T-Test	Cawthon, S. & Dawson, K. (2009). Drama for schools: impact of a drama-based professional development program on teacher self-efficacy and authentic instruction.

Table 14

*Improv Articles with Qualitative Research Methods (16-ordered alphabetically)*

<b>Domain</b>	<b>Explicit Research Questions?/Method</b>	<b>Article</b>
Education	No/ Case Study	Beghetto, R. A. & Kaufman, J. C. (2011). Teaching for creativity with disciplined improvisation.
Education	No/ 3-person Case Study	Borko H. & Livingston C. (1989). Cognition and improvisation: differences in mathematics instruction by expert and novice teachers.
Education	No/ Case Study	Burnard, P. (2011). Creativity, pedagogic partnerships, and the improvisatory space of teaching.
Education	Yes/ Grounded Theory	Dawson, K., Cawthon, S. & Baker, S (2011). Drama for schools: teacher change in an applied theatre professional development model.
Education	No/ Content Analysis	DeZutter, S. (2011). Professional improvisation and teacher education: opening the conversation.
Education	No/ Linguistic Analysis	Erickson, F. (1982). Classroom discourse as improvisation: relationships between academic task structure and social participation structure.
Education	No/ Case Study	Erickson, F. (2011). Taking advantage of structure to improvise: examples from elementary school classrooms.
Resilience Sociology Psychology Business	Yes/ Naturalistic Inquiry, Coded video & surveys Yes/ Anecdotal Descriptive	Welch Knox, D. L. W. (1998). The role of improvisational theater training in building resilience from member participants' perspectives: A qualitative study. Huffaker, J.S. & West, E. (2005). Enhancing learning in the business classroom: an adventure with improv theater techniques.
Business/Organizational Psychology Nursing	Yes/ Action Research No/ Phenomenology, Hermeneutics, and Aesthetics.	Lewis, J. (2007). Improv training for organizational teams. Lipsker, C. (2005). Constructing nursing knowledge via playback theatre in professional training of community nurses: A study on the effect of learning and behavior patterns.
Early Childhood Education	Yes/ Long-term observations coded for themes	Lobman, C. L. (2003b). What should we create today? Improvisational teaching in play-based classrooms.
Early Childhood Education	Yes/ Longitudinal Case Study	Lobman, C. L. (2006). Improvisation: An analytic tool for examining teacher-child interactions in the early childhood classroom.
Education	No/ Observation and Analysis of data	Sassi, A., & Goldsmith, L.T. (1995). Beyond recipes and behind the magic: mathematics teaching as Improvisation.
Education	No/ Case Study	Sassi, A. (2011). How “scripted” materials might support improvisational teaching: insights from the implementation of a reading comprehension curriculum.
Education	No/ Case Study	Shem-Tov, N. (2011). Improvisational teaching as mode of knowing.

Table 15

*Improv Articles with Theoretical /Philosophical/ Descriptive Focus (23-ordered alphabetically)*

<b>Domain</b>	<b>Article</b>
Negotiation Mediation	Balachandra, L., Barrett, F., Bellman, H., Fisher, C., & Susskind, L. (2005). Improvisation and mediation:
Negotiation	Balachandra, L., Crossan, M., Devin, L., Leary, K., & Patton, B. (2005). Improvisation and teaching negotiation: Developing three essential skills.
Business Organizational Science	Barrett, F. (1998). Creativity and Improvisation in jazz and organizations: Implications for organizational learning.
Nursing	Bergum, V. (2003). Relational pedagogy: Embodiment, improvisation, and interdependence.
Education	Berliner, D. C. (2011). Forward. In R. K. Sawyer (Ed.) <i>Structure and Improvisation in Creative Teaching</i> (pp.xiii-xvi). Cambridge: Cambridge University Press.
Adult Education	Berk, R. & Trieber, R. (2009). Whose classroom is it, anyway? Improvisation as a teaching tool.
Education	Barker, L. & Borko, H. (2011). Conclusion: presence and the art of improvisational teaching.
Business	Crossan, M. (1998). Improvisation in action.
Theater Psychology Education	Dauber, H. (1999) How playback theatre works: a matter for practical research.  Hines, R. & Hines, C. (Producers), & Createspace (director). (2010). <i>Improv tips for better collaboration</i> [DVD].
Early Childhood Education	Lobman, C. L. (2003a). The bugs are coming! Improvisation and early childhood teaching.
Program description	Lobman, C. (2011). Improvising within the system: creating new teacher performances in inner-city schools.
Narrative Transformation/ Conflict Resolution	Park-Fuller, L.M. (2005, February 27). Beyond role-play: playback theatre and conflict transformation.
Sociology Catharsis Healing Public Health	Patterson, P. (2004). Acting out in hospital corridors: playback theatre in a medical setting.  Rosado-Pérez, J. (2005, February). Teatro espontáneo de la Habana: using playback theater to educate about living with HIV/AIDS in Cuba. University of Puerto Rico at Cayey.
Philosophy Education Bullying Sociology Education	Ross, D.S. (2010). <i>Improv ed.: changing thoughts about learning.</i>  Salas, J. (2005). Using theater to address bullying.  Sawyer, R. K. (1999). The emergence of creativity.

<b>Domain</b>	<b>Article</b>
Education	Sawyer, K. R. (2004a). Improvised lessons: Collaborative discussion in the constructivist classroom.
Education	Sawyer, R. K. (2004b). Creative teaching: Collaborative discussion as disciplined Improvisation
Education	Sawyer, R. K. (2011). What makes good teachers great? The artful balance of structure and improvisation.
Psychology Education	Strekas, Jennifer. (n.d.) Our voices define our worth: an investigation into alleviating teacher burnout through playback theatre.
Business Organizational Science	Vera, D., & Crossan, M. (2004). Theatrical improvisation: lessons for organizations.
Business Organizational Science	Weick, K. (1998). Improvisation as a mindset for organizational analysis.



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