An Investigation of How Accountability Systems Influence the Design and Development of Student Centered Learning Environments

Peter James Mathis

Follow this and additional works at: https://dsc.duq.edu/etd


This Immediate Access is brought to you for free and open access by Duquesne Scholarship Collection. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Duquesne Scholarship Collection.
AN INVESTIGATION OF HOW ACCOUNTABILITY SYSTEMS INFLUENCE THE
DESIGN AND DEVELOPMENT OF STUDENT CENTERED LEARNING
ENVIRONMENTS

A Dissertation
Submitted to the School of Education

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Education

By
Peter J. Mathis

May 2016
Copyright by

Peter J. Mathis

2016
AN INVESTIGATION OF HOW ACCOUNTABILITY SYSTEMS INFLUENCE THE DESIGN
AND DEVELOPMENT OF STUDENT CENTERED LEARNING ENVIRONMENTS

__________________________________, Chair
Rick R. McCown, Ph.D.
Professor, Department of Educational Foundations & Leadership
Duquesne University

__________________________________, Member
Deborah Scigliano, Ed.D.
Clinical Assistant Professor, Department of Educational Foundations & Leadership
Duquesne University

__________________________________, Member
Jerry Minsinger, Ed.D.
Adjunct Faculty and Supervisor of Student Teachers, Department of Educational Foundations &
Leadership
Duquesne University

__________________________________, Member
Stephen A. Mitchell, Ph.D.
Professor, School of Teaching, Learning and Curriculum Studies
Kent State University

Program Director
Connie M. Moss, Ed.D.
Clinical Associate Professor, Department of Educational Foundations Leadership and
Director, Ed.D. in Educational Leadership Program
Duquesne University School of Education
ABSTRACT

AN INVESTIGATION OF HOW ACCOUNTABILITY SYSTEMS INFLUENCE THE DESIGN AND DEVELOPMENT OF STUDENT CENTERED LEARNING ENVIRONMENTS

By

Peter J. Mathis

February 2016

Dissertation supervised by Rick McCown, Ph.D

The research reported in this dissertation investigates the impact that accountability systems have on the design and development of student centered learning environments. The nature of student-centered learning environments (SCLEs) in this study is framed theoretically by cultural historical activity theory (CHAT). The investigation itself occurred within a specific practice context: an urban charter school serving elementary-aged children. The efforts to design and develop SCLEs in the school focused on the use of improvement inquiry by groups of stakeholders organized into a developing human ecology in educational contexts called networked improvement communities. The research sought to determine (1) how accountability systems influenced instructional practices within the school and (2) how practicing teachers perceived the assessments embedded within the accountability systems. Data were collected via surveys, interviews,
and a focus group. The data from the surveys and interviews informed the work for the focus group. The work from the focus group generated a stakeholder-generated “theory of practice improvement” in the form of an illustrative driver diagram. The driver diagram contributed an empirically generated proposal for how improved instructional practices might be pursued at the school. The investigation concluded with recommendations for implementing the plan within the school and recommendations to the broader field of education to engage more deeply in improvement inquiry.
DEDICATION

This is my first piece of work that is worthy of dedication and I could not begin to think of anyone else to dedicate this work to besides my family. The generations that came before me really paved the way for me to engage in this work. Specifically I am in debt (which I can not begin to repay) to my grandparents, parents, sister, wife and extended family members. The support, love, encouragement and patience you demonstrated over the years are truly immeasurable. Who I am as a person today is invariably due in part to my upbringing. I dedicate this work to all of you as each of you played a role in assisting me and I am forever grateful.

In the same breath I would like to look into the future and dedicate this work to my son, niece, nephews and any other additional children that may bless our family. These kiddos are the future and I am excited to be a part of their learning. I engaged in this work to make learning more authentic, more student-centered and, most importantly, more fun.

So, I dedicate this work to all of you with the hope that you continue to engage in the learning process and relish the moments of curiosity and experimentation. We still have a lot to learn and teach each other and I am looking forward to all the lessons that are still to come.
ACKNOWLEDGEMENT

There are a few people who I would like to acknowledge as they stood beside me, engaged with me, and encouraged me to complete this work. First, I would like to acknowledge my parents, Jim and Karen, and my sister, Lisa. All of you mean the world to me and you have always been supportive of the directions I go and the work I engage in. You are the best family one could ask for and I love you all.

Second I would like to acknowledge my wife, Shannon. You were probably more engaged in this process than you had anticipated, but your insights and knowledge assisted me in formulating my thoughts and ideas. Furthermore, the amount of sacrifices you made to allow me to complete this work really demonstrates the loving, caring and thoughtful person who I fell in love with.

Next, I would like to thank Dr. Benjamin Davis. Our lives crossed paths by way of this program and I could not be happier. You have become a dear friend, colleague and insightful resource for me. I enjoy the time we spend together and the conversations we engage in. I am looking forward to both our futures and am truly thankful that this program provided us with a friendship that will last a lifetime.

Finally, I would like to especially acknowledge my advisor, colleague and friend, Dr. Rick McCown. Your gentle guidance and constructive feedback assisted me greatly in constructing this piece of work. You have a way of crafting your thoughts and expressing them that allows students to think and explore and that allows for expansion of one’s imagination. You are a great facilitator of learning and a true educator. I feel both lucky
and honored to have had the chance to work and learn with you. I look forward to our continued friendship and the work that lies ahead of us.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>iv</td>
</tr>
<tr>
<td>Dedication</td>
<td>vi</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>vii</td>
</tr>
<tr>
<td>List of Tables</td>
<td>xii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>xiii</td>
</tr>
<tr>
<td>List of Abbreviations</td>
<td>xiv</td>
</tr>
<tr>
<td><strong>Chapter 1</strong></td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>General Overview</td>
<td>2</td>
</tr>
<tr>
<td>Problem of Practice</td>
<td>5</td>
</tr>
<tr>
<td>Importance of Study</td>
<td>8</td>
</tr>
<tr>
<td>Social Justice Implications</td>
<td>11</td>
</tr>
<tr>
<td>The Need for Improvement</td>
<td>17</td>
</tr>
<tr>
<td>Contextual Framework</td>
<td>18</td>
</tr>
<tr>
<td>Contextual Data</td>
<td>19</td>
</tr>
<tr>
<td><strong>Chapter 2</strong></td>
<td>24</td>
</tr>
<tr>
<td>Narrowing the Focus</td>
<td>24</td>
</tr>
<tr>
<td>Review of Literature</td>
<td>26</td>
</tr>
<tr>
<td>Social Constructivist’s Epistemology</td>
<td>27</td>
</tr>
<tr>
<td>Student Centered Learning Environments</td>
<td>30</td>
</tr>
<tr>
<td>Objectivism vs. Constructivism</td>
<td>32</td>
</tr>
</tbody>
</table>
Cognitive Processes as a Mindset .................................................................................. 122
Establishing the Learning Environment ...................................................................... 125

Chapter 5 ..................................................................................................................... 127
Generative Impacts ...................................................................................................... 127
Internal/External Impacts ............................................................................................. 128
Improvement Inquiry as an Agenda for Educational Leadership .............................. 132
Conclusion .................................................................................................................... 137

References .................................................................................................................... 139

Appendix A .................................................................................................................. 150
Appendix B ................................................................................................................... 153
Appendix C .................................................................................................................. 154
<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Assumptions Inherent in Objectivism and Constructivism</td>
<td>34</td>
</tr>
<tr>
<td>Table 2</td>
<td>Sampling of the Consequences Associated With Accountability Systems Operating in the Field of Educational Assessment</td>
<td>64</td>
</tr>
<tr>
<td>Table 3</td>
<td>Modes and Frequencies of Survey Responses</td>
<td>82</td>
</tr>
<tr>
<td>Table 4</td>
<td>Emergent Themes From Interview Data</td>
<td>84</td>
</tr>
<tr>
<td>Table 5</td>
<td>Eight Cultural Forces That Define Our Classrooms</td>
<td>125</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Demographics of Schools</td>
<td>20</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Comparison of Proficient and Advanced Reading and Math Scores</td>
<td>21</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Comparison of Proficient and Advanced Science Scores</td>
<td>22</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Demographic Comparison of Reading Scores</td>
<td>23</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Demographic Comparison of Math Scores</td>
<td>23</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Literature Review Organizational Map</td>
<td>27</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Experimental Learning Cycle</td>
<td>42</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Vygotsky’s Mediation Model</td>
<td>45</td>
</tr>
<tr>
<td>Figure 9</td>
<td>The Structure of a Human Activity System</td>
<td>46</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Two Interacting Activity Systems</td>
<td>47</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Vygotsky’s Zone of Proximal Development</td>
<td>49</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Driver Diagram From Focus Group</td>
<td>91</td>
</tr>
<tr>
<td>Figure 13</td>
<td>The Plan-Do-Study-Act Cycle</td>
<td>117</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Repeated Use of PDSA Cycle</td>
<td>118</td>
</tr>
</tbody>
</table>
LIST OF ABBREVIATIONS

*Elementary and Secondary Education Act (ESEA):* Federal legislation signed into effect by Lyndon Johnson in 1965. Offered equal opportunities to education and established high standards and accountability.

*Measures of Academic Progress (MAP):* Computerized tests that are adaptive and offered in reading, language usage, and mathematics. The difficulty of each question is based on how well a student answers all the previous questions.

*Networked Improvement Communities (NICs):* An intentionally designed social organization with a distinctive problem-solving focus; roles, responsibilities, and norms for membership; and the maintenance of narratives that detail what it is about and why affiliating with it is important.

*No Child Left Behind (NCLB):* Federal legislation that enacts the theories of standards-based education reform.

*Pennsylvania System of School Assessment (PSSA):* Annual standards-based, criterion-referenced assessment that provides students, parents, educators, and citizens with an understanding of student and school performance related to the attainment of proficiency of the academic standards.

*Race to the Top (RTT):* A U.S. Department of Education initiative that was designed as a contest for schools to participate in in order to stimulate innovation and reforms within districts.
Student Centered Learning Environments (SCLEs): Provide interactive, complementary activities that enable individuals to address unique learning interests and needs, study multiple levels of complexity, and deepen understanding.
Chapter 1

Introduction

This dissertation will investigate how accountability systems impact the design and development of student centered learning environments (SCLEs) within a specific context. The specific context for this investigation is a charter school in Pittsburgh, PA. Administrators, teachers, and instructional coaches participated in this study and have provided useful insights about how accountability systems operate within their specific contexts. This dissertation is organized into five chapters. Chapter one serves as an introduction, which will provide some context and background information about the problem that is being investigated, why this problem is important, and the social justice implications embedded within this problem. Chapter two will serve as a literature review, as well as a place for a discussion about how this problem has been addressed. Chapter two will also house the theoretical framework(s) that were used to understand this problem. Finally, chapter two will paint a picture of what improvement would look like as well as the consequences of not solving this problem. Chapter three will establish the research questions and focus on the methodology used for this study. Chapter three will also portray the data from the study in the results section and will present an interpretation of the data. Chapter four will outline the designs for action or the improvement effort that have been developed in order to engage others in this work. Chapter four will also outline an improvement effort that incorporates improvement science and Networked Improvement Communities (NICs). Chapter four will also discuss a mindset to utilize when working within a NIC. Chapter five will discuss the work moving forward and the generative impacts that are sought from this study.

This document represents a dissertation of practice, which is a fulfillment for the Professional Doctorate in Educational Leadership at Duquesne University. The organizational
structure of this document will follow the organizational guide to the dissertation in practice, which was provided by the Department of Educational Foundations & Leadership at Duquesne. The organizational headings will assist the reader in understanding the problem of practice that I have chosen.

Chapter one will kick-start the investigation of the identified problem. Chapter one sets the stage for the study and informs the reader of the specific context. The general overview of the problem will provide a quick look at how accountability systems have shifted over the years and how these systems have manifested themselves in the field of education. Following the general overview, the problem of practice will be clearly defined and some assumptions will be laid out that will be considered during this investigation. Next, the importance of this problem and the impacts this problem is having on the field of education will be discussed. Social justice implications will be addressed in the following subsection. This section will also dive into the history of assessment and show how current assessment practices came to fruition. Understanding the need to seek improvement for this problem and why we should pursue improvement will also be discussed. Finally, the specific context that will be used in this investigation will be introduced and accompanied with contextual data. This will paint the picture of how this problem is operating within the specific context.

**General Overview**

The word “learning” can be very difficult to define. There are many different points of view as to what learning really is, how it is achieved, and/or how it is assessed. Furthermore, the views surrounding learning constantly shift. With the rise of constructivism, a paradigm shift came about during the 1990s and traditional views of education came under scrutiny. Snowman and McCown (2015) define constructivism as “meaningful learning [that] occurs when people
actively try to make sense of the world—when they construct an interpretation of how and why things are—by filtering new ideas and experiences through existing knowledge structures” (p. 346). Traditional models of education, such as transmissive instruction, were challenged and new frameworks were investigated that focused on a more social, conversational, and constructive model of learning (Jonassen & Land, 2012). As we moved into the 2000s, accountability systems within education became a focus and business models were applied to school settings in the hope that accountability would prevail. Currently, all states have accountability systems, and most are focused on student performance on state assessments. Schools and districts are held accountable based on students achieving specific performance levels or by demonstrating an increased performance from the previous year (Fuhrman, 2004). Older accountability systems issued by states operated on more of a check-and-balance system to ensure that districts were providing a certain level of education. With the overhaul of the old accountability systems, new accountability systems emerged that were specifically focused on schools and students. Embedded within new accountability systems are consequences for poor performance, which has led to a myriad of issues within the field of education (Fuhrman, 2004). Issues range from improper allocation of funding for schools to labeling students, schools, and communities. This study will focus on how accountability systems are operating within a specific context and will seek to understand the system and the results that it is producing.

This study was pursued based on two vastly different experiences as an educator working within different contexts. In both contexts, accountability systems heavily influenced instructional practices. However, in one context, the instructional practices were influenced in a negative way. For example, there was an intense amount of pressure for the school and students to perform well on standardized tests. The pressure was so intense that it trickled into the
classroom and teachers were narrowing their curricula and focusing their lessons on teaching students ways to perform well on the test. There was even a time during an administration meeting where the assistant superintendent reviewed the entire list of students who were enrolled in the school and identified “bubble students” to focus on. Bubble students are students who performed well on previous standardized tests, but came up a few answers short of passing the test or achieving proficient status. The assistant superintendent then assigned teachers to the bubble students in order to provide them with one-on-one instruction in hopes of these students scoring in the proficient category during the next round of standardized tests.

The other context that informs this investigation comes from a charter school where instructional practices challenge the status quo or, put simply, look different from traditional education practices. For example, the charter school uses a looping model. Under this model, two teachers are in every classroom for two- or three-year cycles and teachers have the same group of students. This allows student-teacher relationships to blossom, and there is also more instructional time at the beginning of each school year since these relationships have already been established. It also puts the student-to-teacher ratio at approximately 12:1 as opposed to 25:1. The smaller student-to-teacher ratio allows teachers to hone in on student needs and allows for differentiated instruction to flourish. The charter school also encourages teachers to create authentic learning experiences for students and no textbooks are used except in one grade-level math class. Teachers are encouraged to take risks and learn from each lesson, all while providing formative feedback to their students. Finally, the charter school also downplays standardized testing and prepares students though authentic learning experiences as opposed to narrowing the curriculum in order for students to perform well on standardized tests.
This investigation is based on the experiences of the author and therefore there will be a strong narrative that provides details about each of these contexts. This narrative will help paint a picture of a system that is operating within a specific context and how the system is affecting members of the school, academy, and community. Data from the charter school will also provide validity for this study and insight as to how improvement will be sought.

**Problem of Practice**

For the purpose of this study, the problem will be defined as: accountability systems are preventing the enactment of effective SCLEs. Effective learning environments can consist of a variety of frameworks and/or constructs. Jonassen (1991) states, “Learning theory has undergone a major revolution the past few decades” (p. 53). Jonassen is correct about the transformation of learning theories over the decades. Jonassen and Land (2012) go on to state, “Never have alternative theories of knowledge and learning been so consonant in their beliefs and the methods they espouse” (p. viii). The emergence of alternative learning theories can be extremely useful when designing SCLEs. Some of these theories and other frameworks will be discussed later in this dissertation.

Public education is a costly endeavor and it seems to get more expensive each year. Currently, funding for public education sits in the ballpark of $630 billion annually. It is normal for taxpayers to be curious as to how money is being allocated and used within their school districts. After all, taxpayers are part of the community and schools can often impact the sentiments of the community. As O’Day (2004) states, “It is reasonable for the public and its representatives to want to know where the money is going and what it is producing” (p. 15). In making this comment, O’Day urges us to think critically about the allocation of this money and how it is being used. As a society we have a right to know where the money is going and what it
is producing, a point that needs emphasizing since so many people believe in the government’s ability to properly fund the educational system. New accountability systems were created with a purpose and certain intentions. Fuhrman (2004) indicates five assumptions that new accountability systems imply when operating effectively. As you can see from the assumptions below, most of the assumptions revolve around student performance and consequences:

1. Performance, or student achievement, is the key value or goal of schooling, and constructing accountability around performance focuses attention on it.
2. Performance is accurately and authentically measured by the assessment instruments in use.
3. Consequences, or stakes, motivate school personnel and students.
4. Improved instruction and higher levels of performance will result.
5. Unfortunate unintended consequences are minimal. (pp. 8–9)

Although all of these assumptions bear importance, assumption two will be thoroughly investigated during this study. As noted earlier, this investigation will take place in a charter school in Pittsburgh, PA. The school serves students in grades K–8, but the study will focus on students who are in grades 4–8. For the purpose of this study, accountability systems will be in reference to federal and state mandates that require schools to administer assessments to students in order to gauge student development. Therefore, accountability systems will be defined as the standards that are imposed upon schools that measure performance and are linked to school funding.

In continuation of defining this problem, we must consider current learning environments and why they came to exist. Current assessment accountability systems that are in place are a result of the No Child Left Behind (NCLB) Act, a federal policy that was passed into law on January 8, 2002. NCLB is one of the biggest and most controversial initiatives put forth by the federal government in recent years. NCLB is actually the reauthorization of President Lyndon Johnson’s Elementary and Secondary Act (ESEA) of 1965. The ESEA was originally developed
to assist with increasing student achievement and narrowing the achievement gap. NCLB requires schools to administer assessments to students at certain grade levels in order to receive funding. The goal is for schools to achieve adequate yearly progress (AYP). If AYP is not met, schools become labeled as “failing,” “low performing,” or receive other negative designations. One of the results of NCLB is that it has created learning environments where teachers are teaching to the test and students are stressed about taking these tests. These types of assessments do not allow students to demonstrate deeper learning dispositions that focus on a student’s sense of agency. Furthermore, this type of environment also deprives students of authentic learning experiences and fails to allow a transmissive model of education to flourish. According to Ravitz, Becker, and Wong (2000),

Traditional transmission instruction is based on a theory of learning that suggests that students will learn facts, concepts, and understandings by absorbing the content of their teacher’s explanations or by reading explanations from a text and answering related questions. Skills (procedural knowledge) are mastered through guided and repetitive practice of each skill in sequence, in a systematic and highly prescribed fashion and done largely independent of complex applications in which those skills might play some role. (p. 4)

This interpretation challenges the work of those critics who have long assumed that transmissive instruction was an effective model of learning. To accompany this thought, McCarty and Schwandt (2000) state, “The traditional lecture format is particularly troublesome here because it is based either on an unwarranted ‘banking model’ of knowledge transmission or on the Socratic ideal of challenging the capacity of students to reason well” (p. 59). This is an important problem to address because students are not constructing their own knowledge when
situated in these environments. It also challenges the aforementioned second assumption that current assessments accurately and authentically measure student performance. Current assessments require students to master memorization and factual-recall strategies that they then apply to take a multiple-choice test. These types of assessment lack real-world applications; as a result, these types of assessment produce learners who are not prepared for life outside of school. Deeper learning dispositions such as creativity, collaboration, and innovation cannot be measured by these summative assessments, which are intentionally designed and implemented to conduct assessments of learning. These examples are just a snapshot of the bigger picture of how standardized testing fails to prepare learners. This should be considered a problem in the field of education. Understanding how this problem manifests itself in particular contexts and why it is important to seek improvement will be the focus of this study.

**Importance of Study**

The identified problem is important because of the reach it casts on the nation. This problem affects students and schools all over the country. With NCLB being a federal mandate, schools are forced to abide by the federal government’s requirements. With NCLB in place, we are in a vicious cycle of depriving students of authentic learning experiences and essentially not preparing them to their fullest to enter the real world. Employers want to hire problem-solvers and critical thinkers, not proficient test-takers. Understanding what people know about SCLEs and the impacts that accountability systems have on these environments will shed some light on how we can start to engage in improvement efforts. This is an important problem to understand, for if we can gain insight about this problem in one particular context and understand why it exists, we can then make recommendations for educational leaders to address this problem within their contexts. It can also provide scholars with data and an example to reference when
engaging in scholarly work and conversations. Community members will also benefit from this study because they will be informed of practices taking place within the schools in their specific communities. Being informed community members allows critical conversations to flourish and allows for a more engaged conversation that is situated in facts instead of assumptions. By taking this approach, it allows this work to create generative impacts within the field of educational leadership as well as across the school, academy, and community (SAC).

This problem negatively impacts numerous people across the SAC. This problem exists because current learning environments are fueled by political and cultural power structures that have undergone epistemological shifts over the years. According to Land, Hannafin, and Oliver (2012), “epistemological shifts have endangered a variety of innovative and proactive learning environments” (p. 4). Adding to their argument, it is important to note that current accountability systems in place have also endangered these types of learning environments. Current accountability systems have created types of assessment that rely on students memorizing facts and recalling them. The assessments are usually in the form of multiple-choice standardized tests. These types of assessments fail to demonstrate student knowledge. The accountability systems, and the standardized tests that are embedded in these systems, were designed and implemented as a way to judge schools and rank them against a national set of standards. This may have seemed like a good idea in the design process, but the consequences in the implementation process have resulted in ineffective learning environments. For example, high-stakes environments are created instead of SCLEs due to the pressure students and schools feel to perform well on the tests. A sense of competition has also been an unintended consequence. This is evident among students, teachers, administrators, and even communities. Some schools and educators are going to extremes to ensure they make AYP and get funding from the
government. Cheating in schools has gone far beyond a student looking over another student’s shoulder. Educators across the county are involved in cheating schemes and corruption due to the high stakes associated with the accountability systems that are in place. For example, in New York City a principal who ran a school that was associated with the Teachers College at Columbia University was recently caught in a cheating scandal. She admitted that she changed some of her third-graders’ answers on a state-mandated test in order to boost her school’s overall performance. This sent the community reeling for answers, and on the same day the principal admitted her guilt, she ended her life by jumping in front of an oncoming subway train.

This one extreme example is just the tip of the iceberg when discussing the consequences associated with accountability systems. A thorough investigation of the consequences, as well as another example of cheating, will be addressed in a later section. The discussion will continue as to why this problem is worthy of investigation and the following section will discuss some of the social justice implications.

Before transitioning to the social justice implications, I will briefly discuss how my experience as a professional educator has contributed to my interest in the problem of practice that drives this investigation. My experiences as an educator, along with generally being a curious person, are among the reasons I decided to investigate this topic. I know from experience as a student and as an educator that the assessments students are required to take do not represent a student’s ability and rather are just a moment in time for the student. I have firsthand experience of working in a context where learning environments are student centered and success has been documented. I also have experience working in a school that was not student centered and a transmissive model of education was in place. Furthermore, I have also been researching this problem over the past three years and have reviewed the literature on this
problem. In doing so, I have come to realize that this is a problem that has had a large impact on schools across the nation. As a researcher, I thought this problem was worthy of my time and effort. Bringing people to this work in order to eventually construct SCLEs that can be applied within school contexts will serve as the primary contribution of this study. Further investigation of this problem is needed, and this additional work will have the potential to yield contributions for scholars, policymakers, practitioners, and community members. A review of the literature will open the conversation about this problem and bring the voice of scholars into this conversation. The instruments involved in this study will seek to bring the voices of teachers, administrators, and instructional coaches into this conversation. Bringing together the voices of the school, academy, and community will allow for a broad range of insight on this problem and provide perceptions on how others view this problem.

**Social Justice Implications**

This problem is also justified and ultimately worthy of investigation because it is a matter of social justice. Some of the consequences that have resulted from imposing these accountability systems are unfair and unjust. The aforementioned consequences that have arisen from implementing these accountability systems should be considered a matter of social justice. Although these are only a few examples that demonstrate that this problem is a matter of social justice, they demonstrate just how far this problem reaches and the vast impact it has on people. Understanding how current learning environments got to this point and looking at the history of assessment will assist in affirming my social justice claim.

In order to understand the history behind assessment, we must dig into the roots of some other cultures that ultimately influenced the west and our ideas and theories about assessment. In order to do this, I am going to rely on the work of Ginette Delandshere and Ben Wilbrink. Both
of these scholars have published on assessment, with specific articles on the history of assessment. One example dates back to the early history of Imperial China. The Chinese implemented civil service examinations, known as imperial examinations, which served as a selection process to identify capable and moral individuals who were deemed worthy of holding positions in public office where no hereditary ruling class existed (Delandshere, 2001).

Delandshere (2001) goes on to point out that “the purpose of these examinations was strictly selective and had no educative purposes” (p. 116). The tests were very objective in nature in order to gauge one’s educational excellence. These tests were grueling, usually lasting three days and consisting of intense writing. Students were given all the materials they needed for the three days, including their bedding, and strict procedures were followed to prevent cheating. Usually students took these tests multiple times, as passing them on the first attempt was a difficult feat. The purpose of these tests was to serve as the selection process of candidates to fill the seats for local government positions. Wilbrink (1997) states, “Examinations played a crucial role in the stability of the empire, curtailing the power of the aristocracy and the military, and legitimizing the favoured position of civil servants” (p. 42). The civil service exams were some of the first known written exams in history.

Another influence comes from medieval European universities, which were considered some of the first schools. Here, going to university was a privilege and determined by one’s social class. Most of the exams were oral in nature and public events. Masters would determine when their students were ready for their public defense and therefore, failure was a rare occurrence. The point of these public defenses, Delandshere points out, was for students to demonstrate their knowledge on “prescribed books” and to answer questions in great detail about these books. She notes that “these examinations then had a didactic purpose, making obvious the
link between teaching and assessment” (2001, p. 116). From this public process came the notion of disputations. Originating from Aristotelian pedagogy, disputations are what we know today as thesis or doctoral defenses. Students are required to defend their topic of study in front of a panel in order to demonstrate not only their knowledge, but also to promote the legitimacy of their work. Disputations ruled the assessment stage for quite some time. It wasn’t until the 16th century that assessment was challenged and looked at through a different lens.

At the turn of the 16th century, the idea of gaining knowledge through experimenting was introduced. Delandshere (2001) states that “assessment, then, would no longer be regarded as a way to debate publicly, uncover and validate knowledge, but rather it would be used as a tool to verify individual learning and the acquisition of this established knowledge” (p. 117). Delandshere’s point is that this shift in assessment really focused on gauging what the student had learned. One might think that creativity and ingenuity would take off during this shift in the way people were thinking about assessment. Viewing assessment from a social, political, and economic standpoint, masters and others viewed creativity and ingenuity with skepticism. People were eager during this time to imitate others as that was considered the normative practice.

It wasn’t until the 19th century that we saw another shift in the way assessment was viewed. The culture at this time played into the shift in assessment as the industrial revolution was taking hold. During this time, mass production was at its peak and major systems such as transportation, communication, and banking were all progressing at faster rates. Assessment took a hard turn; some would argue a turn for the worse. Delandshere (2001) states that “industrialization and mass production would eventually bring an ethic of individual ambition and achievement with the related notion of success, which inevitably also defined failure” (p. 117). It was in this time frame that assessment gained traction as becoming a competition.
makeup of the culture during this time frame sought fast, mass-produced products that inherently created competition among people and communities. Assessment of knowledge was no exception to this cultural climate. Oral assessments were thrown out the window and replaced with written assessments. The focus shifted to how fast someone could complete the assessment, which now narrowed the content focus due to the limitations of the written form, and ultimately pigeonholed one’s knowledge. The reason for this type of assessment, Delandshere (2001) states, is that “competitive examinations were first used as a way to motivate students to learn and eventually to rank them according to merit, and to reward and honour their learning” (p. 117). This led to a culture where assessments were used to determine achievement, which ultimately led to opportunities for the privileged. It is here that Delandshere (2001) goes on to state, “In this process, assessment lost its didactic educative function as it became used as a means by which the social structure would be reorganized in order to create the possibility of social mobility” (pp. 117–118). This was also the time frame during which marking and ranking systems were being developed and implemented. Wilbrink (1997) states, “Exactly why and how ranking systems were replaced in the 19th century with marking systems is not known, but surely the 19th-century belief in the power of measurement . . . must have been involved” (p. 39).

Since those days, education has evolved and assessment has become standardized. By standardizing it, assessment became more objective in nature and created what we refer to today as “high stakes” for the students who are being assessed. With the standardization of assessment, competition grew stronger since a grading system was also embedded into the standardization process. Errors made by the students are recorded and ultimately are the most importance piece of data taken away from the assessment. Many people criticize standardized testing and the high stakes that are associated with it. Some of the consequences associated with standardized testing
include labeling students, the narrowing of the curriculum, the retention of students, and stripping students of opportunities. However, when student learning becomes compromised, it can create a high-leverage problem that permeates through schools, education, and communities.

By understanding the history of assessment, we can begin to contextualize the value that is placed on assessment and the effects it has on society. The value can be influenced by the culture in which assessment exists and by the people who make up that culture. Although assessment has changed throughout the centuries, one aspect has always been consistent: it plays a role in society and creates an avenue for knowledge to be displayed. Assessment has also played a key role in demonstrating privilege over the centuries and in doing so, has created a sense of classism within society. For the most part, assessment has been held for those who are considered in the upper class, where privilege is expected. Even with the advancement of technology and the amount of resources we have, assessment is still deeply rooted in these century-old paradigms. Therefore, current forms of assessment can and should be considered a matter of social justice. Wilbrink (1997) states, “It is fascinating to observe that assessment procedures handed down by tradition were in this century uncritically adopted in mass education, possibly leading to major inefficiencies in education and, for too many students, a lack of quality in school life” (p. 44). The essence of Wilbrink’s argument is that we need to critically examine the systems that governing bodies are imposing on our schools. We can no longer adopt what they impose as history has showed it to be flawed and unjust.

Over the years, people such as policymakers, educational reformers, state departments, and the U.S. Department of Education have all had different silver-bullet solutions for addressing this problem. For example, policymakers and the U.S. Department of Education have issued federal acts (ESEA, NCLB, and Race to the Top (RTT)) over the years to try to address issues
within the education system as well as to hold those running the systems accountable. It almost seems like every year there is a new initiative or fad within the field of education. Most of the time these initiatives or fads are designed universally and dropped down onto schools as a one-size-fits-all approach. So why has there been little to no improvement over the years? Elmore (2004) writes

The current message of policy makers and advocates, fearing retrenchment on reforms to which they are attached, is “stay the course.” But stay the course with what? As with any policy idea, performance-based accountability, at its best, is a skeletal design—a set of highly provisional ideas about what needs fixing in American education and how it should be fixed—which is played out in a complex institutional, political, and organizational arena. (p. 274)

In other words, Elmore believes the crux of the problem lies within the political arena. There is no doubt that the people within the political arena heavily influence this problem. Often, people who do not even work in schools develop these policies and initiatives. These policies are then imposed on schools and districts all over the country and expected to work. Part of the problem is that policymakers think their policies are working and providing students with equal opportunities to education. The truth of the matter is that most of the policies have done little to improve inequality within the educational system. Jennings and Sohn (2013) would agree when they state that “in the political arena, perceptions matter. If policy makers and voters believe that inequality has declined when in fact it is unchanged or growing, the political will to implement policies that act on schools or on the family context to address these problems is potentially undermined” (p. 198). Inequity is just one of the major consequences that is evident due to accountability systems operating within the context of schools.
As the field of educational leadership transforms, we can no longer afford to leave current forms of standardized testing unquestioned or unchallenged. We need to dig deep into understanding learning and how students can demonstrate their knowledge. We as educators need to learn ourselves, inform others, and seek improvement before we can critically advocate for our students. Learning is a process that encompasses variability, experimenting, and differential sequences for those involved. This problem does need attention and work needs to be done on seeking improvement. There is a call for a revolution in education, specifically in the assessment arena. We have outgrown the one-size-fits-all approach, and need systems that allow for flexibility and growth.

The Need for Improvement

This problem should be addressed and improvement should be sought because students deserve the right to learn by constructing their own knowledge and engaging in meaningful experiences that interest them. There are too many cases of current learning environments that rely on transmissive models of education, which force a curriculum on students and provide little opportunities for students to construct their own knowledge. For example, think about a typical entry-level college course. My fondest memory of this was a psychology 101 class during the first semester of my undergraduate studies. The class took place in a large lecture hall with about a 200:1 student-to-teacher ratio. We had required readings and the professor would lecture us on the material from the book. There was a strong feeling of disengagement in that class and I can honestly say that I cannot recall one thing that I learned from that class. We are already seeing states that are seeking waivers from the federal government because they were unsuccessful at meeting the goals of NCLB. If we stay on this course and educate our students using transmissive models and force them to take standardized tests so that schools can be held
accountable, then students will continue to be deprived of a high-quality education, continue to be retained, continue to be denied access to college, and will be unable to reach their full potential. Herman (2004) states, “The idea is that if society and its stakeholders are clear on what is expected, it is possible to hold everyone in the system—from policy makers to educators and students—accountable for meeting those expectations” (p. 141). Herman is right that clear expectations are important to establish if we want to hold everyone who is involved accountable. Adding to Herman’s argument, I would point out that we need to set expectations on how educators should structure their learning environments. Setting clear expectations that create SCLEs as well as providing authentic learning opportunities will allow for students to flourish in the classroom. This problem needs to be addressed in order to disrupt the status quo and restore the purpose of education, which is to learn. Disrupting current learning environments and penetrating normative practices will be a challenge, but starting in a small, specific context will provide insight as to how we can remake learning and seek generative impacts.

**Contextual Framework**

The specific context in which this study takes place is a charter school that has an environmental curriculum focus. This focus drives not only the curriculum, but also the learning. Within this specific context, there is a focus on providing students with authentic learning environments and using the environment (a 500-acre park) to enhance lessons. The only classes that have textbooks are math and even in those classes, textbooks are used sparingly. Teachers are given the freedom to explore and experiment with different teaching models. There is a coteacher model as well as a looping model in place, which means every classroom has at least two teachers and that students and teachers are looped together in either two- or three-year rotations. This allows for teachers to spend time with students and address their individual needs
as well as building relationships with the students over the looping years. Also, within this specific context, the school downplays the notion of standardized tests and tries to create an environment where students do not feel pressured by the high stakes associated with these tests. Teachers and staff instill confidence in students by constantly reminding them they are prepared and that these tests do not define who they are; rather, the results reflect just a period in time. The school pulls students in from all over the city of Pittsburgh as well as students from the suburbs of Pittsburgh. Ultimately, the makeup of the student body is similar to that of other Pittsburgh public schools. One of the underlying differences that sets this charter school apart is the unique approach to learning, along with the assistance of the park, and the success that this system has demonstrated over the years. This charter school is challenging the status quo and seeking to provide students with the opportunity to construct their own knowledge and to reflect on their experiences. They are stepping outside the normative practices that are evident in so many traditional schools and seeking to provide students with authentic learning environments. Students are challenged to think from a systems perspective and to understand how that system operates. This unique approach to learning will help to create problem solvers, critical thinkers, and collaborative students who will be prepared to take on the challenges of the world in the years to come. As a researcher, I support this approach to learning and am looking to investigate this problem further in order to gain a deeper understanding.

**Contextual Data**

In order to better understand the context that will be used for this investigation, a few figures will be used to demonstrate the demographics and specific statistics of the school. The charter school falls under the umbrella of Pittsburgh Public Schools (PPS), so data from the charter school will be compared to data from the PPS. Data from my prior experience at a public
school just outside of Pittsburgh, PA, will also be included. All three of these contexts are situated in western Pennsylvania. Also, a few of the figures compare data from these three contexts to that of the rest of the state of Pennsylvania. Figure 1 outlines the demographics that are represented within the three contexts as well as portraying the percentage of students who fall under the category of “economically disadvantaged.”

Figure 1. Demographics of Schools

PPS data is only broken down into black, white, and other races. As this data shows, there is a larger black population of students who attend PPS and the public school than the charter school. On the contrary, there is a larger white population of students who attend the charter school than PPS and the public school. The charter school is not necessarily a snapshot of a typical PPS school; this is due in part to the fact that the charter school pulls students from outside of PPS as well. Currently, the charter schools serves students from 12 different zip codes including Pittsburgh. Aside from white and black students, all three contexts house a very small number of
students from other races. It is important to also note that the public school had the largest number of students who fell under the category of “economically disadvantaged,” at 87.57%.

Figure 2. Comparison of Proficient and Advanced Reading and Math Scores

Figures 2 and 3 compare proficient and advanced scores in reading, math, and science. As you can see from the data, the charter school outperforms the state of PA, PPS, and the public school in all three subject areas. This investigation will aim at understanding how instructional practices are affected by accountability systems within the context of the charter school. The investigation will also aim to understand teachers’ perceptions of the state-mandated tests that are embedded within these accountability systems and how teachers believe the tests inform learning.
Finally, Figures 4 and 5 compare demographics of overall proficient or advanced scores in reading and math in the charter school and PPS. This data was not available for the public school. However, the comparison between the charter school and PPS still provides a unique look at how students are performing in each context based on the two largest subgroups of students as well as economically disadvantaged students. In reading, the charter school outperforms PPS across the board. However, Figure 5 indicates that white students at the charter school outperform white students from PPS in math, while black students from PPS outperform black students from the charter school in math. This seems to be the only area where the charter school was outperformed by PPS. All of the data presented helps paint the picture of the success the charter school is having compared to PPS, the state of PA, and a specific public school in PA. Therefore, understanding how systems are operating in the charter school and gaining an understanding of teachers’ perceptions will provide an opportunity for improvement to be sought and generative impacts to be made across the school, academy, and community.
Figure 4. Demographic Comparison of Reading Scores

[Bar chart showing comparison of reading scores by race and socioeconomic status for Charter School and PPS.]

Figure 5. Demographic Comparison of Math Scores

[Bar chart showing comparison of math scores by race and socioeconomic status for Charter School and PPS.]

Summary:

- Overall proficient or advanced in reading:
  - White Students: Charter School (80%), PPS (70%)
  - Black Students: Charter School (50%), PPS (40%)
  - Economically Disadvantaged: Charter School (70%), PPS (60%)

- Overall proficient and advanced in math:
  - White Students: Charter School (85%), PPS (75%)
  - Black Students: Charter School (45%), PPS (35%)
  - Economically Disadvantaged: Charter School (65%), PPS (55%)
Chapter 2

Chapter two will dive into the literature and frameworks that influence this problem. The chapter will start by naming the issue and giving direction to the literature that will be reviewed. In the next section, a review of the literature will take place and will bring in the voice of scholars who have researched this problem. Following the review of the literature, theoretical frameworks that inform this problem will be introduced. An array of consequences for failing to address this problem will be discussed during the next subsection. Following the consequence section, a real-life example will be given in order to bring this problem closer to reality. A synthesis will attempt to weave the research and the reality of this problem together in order to provide validation for this investigation. Immediately following the synthesis, one of the theoretical frameworks will be applied as a lens to this investigation with a justification as to why this framework is appropriate. Chapter two will conclude with a look at a few prior solutions that have been enacted to address this problem that have ultimately failed to reach the heart of this problem.

Narrowing the Focus

This problem will be addressed from three different aspects. The three aspects that will be addressed are: educational accountability systems, student assessment, and SCLEs. All three aspects have vast amounts of literature surrounding them. Although these three aspects are very different, when they are interwoven we have a problem that is creating havoc in our educational system and affecting real people in schools, the academy, and the community. Furthermore, parts of this problem are not new. Rather, certain policies that influence this problem date back to over 20 years ago. For example, as Anagnostopoulos, Rutledge, and Jacobsen (2013) state,
test-based accountability has dominated U.S. educational policy for over twenty years. Beginning in the 1990s with a handful of states and expanding nationally with the 2001 passage of the federal No Child Left Behind (NCLB) Act and, more recently, the 2009 Race to the Top initiative, state and federal policy makers have sought to induce improvements in the nation’s public schools by attaching increasingly consequential incentives and sanctions for students, teachers, and schools to students’ scores on state assessment. (p. 1)

How we assess students has also seen changes over the years. As Heubert (2004) states,

As most educators and policy makers know, large-scale assessment, including testing for high-stakes purposes, has changed in important ways since the “minimum competency test” (MCT) programs of the 1970s and 1980s; most tests embody much higher standards today, more low-achievers are assessed and there has been growth in graduation testing and especially promotion testing. (p. 220)

In making these comments, Anagnostopoulos et al. and Heubert urge us to think about how this situation has come to be a reality and why improvement efforts have failed. This problem is not just an issue in the particular contexts in which I am studying. Learning environments have been studied for decades. Specifically, David Jonassen and Susan Land have been engaged in work around SCLEs for some time now as they recently released their second edition of Theoretical Foundations of Learning Environments. Their work continues to investigate the theoretical foundations that impact SCLEs and they challenge the assumptions that are evident within the transmissive model of practice. This type of practice has manifested itself in so many classrooms across the county. This problem is affecting real people on a daily basis and it is not just impacting students. The problem spans the SAC and impacts teachers, administrators, professors,
policymakers, and even communities. The work that has been done to date aligns well with my study because I am seeking to gain an understanding of what people know about this problem within their specific context. Land, Hannafin, and Oliver (2012) state, “We need to identify frameworks for analyzing, designing, and implementing learning environments that embody and align particular foundations, assumptions, and practices” (p. 5). In order to achieve this, looking at specific contexts and coming to conclusions as to why certain learning environments exist will assist in identifying these frameworks and ultimately will have generative impacts. This three-tiered approach to reviewing the literature will allow for a deeper understanding of the views of scholars. The review will focus on scholars who have published intensely on a specific topic or on a specific article that bears some weight in investigating this problem. In no way should this be considered a complete review of the literature, as the amount of literature on these three topics is immense. Finally, in order to assist the reader in understanding the review of the literature, a table will be produced outlining a sampling of the research studies and scholars that have made significant contributions to the three topics.

**Review of Literature**

The first step in studying the impact that accountability systems are having on SCLEs is to review current literature. There is a lot of literature published on this topic and in order to narrow the focus and frame the review, the review will be organized under the umbrella of a social constructivist epistemology framework. Figure 6 illustrates the organization of the literature review. The literature review will conclude with a review of accountability.
Social Constructivist’s Epistemology

Constructivist epistemology’s major assumption is that human knowledge is constructed through a dynamic interaction between the human and an experience. Therefore, each learning experience is unique and can be interpreted differently based on contextual factors. Vygotsky’s social constructionism theory explores how interactions with others affect the construction of knowledge. Learning environments can provide many interactions between students, teachers, and even the environment (nature). How these interactions affect the learner is something that also should be considered when constructing SCLEs. Packer and Goicoechea (2000) state, “Learning entails both personal and social transformation” (p. 228). In making this comment, Packer and Goicoechea urge us to come to understand both these transformations and the role school plays in the transformation of students.

Immanuel Kant is thought to be one of the earliest people to investigate and write about constructivism. Howe and Berv (2000) paraphrase an epistemological assumption of Kant’s when they state, “A conceptual scheme without sensory data is empty, sensory data without a conceptual scheme are blind” (p. 21). In other words, Kant is expressing the need for raw data that constructs experiences, which then inform theories. Social constructivism is a theory that has drawn attention over the years and has a cult-like following of researchers. Ernst von Glasersfeld
is just one example of a researcher who devoted his time and effort to studying social constructivism. From his studies, von Glasersfeld coined the term “radical constructivism.” In von Glasersfeld’s view, radical constructivism is defined as an unconventional approach to the problems of knowledge and knowing. It starts from the assumption that knowledge, no matter how it be defined, is in the heads of persons, and that the thinking subject has no alternative but to construct what he or she knows on the basis of his or her own experience. (1995, p. 18)

Von Glasersfeld’s view on constructivism is a very individualist approach in that he claims each person has their own unique experience and internalizes knowledge in their own way. The experience helps shape knowledge creation and social interactions can be part of the experience. On the contrary, not all researchers agree with this train of thought. Slezak (2000) states

The doctrines of radical social constructivism take scientific theories to reflect the social milieu in which they emerge and, therefore, rather than being founded on logic, evidence, and reason, beliefs are taken to be the causal effects of the historically contingent, local context. Accordingly, if knowledge is intrinsically the product of “external” factors rather than “internal” considerations of evidence and reason, then it is an illusion to imagine that education might serve to instill a capacity for critical thought or rational belief. On these views education becomes indoctrination, pedagogy is propaganda, and ideas are merely conventional conformity to social consensus. (p. 93)

This local context to which Slezak refers helps us put into perspective where social constructivism comes from and what informs the theory. However, evidence is typically needed to back up and support theories. Slezak questions whether or not this local context, which is informed by external factors, can actually provide merit to social constructivism. In order to
better understand social constructivist epistemology, the meaning of “epistemology” must be broken down. Howe and Berv (2000) use a disjunctive syllogism as a way to comprehend the meaning when they state, “Either-Or: Either there exists some wholly external, extra-human world by which to verify knowledge claims, or truth resides solely in what individuals or groups construct, i.e., in their conventions” (p. 25). Howe and Berv provide for us the two sides of social constructivism. These two sides have been investigated by researchers and debated in articles, books, and journals for years. As humans we have also been constructing knowledge and interacting as a race for a long time. As the prominent philosopher Paulo Freire (1998) puts it, 

We have been able, through a long human history, to distinguish ourselves, by our own decisions, as individuals among the whole humanity, but still within the workings of society, without which we also would not be what we are. In truth, we are neither only what we inherit nor only what we acquire but, instead, stem from the dynamic relationship between what we inherit and what we acquire. (p. 69)

Freire reminds us that it is through the interactions and workings of humans that we have become as advanced as we are today. For if there were a void in this process, we might not be in a state to even discuss the theory of social constructivism, let alone its place in education.

Furthermore, other researchers, such as Luise Prior McCarty and Thomas Schwandt, take a linguistic idealism approach to describing social constructivism. According to McCarty and Schwandt (2000),

The notion that what knowledge claims about self, world, or other might be true or false is nonsensical within social constructionism because the very concepts “true” and “false” are themselves regarded as linguistic artifacts. Hence, what counts as knowledge in a classroom is nothing more or less than a “temporary location in dialogic space—samples
of discourse that are accorded status as ‘knowledgeable tellings’ on given occasions.’” (p. 58)

In other words, McCarty and Schwandt believe that how knowledgeable one is is based on one’s location and who else is around them. This is typical in a traditional classroom, where the teacher is considered knowledgeable and transmits knowledge to the students, who are not as knowledgeable. How students interact with the teacher is just one social construct that goes into learning. Oftentimes the teacher is seen as the authority and decides what to teach and how to teach it. However, pedagogy and the art of teaching must have a student centered approach. McCarty and Schwandt (2000) acknowledge this when they state, “Pedagogy must be designed so as to enable students to participate in a range of conversations and to acquire the kinds of rhetorical skills that allow them to take persuasive positions within these conversations. Collaborative and student centered learning are to be highly prized” (p. 59). McCarty and Schwandt are right that collaboration and student centered learning should be at the forefront of a teacher’s pedagogical practice. Social constructivism has many different epistemological tangents, however: if we go back to the major assumption that human knowledge is constructed through a dynamic interaction between the human and an experience, then we must design learning environments that are student centered and enable the students to participate.

**Student Centered Learning Environments**

Both theorists and researchers have investigated learning environments and theories and have developed approaches. Jonassen and Land (2012) celebrate the fact that “for the past two decades, pedagogical research has been focused increasingly on problem-based, project-based, inquiry-oriented pedagogies in the forms of open-ended learning environments, microworlds, goal-based scenarios, anchored instruction, social-mediated communication, and so on” (p. x).
SCLEs are designed and operate differently from traditional learning environments; however, they are all grounded by the constructivist’s perspective of learning (Land, Hannafin, & Oliver, 2012, p. 4). One major assumption that has recently been identified is that there is not a unifying theory that sets the standards for SCLEs (Land, Hannafin, & Oliver, 2012). Due to this, SCLEs are designed to create experiences for the learner to assist them in constructing knowledge. Hannafin and Land (1997) state, “Ideally, student centered learning environments emphasize concrete experiences that serve as catalysts for constructing individual meaning” (p. 173). As a result, the epistemological pillars and assumptions are similar in nature to constructivism. SCLEs’ assumptions are identified below:

1. Centrality of the learner is defining meaning
2. Scaffolded participation in authentic tasks and sociocultural practices
3. Importance of prior and everyday experiences in meaning construction
4. Access to multiple perspectives, resources, and representations.
   (Land, Hannafin, & Oliver, 2012, p. 8)

Land, Hannafin, and Oliver (2012) go on to state, “Pedagogically, SCLEs favor rich, authentic learning contexts over isolated, decontextualized knowledge and skill, student-centered, goal-directed inquiry over externally directed instruction, and supporting personal perspectives over canonical perspectives” (pp. 4–5). As stated previously, SCLEs are designed and developed differently. Keeping the learning goals, problems to investigate, available tools, and scaffolds in mind when constructing learning environments are important tenets to the design and development of SCLEs. To illustrate the variety of SCLEs, a few options of design are listed below:

1. Problem-based learning
2. Learning communities
3. Communities of practice
4. Gaming, virtual worlds, and simulation environments
5. Digital repositories.
   (Land, Hannafin, & Oliver, 2012, pp. 16–18)
These represent a few learning environments that can be designed and developed with a student-centered approach. Each of these environments utilizes different tenets in its design and development. Diving into each of these and explaining the differences between them is not the intention. Rather, the illustration represents a variety of learning environments, which are student centered, that can be created based on the epistemological ideology they share.

**Objectivism vs. Constructivism**

When constructing learning environments, two different points of view could be considered: objectivism and constructivism. Objectivists consider knowledge as an external independent variable that must be obtained by the learner in order to make meaning of the available information. There is a field of scholars who link objectivism to realism, in that the world operates independently from humans. Some of those scholars are: Vrasidas (2000), Jonassen (1991), and Lakoff (1987). An important epistemological assumption of objectivism is that, within the operating world, there are structures and those structures can be examples for learners to strive for (Jonassen, 1991, p. 9). Vrasidas (2000) affirms this when he states, “The real world is fully and correctly structured so that it can be modeled” (p. 3). In an objectivist’s point of view, the teacher would play an important role in facilitating the transfer of knowledge to the learner. This type of instruction is categorized as transmissive instruction and is evident in many learning environments. According to Jonassen and Land (2012), “epistemologically, it assumes knowledge is an object that can be conveyed and owned by individuals, which assumes that students can come to know the world as the teacher does” (p. viii).

On the contrary, constructivism is based on the epistemological thought that the learner constructs knowledge. As Fox (2001) states, “As a theory of learning, its central claim is that (human) knowledge is acquired through a process of active construction” (p. 24). As a theory of
learning, many scholars who have all applied their own unique lenses to the theory have investigated constructivism. This list of scholars includes Piaget (1970); Vygotsky (1978); von Glaserfeld (1989); Luhmann (1993); and Kuhn (1996). The reason for the widespread investigation of constructivism is that constructivism’s basic definition leaves room for the maturity of the theory as well as the capability to be applied in a variety of settings. Jonassen even believes that constructivism dates back all the way to Kant’s work from the 17th century. This is evident when Jonassen (1991) states, “Constructivism, founded on Kantian beliefs, claims that reality is constructed by the knower based upon mental activity” (p. 10). Kant’s seminal piece of work, *Critique of Pure Reason*, investigated the harmony between reason and human experiences. Kant (2015) expresses this in a newer published version of his work when he states, “Human reason, is called upon to consider questions, which it cannot decline, as they are presented by its own nature, but which it cannot answer, as they transcend every faculty of the mind” (p. 4). Jonassen (1991) refers to Kant and challenges objectivism when he writes, “Rather than being driven by external structures, these mental models are a priori, according to Kant” (p. 10).

Objectivism and constructivism are often thought to be situated at two completely different ends of a spectrum. Jonassen (1991) himself states, “The two theories are generally described as polar extremes on a continuum from externally mediated reality (objectivism) to internally mediated reality (constructivism)” (p. 8). Cronjê (2006) agrees when he writes, “If one accepts such a model, then one must characterize any given learning event as either objectivist or constructivist, or else locate it somewhere on the continuum between the two extremes” (p. 388). In order to illustrate and compare the assumptions of these two learning theories, Table 1 has been constructed.
<table>
<thead>
<tr>
<th></th>
<th>Objectivism</th>
<th>Constructivism</th>
</tr>
</thead>
</table>
| **Reality (real world)** | *External to the knower*  
*Structure determined by entities, properties, and relations*  
*Structure can be modeled* | *Determined by the knower*  
*Dependent upon human mental activity*  
*Product of mind*  
*Symbolic procedures construct reality*  
*Structure relies on experiences/interpretations* |
| **Mind**         | *Processor of symbols*  
*Mirror of nature*  
*Abstract machine for manipulating symbols* | *Builder of symbols*  
*Perceiver/interpreter of nature*  
*Conceptual system for constructing reality* |
| **Thought**      | *Disembodied: independent of human experience*  
*Governed by external reality*  
*Reflects external reality*  
*Manipulates abstract symbols*  
*Represents (mirrors) reality*  
*Atomistic: decomposable into “building blocks”*  
*Algorithmic*  
*Classification*  
*What machines do* | *Embodied: grows out of bodily experience*  
*Grounded in perception/construction*  
*Grows out of physical and social experience*  
*Imaginative: enables abstract thought*  
*More than representation (mirrors) of reality*  
*Gestalt properties*  
*Relies on ecological structure of conceptual system*  
*Building cognitive models*  
*More than machines are capable of* |
| **Meaning**      | *Corresponds to entities and categories in the world*  
*Independent of the understanding of any organism*  
*External to the understander* | *Does not rely on correspondence to world*  
*Dependent upon understanding*  
*Determined by understander* |
| **Symbols**      | *Represent reality*  
*Internal representations of external reality (“building blocks”)* | *Tools for constructing reality*  
*Representations of internal reality* |

(Adapted from Jonassen, 1991, p. 9)
Accountability

The history of accountability and its leap into the field of education will be explored in this review, as well as how accountability systems are impacting current learning environments. “Accountability” is a word that has been around for quite some time. What does it mean within the field of education? When did it become important in the field of education? An investigation of these two questions is important if we want to ultimately know how accountability systems are impacting instructional practices.

In Leon Lessinger’s (1970) seminal work on accountability within the field of education, he writes, “The movement for accountability in public education arises not from any single source but from the shared experiences of many of us who work in or for the schools” (p. 107). Though the word has been around for some time, accountability was just starting to be discussed seriously in education in the late 1960s and early 1970s. Lessinger (1970) goes on to argue, “Even in this sampling of statements, however, we find that ‘accountability’ and similar words are being used in a variety of ways” (p. 113). Lessinger’s point is that as a field of education, there was some confusion as to what “accountability” meant and who is responsible. According to Browder, Atkins, and Kaya (1973), “Before education borrowed the term and inflated it with its own meanings, ‘accountability’ expressed a relationship between the occupants of roles that control institutions, the ‘holders of power,’ and those who possess the formal power to displace them” (p. 6). Yet a sober analysis of the matter reveals that accountability has manifested itself into a system within education as a way to demonstrate results. Writing in the High School Journal, Lessinger (1977) writes that “accountability in education represents a kind of ‘due process for results’” (p. 152). Current accountability systems like NCLB are truly result-oriented as students are placed in categories based on their performances and this data is then
used to compare schools and (financially) award the schools that performed well. Thorn and Harris (2013) write that
test-based school accountability, introduced by No Child Left Behind (NCLB), has been one of the most influential drivers of policy change in U.S. education history. It has changed what teachers teach, how they teach it, and how they think and feel about their work, while simultaneously transforming the way school leaders allocate resources. (p. 57)

Thorn and Harris’s point is that the culture around pedagogy has changed due to imposed policies. Browder et al. (1973) acknowledge that “in total, from the pressures of the times in which we live, education has found the emerging patterns of accountability alluring” (p. 13). As alluring as accountability systems are for the field of education, we need to understand how to properly implement these systems. Lessinger (1977) argues that “as a system concept, accountability assumes interrelated responsibility” (p. 152). This collective action that Lessinger referenced in 1977 still holds true today. What is missing? Lessinger (1977) argues that control is missing. Many people would assume that teachers have control in their classrooms and are able to conduct their pedagogy in a way that is best for their students. However, the federal government is in control of creating certain accountability policies (ESEA, NCLB, and RTT) and imposing them on schools. The federal government is not the only player in the field when it comes to amassing control. According to Thorn and Harris (2013), “the balance of power in school decision making has shifted away from teachers, unions, and schools of education—what some call ‘the establishment’—towards testing companies, data managers, district department heads, school principals, and state and federal policy makers” (p. 57). These other players, specifically the non–school-based ones, shine some light on just how many hands are in the pot
trying to control what goes on in the classrooms. Accountability systems have had a direct effect on learning environments.

Students, teachers, and learning environments are all impacted by accountability systems. One of many impacts is how teachers allocate instructional time (Jennings & Sohn, 2013; Dee & Jacob, 2011). Teachers are feeling the stress for their students to perform well on standardized tests. However, teachers are not the only ones feeling this stress. According to Hannaway and Hamilton (2008), “the instructional shifts that occur in response to performance-based accountability can be prompted by action at any level in the system” (p. 13). Teachers are not solely responsible for deciding to reallocate instructional time. Superintendents, principals, and school boards all have their motives and agendas they are imposing in order to seek success. The result is that teachers are spending more time on test-related content and skills. Mintrop and Sunderman (2013) contend that “good instruction is deeply embedded in a web of interconnected and highly institutionalized relationships and links: community relations, professional connections, administrative hierarchies, and societal standards of proper comportment and required skills and knowledge” (p. 38). Mintrop and Sunderman remind us just how interconnected instruction has to be in order for it to assist in a student’s ability to grow and develop. The aspects of interconnectedness that Mintrop and Sunderman mention are difficult to achieve in current learning environments where accountability systems are highly valued.

There is no question that accountability systems have an impact on instructional practices. It is important to note that NCLB is a standards-based accountability system. Meaning, subject area curriculum is designed around a set of standards for all students to achieve by the end of the instruction. Just like any reform effort, standards-based reform has roots. In this case, the roots of the reform stem from the early 1990s, when the “high standards for all students”
movement jumped into the spotlight and sought to bring about a new, more challenging curriculum for both students and educators. Swanson and Stevenson (2002) write that “standards-based reform possesses a process-driven conception of educational change that explicitly links schooling inputs and policy drivers to student outcomes through clearly defined mechanisms” (p. 3). Basically, Swanson and Stevenson are saying standards-based reform is another educational fad (change) that is designed with clearer expectations and specific outcomes for students to strive for. Swanson and Stevenson (2002) go on to argue that “standards based reform aims to improve student learning by challenging the core productive technologies of schooling—the academic content and pedagogical practices of classroom instruction” (p. 3). In making this comment, Swanson and Stevenson affirm that pedagogical practices are impacted due to accountability systems.

The literature also indicates that teachers are narrowing their curricula due to accountability systems that are in place. In 2003, Pedulla and others completed a national study focused on how state-mandated tests impact instructional practices. From that study Pedulla et al. (2003) conclude that

teachers in states with high-stakes tests are much more apt than their counterparts in states with lower-stakes tests to engage in test preparation earlier in the school year; spend more time on such initiatives; target special groups of students for more intense preparation; use materials that closely resemble the test; use commercially or state developed test specific preparation materials; use released items from the test; and try to motivate their students to do well on the state test. (p. 5)

Koretz (2008) complicates matters further when he writes that “teaching the specific content of the test, or material close enough to it to undermine the representativeness of the test, illustrates
the contentious issue of score inflation, which refers to increases in scores that do not signal a commensurate increase in proficiency in the domain of interest” (p. 3). The essence of Pedulla’s and Koretz’s argument is that pedagogical practices are suffering due to the accountability systems in place. These accountability systems are striving for score inflation rather than individual students’ growth and development. Narrowing of the curriculum is just one example of a consequence due to accountability systems that are in place within schools. There are a myriad of other consequences associated with the implementation of these accountability systems, which the following section will address.

Theoretical Frameworks

This section will explore four different theoretical frameworks that inform this investigation. The frameworks vary in nature, but share the common theme of having the ability to influence the design and development of learning environments. The first theory that will be discussed is a motivational theory, known as flow theory. The second theory that will be introduced is experimental learning theory. Experimental learning theory focuses on the experience of the learner and how they engage within their environment. The third theory explores how culture, history, and student activity can influence a learning environment. Finally, the fourth theory brings attention to differentiation of instruction for learners. All of these theories bring a unique approach when discussing SCLEs. These frameworks are being discussed to bring attention to the variability and difficulty of designing and developing SCLEs.

Flow Theory

Mihaly Csikszentmihalyi’s flow theory is a motivational theory that suggests that when learners enter a state of flow, they are completely immersed in what they are doing and absorbing what they are engaged in. Snowman and McCown (2015) define flow as “the mental
state of high engagement in an activity” (p. 397). Csikszentmihalyi’s seminal work on flow came out in 1975 and has since caught the attention of other scholars who have investigated this theory and applied it to everything from education to flow as a way of life. Flow theory gets its roots from Csikszentmihalyi’s observations of artists during his studies as a doctoral student. Like any curious human, Csikszentmihalyi questioned why these artists would spend so much time and effort on one painting, knowing full well that these paintings would probably be stacked up waiting for someone to buy them or, more realistically, waiting for a nice layer of dust to form on top of them. During the time of these observations (1960s), Csikszentmihalyi (1988) recalls, “Few psychologists were as yet interested in intrinsic motivation; the ruling paradigm was still exclusively focused on explaining behavior in terms of extrinsic rewards” (p. 4). As a result, flow really found its roots as an intrinsic motivation theory. Csikszentmihalyi set off to investigate this theory. As Csikszentmihalyi (1988) himself writes,

it is necessary to begin observing what people do and what happens to them when they are not confined to the couch or the laboratory, but are involved in their normal lives in real ecological settings. In particular, it is important to observe them in those moments when their lives reach peaks of involvement that produce intense feelings of enjoyment and creativity. (p. 15)

Csikszentmihalyi was therefore interested in the mind and its ability to organize and concentrate. In some of Csikszentmihalyi’s more recent work, he discusses the normal state of the mind and how it is in the state of chaos. Furthermore, he discusses that as humans (without training) we really only have the ability to focus for a few minutes at a time. (Csikszentmihalyi, 1991, p. 119). Csikszentmihalyi (1991) provides some insight on this when he observes that “the better route for avoiding chaos in consciousness, of course, is through habits that give control over mental
processes to the individual, rather than to some external source of stimulation, such as the programs of network TV” (p. 120). So getting to this state of organizing the chaos and being motivated is something that Csikszentmihalyi continues to study. In a piece written by Nakamura and Csikszentmihalyi (2002), they write that

being “in flow” is the way that some interviewees describe the subjective experience of engaging just-manageable challenges by tackling a series of goals, continuously processing feedback about progress, and adjusting action based on this feedback. Under these conditions, experience seamlessly unfolds from moment to moment, and one enters a subjective state. (p. 90)

Understanding how to get to this state and how experiences and the environment play into reaching this state are questions that researchers and practitioners continue to investigate.

**Experimental Learning Theory**

Kolb’s work on experimental learning theory (ELT) takes aspects of the work of John Dewey, Kurt Lewin, and Jean Piaget in order to create this theory. Kolb uses these scholars to inform his theory, specifically to understand the role that experience has in the learning process (Kolb, 1984, p. 20). Kolb (1984) describes the difference between ELT and other theories when he writes

This differentiates experiential learning theory from rationalist and other cognitive theories of learning that tend to give primary emphasis to acquisition, manipulation, and recall of abstract symbols, and from behavioral learning theories that deny any role for consciousness and subjective experience in the learning process. (p. 20)

Kolb also provides seven epistemological prongs that encompass ELT:

1. Learning is best conceived as a process, not in terms of outcomes
2. Learning is a continuous process grounded in experience
3. Learning is best conceived as a process, not in terms of outcomes
4. The process of learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world
5. Learning is a holistic process of adaptation to the world
6. Learning involves transactions between the person and the environment
7. Learning is the process of creating knowledge. (Kolb, 1984, pp. 26–36)

Kolb defines modes for grasping experience (concrete experience and abstract conceptualization) and modes for transforming experience (reflective observation and active experimentation) (Kolb and Kolb, 2008, p. 5). Kolb and Kolb (2008) write that “experiential learning is a process of constructing knowledge that involves a creative tension among the four learning modes that is responsive to contextual demands” (p. 5). Ideal learning takes place when the learner is engaged in a process where they are passing through each mode. Each learning experience is different; therefore, other factors that play into this ideal learning process include how and where the learning experience is situated and the content is being learned. Kolb’s theory is easily illustrated by a cycle and is represented in Figure 7.

Figure 7. Experiential Learning Cycle

(Clark, 2011)
ELT is a learning theory that is based on the learner and the experiences they encounter. How the learner progresses through the ELT cycle is something that is still being investigated to date.

**Cultural Historical Activity Theory**

Cultural historical activity theory (CHAT) can be attributed to the work of Vygotsky, Leon’ev, and Luria. Snowman and McCown (2015) support this when they write, “Cultural-historical activity theory evolved from the social constructivism of Vygotsky” (p. 350). In essence, this is a multi-dimensional theory that brings in the aspects of culture and history and blends them with Vygotsky’s and Leon’ev’s activity theory. Vygotsky, Leon’ev, and Luria bring in aspects of culture with a collaborative framework. Meaning that as humans, we share experiences and these experiences are shared with and passed on to future generations as we evolve as a species. Tools are created to share these experiences. Language is a foundational example of such a tool. However, tools can vary from communication tools to symbolic tools. Stetsenko and Arievitch (2004) would agree when they argue that

> in the course of human evolution, the tools come to reify the collective experiences (e.g. knowledge, memory, skills) that can be passed to subsequent generations, not through genetic mechanisms but by means of specially organized teaching and learning processes in which these tools are re-introduced to and re-discovered by each succeeding generation. (p. 482)

Culture therefore acts as a vehicle to share experiences through a means of utilizing a variety of tools. As we evolve, new tools are created in order to accommodate the transformation of the evolving environments.

The historical aspect of this theory relates to human development, specifically how as humans we have developed and become civilized within our environments. Over millennia of
existence, humans have created and transformed environments through human labor. As Stetsenko and Arievitch (2004) write,

> These historical processes, also termed cultural evolution—to emphasize both their radical difference from and their continuity with biological evolution—are based on active transformations of existing environments and the creation of new ones. These transformations are achieved through human labor, that is, a collective and collaborative (i.e., social) use of tools, in which individual efforts are necessarily blended to produce, deploy and preserve the efficient tools, as well as pass them on to new generations. (p. 482)

The notion of passing the tools on to future generations and understanding how humans have shaped and transformed environments are two major aspects of CHAT. How humans act within these environments and how they create these tools and transform environments leads us into the third prong of this theory.

At its basic definition, activity theory is human action. As Jonassen and Rohrer-Murphy (1999) contend, “Activity theory is a powerful socio-cultural and socio-historical lens through which we can analyze most forms of human activity” (p. 62). However, there is some research that indicates there is a misconception about activity theory. In the West, activity theory is known as CHAT, but in Russia, where Vygotsky investigated and developed this theory, it is simply known as “activity theory.” According to Daniels (2008), “the Western CHAT and Russian activity approach have different functions. The former defines activity more as an object of scientific study and management and the latter as an explanatory principle” (p. 117). The difference is credited to a difficulty in translation of Vygotsky’s work. With that being said, the
central concept behind Vygotsky’s activity theory is mediation, which also serves as the foundational proponent of Vygotsky’s theory of constructivism. Cole and Wertsch (1996) write,

In their early writings on this subject, the Russian cultural-historical psychologists coupled a focus on the cultural medium with the assumption that the special mental quality of human beings is their need and ability to mediate their actions through artifacts and to arrange for the rediscovery and appropriation of these forms of mediation by subsequent generations. (p.252)

This focus was evident in Vygotsky’s writings as well. Figure 8 demonstrates Vygotsky’s thought about mediation.

Figure 8. Vygotsky’s Mediation Model

(Vygotsky 1970, p. 40)

Vygotsky’s triangle harmonizes the cultural artifacts with the human actions/outcomes. This model also represents an individualist approach as to how this harmonization happens. According to Engeström (2001),

The insertion of cultural artifacts into human actions was revolutionary in that the basic unit of analysis now overcame the split between the Cartesian individual and the untouchable societal structure. The individual could no longer be understood without his
or her cultural means: and the society could no longer be understood without the agency
of individuals who use and produce artifacts. (p. 134)

Regardless of how Vygotsky’s activity theory (or CHAT in the West) has been interpreted, there
have been a number of researchers who have taken the heart of Vygotsky’s work and evolved it.
For example, Figure 9 is considered to be the first generation of a human activity system. The
limitation of Vygotsky’s first generation was the individualistic approach that it possessed. Yrjö
Engeström has worked diligently to create both a second and third generation of Vygotsky’s
original human activity system. Figure 10 represents the second generation of the system.

Figure 9. The Structure of a Human Activity System

![Diagram of a Human Activity System](image)

(Engeström, 1987, p. 78)

Three major additions to the second generation were rules, community, and division of labor.
The other major difference was breaking down the object prong of the original system. Snowman
and McCown (2015) go on to state, “As CHAT has evolved, the importance of culture and one’s
history within a culture have been brought into clearer focus by the third lens through which we
can view the constructivist view of meaningful learning” (p. 350). Therefore, how one makes
sense or meaning of something to inform their action was taken into consideration. Engeström was also responsibly for creating the third generation, which is represented by Figure 10.

Figure 10. Two Interacting Activity Systems

(Engeström, 2001, p. 136)

The third-generation work by Engeström takes into consideration that dialogues, multiple perspectives, and networks are part of the system. Engeström (2001) writes, “The object moves from an initial state of unreflected, situationally given ‘raw materials’ to a collectively meaningful object constructed by the activity system, and to a potentially shared or jointly constructed object” (p. 136). The third generation of a human activity system is one where the target is dynamic. It can be informed by multiple artifacts, which can yield different objects. However, these objects are networked and aligned to form one unique object. Engeström (2001) goes on to identify five principles that aim to summarize this current generation of activity theory:

1. A collective, artifact-mediated and object-oriented activity system, seen in its network relations to other activity systems, is taken as the prime unit of analysis
2. Multi-voicedness of activity systems
3. Historicity
4. The central role of contradictions as sources of change and development
5. Proclaims the possibility of expansive transformations in activity systems. (pp. 136–137)
These five principles inform the transformation of activity theory. Though Vygotsky’s original work was individualistic in nature, it has evolved into a dynamic theory in which culture and history have transformed the theory in new ways. CHAT, as we know it in the West, has embedded itself in the field of education and developed into a theoretical framework that can inform teaching and learning.

**Zone of Proximal Development**

Vygotsky’s work did not stop with CHAT. He was also curious about differentiation, although this term was not coined at the time of his curiosity. Vygotsky’s work on the zone of proximal development (ZPD) helps to gauge what type of instruction is ideal for each child. In his own words, Vygotsky (1978) defined ZPD, in *Mind in Society*, as “the distance between the actual developmental level as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86). Vygotsky created the ZPD in part because he disagreed with three theoretical assumptions that he investigated about the relationship between learning and development. Those assumptions are as follows:

1. Processes of child development are independent of learning
2. Learning is development
3. Relation between learning and development attempts to overcome the extremes of the other two by simply combining them.
   (Vygotsky, 1978, pp. 79–81)

Vygotsky’s investigation of the relationship between learning and development stemmed from two essential issues. According to Vygotsky (1978),

The question to be framed in arriving at a solution to this problem is complex. It consists of two separate issues: first, the general relation between learning and development; and second, the specific features of this relationship when children reach school age. (p. 84)
However, what Vygotsky did understand from his initial investigation is that learning should be coupled with each child’s development level. From his investigation, Vygotsky designed the concept of ZPD.

As a snapshot of Vygotsky’s ZPD, students could be categorized into three different groups based on what they can achieve: (1) learners who can achieve; (2) learners who cannot achieve; and (3) learners who can achieve with assistance. This last group is what Vygotsky pinpoints as the ZPD. This is illustrated in Figure 11.

Figure 11. Vygotsky’s Zone of Proximal Development

(Cuppacocoa, 2014)

Chaiklin (2003) writes, “The [ZPD] focused on the relation between instruction and development while being relevant to many of these other problems” (p. 39). The ZPD is designed to provide a range for each learner. With the development of the ZPD, Vygotsky does make note that the relationship between learning and child development varies as the student progresses from one stage to the next (Vygotsky, 1978, p. 91). Vygotsky also believes there is still work to be done to understand this relationship. Vygotsky (1978) himself writes, “Clearly, the problem cannot be
solved by using any one formula; extensive and highly diverse concrete research based on the concept of the zone of proximal development is necessary to resolve the issue” (p. 91). Working towards understanding the relationship between learning and development is work that is still being completed, but Vygotsky’s seminal work on this relationship provided a foundation for future research to be pursued.

**Consequences**

In order to better understand some of these consequences, a review of three chapters written by different authors will be presented. By no means is this an exhaustive list of all the consequences associated with this problem of practice. Rather, it will serve the purpose of presenting three different viewpoints and will demonstrate some of the consequences of not addressing this problem of practice.

The first chapter, titled “The Effects of Testing on Instruction,” explores some of the consequences associated with standards-based reform efforts: specifically, how standards-based assessments have impacted our field of education. According to Herman (2004), “The basic vision of standards-based assessment starts with consensus on what is important for all students to know and be able to do if they are to be successful in the twenty-first century” (p. 141). In making this comment, Herman urges us to be reminded that there is a pool of political players who are determining what is important for our students to study and learn. In Herman’s chapter, she goes on to indicate a few effects that testing has had on instruction. Before diving into these consequences, it is important to lay out some of the intentions of the policymakers who are behind the standards-based reform movement. First, policymakers created policies that were incentive-laced with the thought that by dangling money in front of schools, improvement would be gained. Herman (2004) herself writes, “Policymakers try to strengthen the accountability
aspects of the system by establishing specific goals for school performance and attaching incentives and sanctions to achieving or surpassing these results” (p. 142). Herman’s point is that policymakers thought that incentives or rewards would spur improvement efforts within schools. Policymakers also thought incentives and rewards would serve as motivation to teachers, students, and the community (Herman, 2004, p.142). However, the intentions of the policymakers did not exactly pan out well. An array of consequences is evident as a result of the policymakers’ actions.

The first consequence worth mentioning impacts teachers. The assessments that were created have impacted the practices of teachers in classrooms throughout the country. The high stakes associated with these tests have stressed teachers to ensure their students are prepared to perform well on a standards-based test. This has resulted in teachers teaching to the standards or, as it is more commonly known in the teaching world, “teaching to the test.” Herman (2004) writes, “Unique to standards-based assessment as well is the intention not only to signal to teachers what to teach, but with the use of multiple types and forms of assessment, to provide clues of how to teach as well (p. 142). Ultimately, teaching to the test has killed creativity in the classroom. This has created learning environments where students are drilled on material that will be on the standards-based test. This is also referred to as “kill and drill” in the education world. Students are bombarded with information and drilled on the content to the point that little is retained by the students after the tests.

Students deal with this type of learning environment due to the incentives attached to it, which leads us to our next significant consequence. The tests that are administered to students often impact their lives in dramatic ways. Grade promotion and graduation are often determined by tests and students must perform at certain levels to achieve promotion or graduation. In
Herman’s (2004) view, “dramatic incentives for students also have been added to the mix, as a growing number of states adopt policies that require students to meet a performance standard to be promoted to the next grade or to be granted a high school diploma” (p. 142). In other words, students are also feeling the stress of these high-stakes tests and they often can impact their future and opportunities.

With students and teachers thoroughly stressed out at this point, one might be thinking that at least there is data yielded from these tests that can inform teaching and learning. However, this is not the case, which leads us to our next consequence. Typically, test results come back well after students and teachers have left the school for the summer. The data indicates what the student failed to learn, but when the student returns from summer break, there is new content to learn and new standards for the teachers to teach to. Results from the test do so little to inform learning that it makes people question what the point of these tests is and why the timing of when they are administered has been altered. Herman (2004) argues that

if there is little alignment between what is being taught and what is being tested, the value of using results to determine the strengths and weaknesses or overall effectiveness of instruction is significantly undermined. That is, if what is tested is not taught, the information can tell us little if anything about what students learned in school because what they might have learned was not assessed. (p. 144)

The essence of Herman’s argument is that students are not given the opportunity to demonstrate what they have learned because it is not part of the test. Students are forced to take the required tests, in a format that is predetermined, and are scored based on their ability to answer questions correctly. The summative assessments are designed and implemented intentionally as assessments of learning. Rather, assessments need to be designed as assessments for learning.
Test format leads us to our next consequence. Students are pigeonholed by these tests and as a result an overall assessment of the student’s ability is not gauged. Herman (2004) states, “Even in the best of circumstances, a test measures only a part of what students are learning—what can be measured in a finite and limited period of time and by the types of formats that are included in the test” (p. 144). In other words, tests may limit students’ abilities to display their knowledge and expertise. Herman (2004) goes on to argue, “Good assessment systems really need to include multiple measures to assess the range of knowledge and skills we really want children to achieve” (p. 144). While it is true that good assessment systems need multiple measures, I would also argue that good assessment systems need to use the data from the tests to inform learning. Using tests to determine what areas students are struggling with would allow for teachers to create lessons with a focus that hones in on these areas. Instead, we have standardized tests, which are given late in the school year, and results from these tests are not available until students and staff return from summer vacation. The use of standardized tests has created some changes in instructional practices as well, some of which are consequential in nature.

One change in instructional practice is what is referred to as “narrowing of the curriculum.” Teachers tend to water down their curriculum and cover just what is on the test. The thought behind this is that if students spend more time on the content that is on the test that they will do better on the tests and this would be a good reflection on the teacher and school. When the curriculum is narrowed like this, students are deprived of high-level thinking activities and other authentic learning opportunities. Herman (2004) states, “The net effect was a narrowing of the curriculum to the basic skills assessed and a neglect of complex thinking skills and other subject areas that were not assessed” (p. 145). Herman’s point is that students are not engaged in high-level thinking activities and are only responsible for certain subject areas. This creates a
ranking system as to which subjects are of importance and which are not as important. Therefore, if a student really enjoys history, but it is not a subject that is tested, he or she may be deprived of opportunities to learn about history due to the fact that schools are putting all their energy and focus into subject areas that are being tested.

The standardized tests also impact teachers by influencing the types of tools they use to teach their students. If a standardized test is in multiple-choice format, some teachers may rely on using multiple-choice assessments in their classrooms to train the students before the standardized tests are given. The hope is that students will be used to the format of the large-scale assessment and some of the stress of the environment will decrease. This form of instructional practice should also be viewed as a consequence of standardized tests. Standardized tests influence the types of assessments teachers use in their classrooms. There may be a unit that is taught where a project would be a better form of assessment, but teachers will give a multiple choice test instead. According to Herman (2004),

When a large-scale assessment is composed of multiple-choice tests, teachers tend to use multiple-choice worksheets in their practice, but when the assessments use open-ended items and/or extended writing and rubrics to judge the quality of student work, teachers incorporate these same types of activities into their classroom work. (p. 147)

The essence of Herman’s argument is that, again, this type of practice kills the creativity within the classroom. Giving students opportunities to display their knowledge in multiple formats should be evident within schools and classrooms. However, the pressures that these high-stakes assessments carry can impact schools in many ways, including in instructional practices.

Finally, Herman also discusses the validity of the scores from these large-scale assessments. One critical question that we need to think about is whether the scores from these
large-scale assessments really indicate an increase in student learning (Herman, 2004, p. 160). This is a critical question to answer when we think about improvement efforts within the realm of federally mandated standardized testing. If the scores indicate that an increase in student learning does not exist, then there is a web that will need to be untangled, starting with the reward/punishment systems that are in place for schools based on their schools’ results from these tests. Herman identifies these consequences of the current accountability systems that are in place. If this problem is not addressed then the consequences will remain and grow stronger.

In continuing the quest to identify consequences of not addressing this problem, I will review a chapter by Nancy Beadie. Beadie’s viewpoint is based in a historical context. With that being said, Beadie still identifies some important consequences of failing to address this problem. In order to understand Beadie’s arguments, it is important to note that Beadie believes there are four main levels of accountability in public education:

1. Student level
2. Institutional level
3. Professional level
4. Political level.
   (Beadie, 2004, p. 35)

Beadie’s chapter focuses on the student level and identifies some of the consequences at this level. Beadie (2004) also states that “historically, systems of academic standardization developed largely in relation to the development of urban public high schools” (p. 37). I am of two minds about Beadie’s claim that academic standardization developed in relation to the development of public high schools. On the one hand, I agree that public high schools had something to do with the change in the educational culture. On the other hand, I am not sure if the current state of learning environments is a full result of public high schools coming into existence. I am of the mind that there are numerous factors (i.e., political and economic agendas) playing into the
development and design of current learning environments. Needless to say, Beadie’s work does make some brilliant contributions to identifying consequences if this problem is not addressed. For example, the idea that there is a sense of classism or labeling of students can be dated back to the organization of schools. Beadie (2004) states,

"What is loosely referred to here as “student accountability” is actually a set of systems that developed in the 19th century to address a set of historical problems. The first of these systems is now so fundamental to the organization and administration of schooling that we seldom recognize it as a historical innovation. This is the system of graded schooling, or the hierarchical organization of schools into separate classes or levels of instruction through which individual children are expected systematically to progress. (p. 37)"

Basically, Beadie is saying that the idea of segregating people into classes or, in this case, grade levels, has been around for quite some time now. Since this organizational system was implemented in public education, we have had a set grade for students to enter into based on their age. However, typically when you walk into any classroom you will see students learning at different levels and demonstrating different skill sets. Furthermore, large-scale assessments have impacted learning environments with respect to classism. For example, states have created graduation requirements based on multiple aspects. For example, in New York, there were two types of high school diplomas you could receive: Regents or Local. The Regents diploma was awarded to students who achieved attendance goals and were successful on standardized tests. Local diplomas were awarded to students who still passed high school, but may have had poor attendance or not done well on the standardized tests. By having this “multitiered” system of certification, as Beadie calls it, the state of New York’s system of certification was unjust and
unfair to students. By having a superior Regents diploma, students had more opportunities to attend four-year universities and find employment than their peers who earned Local diplomas. By issuing two different types of diplomas, New York’s certification system categorized or labeled students. One might be wondering why New York’s certification system was operating in this way. Beadie offers some insight to this point when she states, “American public schooling has always been at least as much (or more) concerned with social order as with the mastery of academic content” (p. 47). Those unfamiliar with this school of thought may be interested to know that it basically boils down to a policy issue. Sirotnik (2002) would agree when he writes,

Just as educators need to be held accountable, so do policy makers and the public as a whole. A society that is still marked by substantial racism and classism cannot expect just and equitable public schools no matter how much rhetoric is heard about better leadership, better teaching, and “closing the achievement gap.” (pp. 664–665)

In other words, Sirotnik believes we have a societal issue that is influencing the political arena, where these accountability systems are being developed. We cannot expect schools to be socially just and fair when we have policymakers who are still embedded in racism and classism.

New York had two different diplomas; however, there were still students who did not graduate high school. Today, more than ever, it is difficult to find employment if you do not have a high school degree. Historically, if school was not for you, you could drop out and find work or study a trade or skill and make a living. Beadie (2004) writes, “Over the course of the century, high school education not only became more common; it also became more closely tied to the economy” (p. 41). States such as New York have overhauled their requirements for graduation over the years hoping to instill accountability within the educational system and to yield higher graduation rates. While they rarely admit as much, policymakers often take for granted that they
understand what is happening in the field of education. However, if we took a look at graduation rates over the past few decades we would see very little improvement. As Beadie (2004) points out, “The proportion of the population that successfully completes a high school education has not increased appreciably since 1965” (p. 48). This concluding consequence, which Beadie discusses, adds weight to the argument that accountability systems are negatively impacting the enactment of SCLEs. Finally, Beadie (2004) leaves us with a recommendation when she writes, “The history of student accountability suggests that if our goal is student improvement, we should be looking for ways to restore a culture of aspiration by decreasing, rather than increasing, the threat of punishment” (p. 48). If Beadie is right that we need to decrease the threat of punishment, as I think she is, then we need to reassess the popular assumption that accountability systems within the field of education are operating smoothly and successfully.

The final chapter that will be discussed is more recent in nature and identifies consequences of test scores, accountability, and inequality in American education. Jennifer Jennings and Heeju Sohn, the authors of this chapter, open with some powerful assumptions. One assumption in particular indicates that Americans today tend to believe that accountability systems are operating successfully within the field of education. Jennings and Sohn (2013) write, “Because increasing student achievement was a central goal of NCLB, many observers believe that the federal accountability system is working as intended” (p. 183). When it comes to the topic of accountability, most of us will readily agree that it is necessary. Where this argument usually ends, however, is on the question of how we know accountability systems are operating effectively. Whereas some are convinced that federally mandated accountability systems are the answer to establishing accountability within the field of education, others maintain that these
systems are flawed and improvement should be sought. I am of the mindset that improvement should be sought. How this should be done will be discussed later in this study.

Accountability systems are designed with certain intentions in mind. One important intention of accountability systems that Jennings and Sohn point out is the evaluative aspect they yield. As Jennings and Sohn (2013) argue,

Education and policy researchers now rely heavily on these tests scores to evaluate a range of policies. When we hear that a study demonstrated that an intervention worked, or that a program was effective, what this generally means is that it was effective at increasing test scores. (p. 184)

This intention leads to the premise of Jennings and Sohn’s chapter. The chapter is focused on investigating two different states (New York and Texas) and their testing environments (low-stakes and high-stakes). Although Jennings and Sohn’s study is important, it will not be investigated in depth. Rather, the purpose of bringing in Jennings and Sohn’s viewpoint will be to discuss some of the consequences that were evident in the particular contexts (i.e., Texas and New York) as a result of the accountability systems that were in place within their study. The first consequence worth discussing is the inflation of test scores. Jennings and Sohn also refer to teachers teaching to the test and discuss how this inflates test scores. This is evident when Jennings and Sohn (2013) write that “score inflation occurs when test results overstate students’ skills in the tested area and thus do not provide a valid measure of students’ knowledge and skills in that knowledge domain” (p. 185). In other words, Jennings and Sohn believe that when teachers know which content is going to be included on the test they can drive their curricula to cover the tested material so that students succeed on the test. However, this does not allow the student to demonstrate all their knowledge or ability. Content on standardized tests has become
so predictable that teachers are able to narrow their curricula to the point of covering just what is on the test and drill students on that content. According to Jennings and Sohn (2013), there are five major consequences of score inflation:

1. Students have learned less than their scores suggest
2. Score inflation disproportionately affects poor and minority students
3. Relative improvements become difficult to evaluate, and researchers and policymakers may misidentify effective and ineffective schools and teachers
4. Absence of specific data on how students are doing may allow for ineffective interventions and/or policies that could improve student achievement
5. Inaccurate perceptions of how students are performing may feed back into the political process and potentially affect the debate about how to improve schools. (pp. 185–186)

The consequences identified by Jennings and Sohn that are associated with score inflation paint a picture of the repetitive cycle that is taking place with the field of education. As accountability systems are revamped and reimposed, testing has remained a constant aspect of accountability systems as a form of evaluation. We need to rethink how and why we are using the results of the test to inform learning and policy. Neglecting students who are poor performers on tests signifies another consequence. Oftentimes, “bubble kids” who are right on the edge of passing a test are identified and given specific attention by teachers. The hope is that by teachers spending extra time with the bubble students, they can propel them to pass the test. Typically, these students have taken previous tests and have been very close to passing the test, so the thought is that they are only a few questions away from passing and a little extra remediation will thrust them into the passing category. You may be wondering why identifying bubble students would matter to schools. As Jennings and Sohn (2013) write, “Since sanctions are doled out based on passing rates, slightly increasing the scores of a small number of students can positively impact the school’s accountability rating” (p. 188). I agree that schools identify bubble kids because my experience as an administrator confirms it. As I stated earlier, while I was working at a school
just outside of Pittsburgh, PA, I remember sitting in a meeting where the assistant superintendent was identifying bubble kids and assigning them to specific teachers. In previous years, the school was close to achieving AYP and the superintendent was on the hot seat to make AYP this year or else face harsher consequences.

The two aforementioned consequences (inflated test scores and identifying bubble kids) bring about another consequence that Jennings and Sohn identify as being ignored within the literature. Jennings and Sohn argue that students lack the ability to transfer what was gained from the high-stakes tests to other forms of assessment (2013, p. 189). According to Jennings and Sohn (2013), “In other words, high-stakes measures may overstate the effects of accountability on inequality” (p. 189). Here many policymakers would probably object that high-stakes testing does actually allow for a transfer of abilities from high-stakes testing to other forms of assessment. However, anyone familiar with high-stakes testing should agree that these tests do little to inform learning, let alone inform other forms of assessment. In other words, success on these high-stakes assessments does not directly indicate the overall success of a student. Simply stated, students are being trained to pass the high-stakes test. Passing this test does not demonstrate a student’s knowledge; it just states that students have the ability to perform well on a test.

To complicate matters further, an array of unintended consequences have developed due to accountability systems operating within the field of education. Specifically, NCLB has created an assortment of unintended consequences worth mentioning. The first unintended consequence, which Jennings and Sohn (2013) identify, is that “higher performing students make larger gains on the high-stakes test, while lower-performing students are negatively affected by the initial implementation of NCLB” (p. 190). One of the intentions of NCLB was to bridge the
achievement gap and provide equal opportunity for all students. Many people assume that accountability systems such as NCLB are working and successfully closing the achievement gap. But as Jennings and Sohn (2013) point out,

since the proficiency gap can be narrowed or even closed as advantaged students remain the same distance ahead of disadvantaged students on standardized tests, we raise the possibility that accountability systems may ultimately lead political actors—and, more broadly, Americans—to believe that they have adequately leveled the playing field for poor and minority children while leaving them just as far behind. (p. 195)

We must not assume that policymakers and education reformers are designing flawless accountability systems. Investigations of these systems and gaining a perspective on how these systems are operating in specific contexts will shed light on how improvement can be sought. There are a few reasons why accountability systems were established within the field of education in the first place. According to Jennings and Sohn (2013), there are four goals of educational accountability:

1. Social efficiency
2. Democratic equality
3. Social Mobility
4. Organizational legitimacy.
(p. 192)

Today, organizational legitimacy seems to be based on a variety of factors, none greater than standardized test scores. The results from these tests indicate to the community how a school is doing compared to other schools in neighboring districts or within the state. Since schools are being ranked and labeled like this it is forcing schools to change some of their policies and practices, which leads us to yet another unintended consequence. Jennings and Sohn (2013) write,
As the results presented earlier suggest, high-stakes systems like this, in addition to promoting intended behaviors of the policy, may lead schools to fundamentally change their activities or manipulate information to produce more favorable organizational statistics; and in doing so, important goals of education may be displaced, and it may become more difficult to determine how schools are really doing. (p. 194)

When schools feel the pressure to perform and ultimately be successful or be punished, educational leaders are going to find ways to manipulate the policy or system in order to achieve success. Jennings and Sohn (2013) agree when they write, “These systems are intended to alter behavior and change the way business is done in organizations, particularly those serving disadvantaged populations, and the consistent side effect of this process has been the corruption of the measures themselves” (p. 197). In making this comment, Jennings and Sohn urge us to think about the corruption and inequality taking place due to the accountability systems that are operating. Challenging those within the political arena may not be the best approach when dealing with this problem. Rather, working on it in a very specific context with a group of people who understand how the systems within this context are operating is a more realistic approach. Clearly, there are many consequences for not addressing this problem, and moving forward we must consider options to seek improvement.

In order to conceptualize the consequences, Table 2 outlines a summary of all the aforementioned consequences.
Table 2: Sampling of the Consequences Associated With Accountability Systems Operating in the Field of Educational Assessment

<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joan L. Herman</td>
<td>2004</td>
<td>-Teaching to the test&lt;br&gt;-Little alignment between what is being taught and what is being tested &lt;br&gt;-Tests only measure a part of what students are learning &lt;br&gt;-Narrowing of curriculum &lt;br&gt;-Teachers incorporate the same types of activities that are on the tests &lt;br&gt;-Validity of the test scores</td>
</tr>
<tr>
<td>Nancy Beadie</td>
<td>2004</td>
<td>-Classism: System of graded schooling, or the hierarchical organization of schools&lt;br&gt;-High school education is more closely tied to the economy&lt;br&gt;-The proportion of the population that successfully completes a high school education has not increased appreciably since 1965</td>
</tr>
<tr>
<td>Jennifer Jennings and Heeju Sohn</td>
<td>2013</td>
<td>-Inflation of test scores&lt;br&gt;-Identifying bubble kids&lt;br&gt;-High-stakes measures may overstate the effects of accountability on inequality&lt;br&gt;-Unequal playing field&lt;br&gt;-Manipulation of information in order to produce more favorable organizational statistics&lt;br&gt;-Corruption of the measures</td>
</tr>
</tbody>
</table>

Impact on People

One of the unique characteristics of accountability systems is their ability to reach and affect numerous people. Some of the consequences associated with this problem were just identified. Also, the effects this issue has on students have been previously identified. With that being said, the issue at hand—that accountability systems are negatively impacting the enactment of effective learning environments—is not just an issue to me as the author of this work. Accountability systems are impacting students, teachers, administrators, parents, and communities across the nation. The aforementioned example of the NYC principal forging students’ test answers is an extreme but isolated example. However, NCLB has been a topic of
debate ever since it debuted in 2001. Some of the results from NCLB have left communities in shambles and schools inappropriately funded. For example, in Atlanta a high-profile court case is wrapping up that involved numerous teachers and administrators within the Atlanta public school system. The teachers and administrators are accused of holding cheating parties where they would change students’ answers on state-mandated tests in order to boost their schools’ proficiency and ultimately boost their own income by reaching goals and receiving bonuses.

This goes to show that when money and/or evaluations are at stake, people’s moral character will be exposed. With the investigation and trial wrapping up, some teachers and administrators are facing up to 20 years in jail. The reason for the harsh sentencing, according to the prosecution, is because of the extensive abuse of power. In making this argument, the prosecution has sought to bring Georgia’s Racketeer Influenced and Corrupt Organizations (RICO) accusations against former teachers and administrators. The investigation of Atlanta public schools revealed that 44 schools and close to 200 people were involved in the cheating scandal. A case like this has a broader reach than just the people and schools involved. Atlanta public schools encompass 106 different schools and serve many different communities. This case has put a label on Atlanta public schools, one with a strongly negative connotation.

The Atlanta cheating scandal is just one example of a community being labeled. Numerous other schools and districts are labeled based on their performances on state-mandated tests. Schools are labeled based on student performance data. If students within a school perform well on standardized tests, schools are often labeled as high-performing or efficient schools, while poor performance yields labels such as “failing” or “in need of improvement.” This ultimately puts a label on the entire community, which can lead to stereotyping and misconceptions about the community. This perspective was evident at a school outside of
Pittsburgh, PA that I investigated as part of my research. The school is situated in the middle of an old distressed steel town. This once-thriving town had a large population, but dwindled over the years. During the mid-1980s the city went into such a decline that the Pennsylvania Department of Community Affairs was forced to impose Act 47 on the city, which labeled them as a financially distressed municipality. The school district was forced to close buildings and consolidate into one operating building. Families started to move out and a once-thriving business district slowly became boarded up. With this decline, a new set of problems arose. Violence, drugs, and poverty soon crowded the streets and the school district struggled in a variety of ways. Because of poor test scores and an inability to balance their budget, the school was soon labeled as failing and the community also took on that label. The combination of crime, poverty, and the poor performance of the school created a stereotype about the city, when in reality some of the same problems were evident in other communities, but not as prominently showcased. The community’s label is something that will be difficult to reverse without intervention within the school. Stakeholders must come together and work towards solutions so that students receive the best education possible and are being assessed fairly and accurately. The interesting part to these two examples is that people who live in these respected communities who do not have students in school or have any affiliation to the schools are also part of the label. Schools can shape a community and the people who live in the community are also affected by the performance of students within the school. Therefore, accountability systems and the negative impacts they have on learning environments need to be addressed because as we see, this problem is affecting real people in real communities.

**Synthesis**

As mentioned earlier, work has been done around this problem for decades. Both
theorists and researchers have investigated learning environments and theories that inform these environments. From that work, different approaches have been articulated when creating and designing learning environments. All of the aforementioned theoretical frameworks contribute to an epistemological approach about what learning is and how learners construct knowledge. This investigation is situated under the umbrella of a social constructivist epistemology framework. Constructivist epistemology’s major assumption is that human knowledge is constructed through a dynamic interaction between the human and an experience. Therefore, each learning experience is unique and can be interpreted differently based on contextual factors. In discussions of learning, one controversial issue has been how people learn. On the one hand, objectivists argue that learning occurs independent of the learner. On the other hand, constructivists contend that learning occurs based on the knowledge the learner constructs based on their own mental state of being. Others even maintain a behaviorist approach to learning where learning occurs through conditioning and new behaviors are acquired upon completing the conditioning. My own view follows a social constructivist epistemology framework. Meaning is considered a construction based on events, social interactions, and the meanings associated with these, not the physical objects or events themselves. This demonstrates that how environments should be constructed can vary based on how people understand learning.

Learning environments vary in constructs throughout the field of education. The contexts in which these environments are situated in, as well as the educational leaders who are in charge, can impact learning environments. If you take a look at the practice of teaching, there is a transmissive model in place. How often do you see a teacher talking to a group of students as a form of instruction? This does not give learners an opportunity to construct their own knowledge and they must rely on their teacher to provide it for them. Students have to experiment and
construct their knowledge in order to make meaning of what is being taught. They should not rely on obtaining knowledge through transmission. This leads us to the constructivist point of view, in which knowledge is constructed by the learner and not transmitted by the teacher. Within this point of view, the learner’s reflection on his or her experiences plays a significant role in making meaning, and the learners are constantly shifting their mindsets based on the experiences they are situated in. These two different types of learning environments can also be impacted by other factors, such as accountability systems that are imposed on schools. NCLB is an example of an accountability system. The federal government created NCLB with the intention of holding schools accountable for the teaching and learning that takes place in each school. They did this by dangling funding incentives in front of schools for performing well on standardized tests. The standardized tests are part of the accountability systems that were implemented. The creation of these tests has led to historically well-performing schools receiving federal funding while historically low-performing schools receiving little or no federal funding.

With the social constructivist’s framework as the main epistemology serving as the framework for this study, it is important to note some other theoretical constructs that support this epistemology. There are many other theorists who have developed theories around social constructivist epistemology. This investigation is organized around Vygotsky’s CHAT theory, which will be addressed in the next section. However, I researched other theoretical constructs in order to inform this investigation. The social constructivist epistemology that I chose for this study paved the way for specific types of theoretical frameworks to be investigated and understood. These theories also support the main assumption that there are many ways to design SCLEs. One area where scholars and theorists tend to agree is that there is not a universal theory
that can inform SCLEs. For example, Csikszentmihalyi’s flow theory is a motivational theory that suggests that when learners enter a state of flow, they are completely immersed in what they are doing and are absorbing what they are engaged in. To me this seems like a realistic theory to consider when designing an SCLE. For if we want students to take ownership of learning, they must be engaged at a high level and have the ability to construct their own knowledge. With that being said, the challenge for educators is to find an activity that all their students can be engaged in, allowing them to enter a state of flow. If a teacher has a class of 25 students, it can be challenging to find activities for all 25 students to be engaged in. Another example is Vygotsky’s social constructionism theory. Vygotsky’s theory explores how interactions with others affect the construction of knowledge. Learning environments can provide many interactions between students, teachers, and even the environment (nature). How these interactions affect the learner is something that also should be considered when constructing SCLEs. Furthermore, Vygotsky’s work on the ZPD should also be considered when constructing SCLEs. These four theoretical frameworks demonstrate and support the overarching social constructivist epistemology framework. However, many people have different points of view and disagree about aspects of this problem.

The one major assumption that I shared earlier is that there is not a unifying theory that sets the standards for SCLEs. Rather, SCLEs can look very different based on the contexts in which they are situated. Land, Hannafin, and Oliver (2012) identify other assumptions of SCLEs when they state that despite differences manifested in various student centered designs, several core values and assumptions can be identified: (a) centrality of the learner in defining meaning; (b) scaffolded participation in authentic tasks and sociocultural practices; (c) importance of
prior and everyday experiences in meaning construction; (d) access to multiple
perspectives, resources, and representations. (p. 8)

With that being said, the theoretical frameworks will serve the purpose of grounding some of
these major assumptions of how students learn and align these assumptions when creating
authentic SCLEs. I argue that we need to get away from these types of environments and move
towards a social constructivist theory of learning. The constructs I have chosen for this study will
help paint the picture of what SCLEs might look like. For example, if this shift is going to take
place, tenets from each of these frameworks, as well as ideas from Jonassen and Land’s book,
will be used to seek the answer to how we can construct the best SCLEs with the accountability
systems that are in place. This is truly what I am after in this study, but gaining an understanding
of the specific context that I have chosen will serve the purpose of developing this problem of
practice so that generative impacts can be made.

**Applying CHAT as a Lens**

The synthesis has led me as a researcher to apply CHAT as a lens to this investigation.
CHAT will inform this investigation in a number of ways. First and foremost, I will utilize it as
an organizational structure. CHAT heavily influenced the design and development of the
research questions that will be introduced in chapter three. These research questions were
designed with instructional practices (activities) and perceptions (cultural and historical) from
teachers, administrators, and instructional coaches in mind. Furthermore, CHAT informed the
methods of data collection used and the questions that were asked during the interview and
survey processes. The design of the interview and survey protocols used CHAT as a guide for
formulating questions. Besides some of the demographic questions, all questions can be
connected with CHAT as a foundation. Finally, CHAT was utilized when organizing the results
of this investigation. The results naturally correlate with CHAT as the protocols were designed with CHAT as a foundation to question formulation. Additionally, the results portray, in detail, the perceptions of teachers, administrators, and instructional coaches. This portrayal sheds light on aspects of instructional practices that encompass activity, culture, and history.

Next, scholars and theorists have all defined SCLEs differently. Where students learn, the contexts they learn in, and the culture they learn in are all examples of how learning environments can be defined. CHAT was used to heavily inform the epistemological framework of this investigation. CHAT is evident in a plethora of learning theories, but stands alone as a sound theoretical framework that takes into consideration three major aspects (culture, history, and activity) when designing SCLEs. Therefore, it makes sense for this investigation to be viewed through the lens of CHAT.

Finally, as humans we are only in control of our own activity. Engeström (1999) defines activities as “social practices oriented at objects” (p. 380). These objects must meet the needs of the learner and be internalized by the learner. Students learn differently and therefore the learner determines the need for objects individually. Other factors such as natural and social processes also demonstrate their own activity. These processes are unpredictable to humans, and laws do not define how these processes play out (Lektorsky, 1999, p. 69). The harmony between these processes plays well into CHAT. Lektorsky (1999) observes, “Both natural and human sciences deal not only with universal laws, but also with the realms of unstable, unpredictable, creative, and unique processes” (p. 69). When applying CHAT we know that as humans we create tools (artifacts) and use them to communicate how we learn. This is passed on from generation to generation with transformations of the learning process taking place as time evolves. These transformations are unpredictable, creative, and unique. In Engeström’s (1999) view, “The
mediating artifacts include tools and signs, both external implements and internal representations such as mental models” (p. 381). How these internal and external artifacts are communicated and used vary. Therefore, using CHAT as a way to think about this problem will assist in the work of constructing learning environments that harmonize both human activity as well as natural and social activities. Discussions of CHAT in fact address the larger matter of transforming schools. Miettinen (1999) argues that “to expand the limits of school learning, new kinds of objects—societal activities, knowledge in use—and a corresponding collective subject, a network of learning, are needed” (p. 342). CHAT provides a framework to start the transformative process. By applying CHAT as a lens to this investigation, the normative practice will be challenged and a specific context of where this problem or practice will elicit data that will inform an improvement effort. CHAT will not only inform this investigation, but provide the theoretical concept to allow this work to transform into a collective action that aims to yield generative impacts.

**Prior Solutions**

People are quick to look for solutions when problems arise. This rings true with this problem in that there have been a few “silver bullet” solutions that have been implemented over the years. Formative assessment is one example that practitioners have implemented to address this problem. There is a growing population of theorists who are conducting research on formative assessment (such as Dylan Wiliam, Rick Stiggins, Jan Chappuis, Connie Moss, and Susan Brookhart). They have submerged themselves in formative assessment designs with the hope that students will be better supported during the learning process. Formative assessment is defined by Moss and Brookhart (2009) as “an active and intentional learning process that partners the teacher and the students to continuously and systematically gather evidence of
learning with the express goal of improving student achievement” (p. 6). Formative assessment is geared towards improving the learning process. Teachers and students work together to make changes to the learning process and therefore are not locked into a methodical lesson. This type of teamwork helps to individualize material for students, which, in my opinion, can foster deeper understanding for students and allow them to develop in positive ways. It is unfortunate, though, as Moss and Brookhart (2009) state, that “high-quality formative assessment is rarely a consistent part of the classroom culture” (p. 1). We are currently stuck in a summative assessment process where tests or other premade assessments are administered to students to demonstrate what they have learned. The problem with this is that the learning has already occurred and they are just reciting facts or memorizing definitions. Formative assessment is gaining traction as more and more people are getting fed up with standardized testing. There is an inordinate amount of time spent on standardized testing rather than teacher practices. Teachers are spending more time covering material that will be on the standardized tests rather than devoting time to other topics. Some teachers rely heavily on practice tests to prepare, which limits their ingenuity to create meaningful lessons. However, if formative assessments were implemented then teachers and students would be learning together. Moss and Brookhart (2009) state that “formative assessment raises teacher quality and forges learning partnerships between students and teachers that make a huge difference in what happens every day and every minute in the classroom” (p. 23). Teachers and students need meaningful lessons to stay motivated and to keep the learning process fun. One of the reasons formative assessments are working is because they allow teachers to differentiate instruction for students, which allows each student to learn in their own unique way and improve student development. When the teacher and student work as a team, learning and student development can flourish. Creating SCLEs can prove to be tricky. In
order for SCLEs to be implemented, a shift away from traditional teaching methodology is needed. This paradigm shift has been hard to grasp for some due to the fact that students are the ones who become empowered and teachers feel as though they are being demoted to a facilitator. However, the role of the teacher becomes more important due to the complexity of the knowledge the learner may be trying to comprehend. Quintana et al. (2004) state that “learners can be overwhelmed by the complexity of options available, making it difficult to direct their investigations, see what steps are relevant and productive, and make effective activity decisions” (p. 359). Although I agree with Quintana et al. up to a point, I cannot accept their overriding assumption that switching to SCLEs would be worse than staying in the transmissive environments that are popular in many classrooms across the nation. Therefore, the purpose of this study will be to gain an understanding of what people’s perceptions are around accountability systems and the effects these systems have on their specific environments.

What the scholars have learned is that there are many theories that have been created over the past two decades that have advanced the work around SCLEs. Specifically, the process of learning has shifted to how students make meaning compared to knowledge being transmitted to students. These new theories have assisted in the maturation process of SCLEs. In the second edition of their book, Jonassen and Land (2012) maintain that “newer theoretical perspectives have elaborated constructivist and situated perspectives on learning” (p. vii). Their work, as well as that of other theorists, has provided an alternative approach to transmissive learning environments. For example, Blumenfeld, Kempler, and Krajcik (2006) write, “When learning environments are based on learning sciences principles (e.g. project, problem, and design approaches), they are more likely to be motivating for students” (p. 475). The authors’ point is well taken and understanding the interactions these principles have with teachers, learners, and
technology will be of interest for this study. Furthermore, how accountability systems interact with and impact the design and development of learning environments will also be of importance for this study. This work has advanced over the years and scholars and theorists have learned a great deal, but they will continue to learn as they investigate different SCLEs.
Chapter 3

Chapter three will focus on the methodology that was utilized for this study. The research questions will be introduced as well as the instruments that were used to gather the data. How the data was analyzed will also be discussed. Following the analysis, the results from the investigation will be presented and an interpretation of the data will be conducted.

Research Questions

Given the provided background, context, and relevant literature that inform this problem, it is time to set the stage for the study. In order to narrow this investigation and hone in on how this problem is manifesting itself in a particular context, two research questions will be investigated. First, this investigation is interested in revealing how instructional practices are impacted by accountability systems. The investigation is also interested in teachers’ perceptions about the assessments that their students are required to participate in. Therefore, the two research questions are as follows:

1. How do accountability systems impact instructional practices?
2. How do teachers perceive the assessments that are embedded within the accountability systems?

These two research questions will provide the direction for this investigation. Digging deeper for information through surveys, interviews, and focus groups will provide data about instructional practices and perceptions from teachers and administrators who are in the trenches every day working with students. The intention of this investigation will be to provide a plan of improvement that will yield generative impacts across the school, academy, and community. The research questions that were created correlate directly with the methodology of this study.
Methodology

The purpose of this study is to gain an understanding of how a system is operating within a specific context. In order to achieve this, a subjective point of view from people situated in this context is what will matter the most. The aforementioned research questions are designed to gain a perspective from individuals who are situated in a very specific context. As the researcher, I conducted a qualitative research study that is explanatory and descriptive in nature. My intentions were to document what events, beliefs, and policies inform this problem. I also sought documentation of the social structures, power structures, and processes that inform this problem. The focus of the study had a strict focus on gaining a deeper understanding of how accountability systems impact the design and development of SCLEs within a specific context and how the participants perceive these accountability systems within this specific context. This focus was grounded by the two aforementioned research questions that I set out to answer. However, in order to achieve this finite locus, the design of the study had to be developed so as to attract people from SAC to this work. As a practitioner in a charter school, I used the context I am situated in as my main arena for collecting data. While collecting data at the charter school, I engaged principals, teachers, instructional coaches, and administrators in some inquiry about the learning environments within their specific settings. My methods consisted of conducting surveys, in-depth interviews, and a focus group. During this work, I was specifically interested in how the identified stakeholders view this problem in their own contexts of practice. The data that was collected from the charter school provided insight as to how instructional practices are impacted due to accountability systems and how the participants perceive accountability systems.
Instruments

The survey was intentionally designed in a standardized format so that it yielded specific data. The aim of the survey was to collect data from the participants and to identify and ultimately explain the variability of that data. Marshall and Rossman (1999) state that “the basic aim of survey research is to describe and explain statistically the variability of certain features of a population” (p. 130). The survey consisted of 13 questions and was administered first. The intention of the first two questions of the survey was to collect some demographic information. The other 11 questions were set up with a Likert scale in place. This was designed intentionally to gather some of the perceptual data from the participants. All of the Likert scale questions had the same scale, which indicated whether the participants strongly agreed (1) or strongly disagreed (4). One question had slightly different descriptors, which ranged from “very satisfied” (1) to “very unsatisfied” (4). As the researcher, I conducted the survey assuming that I could collect honest and accurate information from participants via the survey protocol. Marshall and Rossman (1999) support this action when they write, “In deciding to survey the group of people chosen for the study, researchers make one critical assumption—that the characteristic or belief can be described or measured accurately through self-report” (p. 129). Finally, the reason for choosing to survey the participants was threefold: the ease of administering and collecting data; the ability to quantify and generalize data; and the ability to capture the participants’ perceptions and/or beliefs. The survey protocol is included in appendix C.

In-depth interviewing was also used as a method for this particular study. Kahn and Cannell (1957) describe the art of interviewing as “a conversation with a purpose” (p. 149). This was the exact intention of the interview, to have a conversation with each participant. Each participant was asked 13 questions that ranged over a few different topics. The development of
the interview protocol was intentionally designed to gather subjective data from participants. Marshall and Rossman (1999) identify a fundamental assumption of qualitative research when they write, “The participant’s perspective on the phenomenon of interest should unfold as the participant views it, not as the researcher views it” (p. 108). This assumption supports the work that was done in this study. Again, the intention was to understand the meanings of the participants within their specific contexts. One of the benefits of interviewing participants is the ability to ask prompt questions or questions that help clarify what the participant is trying to articulate. Prompt questions were part of the interview process for this study. All the interviews were recorded and transcribed. The daunting task of transcribing interviews yielded emergent themes and allowed for an analysis of the themes (see discussion section). The interview protocol is included as appendix D.

After the surveys and interviews were conducted, a focus group was formed in order to gain a deeper understanding from specific stakeholders. The data from the surveys and interviews informed the work of the focus group. The focus group was tasked with designing the framework for an improvement plan. As the researcher, I identified an aim for the improvement effort. The aim was geared more as a focus question, which asked, “How can we develop and test authentic assessments?” Prior to the focus group, this aim was discussed with an upper-level administrator at the charter school. This served as a comprehensive check to ensure that the focus group would be viable and that the work done in the focus group would align with elements of the school’s strategic plan. During the focus group, a brief discussion took place about some of the emergent themes that were identified from the survey and interview protocols. The purpose and goal of the focus group were also discussed with the participants. After this brief discussion, participants started to work on identifying primary drivers that would assist in seeking
improvement, and ultimately worked towards achieving the aim. After the primary drivers were identified, participants were asked to identify one primary driver as a starting point. The participants were then tasked with creating secondary drivers that would inform the identified primary driver. The driver diagram and the importance of this diagram will be presented in a later section. For the purpose of the study, the work ceased after the focus group. However, the work from the focus group can serve as an improvement plan for the school. The improvement efforts will also be discussed in a subsequent section of this paper.

Analysis

The data will be presented and organized around the two research questions. Data will be taken from the surveys and interviews, which inform the research questions. Data from the focus group will be presented at the end of the results section. The data from the focus group also assists in answering the research questions, but it speaks specifically to the prescription of the improvement plan. The data from the focus group will provide a bridge to chapter four and discussion of the plan for improvement. Detailed field notes and depictions of data are included in appendix E. The design of the survey and interview protocols assisted me as the researcher to think specifically about the research questions that I designed and developed. For example, when setting out to answer the first research question, which is “How do accountability systems impact instructional practices?”, questions on both the survey and interview protocols honed in on asking participants specifically what influenced their instructional practices. Specific survey questions asked participants whether aspects such as collaboration, achievement data, professional development, and different types of assessments influenced their instructional practices. The survey data provided a nice general overview of the participants’ initial thoughts. The interview protocol was designed to generate a more laser-like focus on specifically how
accountability systems impact participants’ instructional practices. For example, question five of the survey asks participants point blank “To what extent do accountability measures influence your practice?” However, the survey also navigates a variety of other questions that really assist in painting a picture of how the participants’ instructional practices are influenced and what their practices look like.

When investigating the second research question, “How do teachers perceive the assessments that are embedded within the accountability systems?”, the survey and interview questions were again intentionally designed and structured to seek answers to this question. As the researcher, I designed protocols that really made me think about the research questions. The questions that I included on the survey asked participants to respond to statements that focused around the Pennsylvania System of School Assessment (PSSAs) and their own forms of assessment that are evident within their classrooms. The statements they responded to sought views of whether they thought the PSSAs allowed students to demonstrate their knowledge in a meaningful way. Other questions honed in on how satisfied participants were with NCLB and the federally mandated tests that are associated with this act. Just as with the first research question, this yielded some quick, general data about the perceptions of the participants. The interview protocol generated data that really detailed the participants’ thoughts. Participants responded to a number of questions that ranged from asking them whether they thought the assessments impacted student learning to whether they thought this was a problem in the field of education. This may seem like a broad range of questions, but it really shed some light on what participants thought about the assessments that are embedded within the accountability systems that are operating within their context.
Results

The reporting of the data will consist of the raw data that was generated from the protocols. Modes and frequencies from the survey protocol will be presented as well as emergent themes from the interview protocol. A quick summary of the protocols and the data it generated provides a foundation for the reader to understand the results from the study. The interpretation of the data will be discussed in the interpretation of data section of this paper.

The survey was distributed to all 11 participants. The results from the first two questions, the demographic questions, yielded the information that five participants identified as teachers, four identified as administrators, and two identified as instructional coaches. The years of experience at the institution varied among participants, but the average number of years served among all participants was 5.5 years. All results from the Likert-scale questions will be reported by modes and frequencies, and results are depicted in Table 3 below. As a reminder, the scale range was from “strongly agree” (1) to “strongly disagree” (4), and question 11 had a range of “very satisfied” (1) to “very unsatisfied” (2).

Table 3: Modes and Frequencies of Survey Responses

<table>
<thead>
<tr>
<th>Question</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Frequency</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

There were four questions from the survey that yielded bimodal data. Questions three, nine, and 13 each yielded bimodal data that included four responses for each mode. Question four generated a large variability. Three participants strongly agreed, four agreed, four disagreed,
and no one strongly disagreed. It is also important to note that question four had the most variability not only between responses, but also in whether participants agreed or not. Question 11 of the survey also yielded bimodal data that included five responses for each mode. Most of the participants disagreed with the statement in question 11, with only one participant responding that they agreed. Questions five and 10 were extreme responses as far as modal responses, generating eight different responses, thus indicating the least amount of variability. All participants disagreed (indicating both “disagree” and “strongly disagree”) to some extent to question five of the survey. The same could be said for question 10 except for one participant who responded that they agreed. Furthermore, questions six and seven were somewhat extreme, generating seven modal responses. All but one participant agreed to some extent to the statement in question six. Question seven was the opposite: nine participants disagreed and two indicated that they agreed. Besides the bimodal questions that generated four responses each, question eight generated the lowest modal response with five responses. Question eight had the most variability, yielding three different responses with at least three participants who responded. The data from the survey protocol is detailed in appendix E with a narrative and bar graph for each question. The narrative serves as a detailed explanation of the data and the bar graph will provide a representation of mode and frequency for each question.

The data from the interview was disaggregated and emergent themes were identified. All participants responded to each of the 13 questions. The process for identifying these themes was transcribing the audio recordings and coding the data from each interview. From the coding process, four themes emerged: authentic learning experiences/assessments; traditional practices/measures; growth and development; and small group instruction/intervention. These themes are portrayed in Table 4 with the frequency with which they occurred. The frequency of
these four salient themes warranted a discussion, even though these themes were not specifically targeted during this study. Each of the four themes points to important ways in which accountability systems impact instructional practices and teachers’ perceptions about the assessments that are embedded within the accountability system. It is important to note that each of the participants did not comment on each of the four themes. It is also important to note that some of the quotes that are used to help illustrate each theme were edited slightly in order to eliminate verbal miscues.

Table 4: Emergent Themes From Interview Data

<table>
<thead>
<tr>
<th>Themes</th>
<th>Authentic learning experiences and assessments</th>
<th>Traditional practices/measures</th>
<th>Small group instruction and interventions</th>
<th>Growth and development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of occurrence</td>
<td>10</td>
<td>19</td>
<td>21</td>
<td>26</td>
</tr>
</tbody>
</table>

**Authentic learning experiences/assessments**

Participants indicated that PSSAs (assessments) embedded within a specific accountability system was not the best way for students to demonstrate student growth and development. Furthermore, participants identified authentic learning experiences as aspects they strive for within their instructional practices. Participants used the word “authentic” to describe “learning experiences,” “measures,” and “assessments.” References to these descriptions were common among participants:

If we can get more authentic measures in, I think that would positively impact student learning. If students are able to do a project instead of a multiple choice question, it allows them that range of thought and allows them to push their thinking forward (Administrator).
Or as one teacher said, “So we like to do a lot of written explanational work, which you don’t see on PSSAs, something that’s a little more authentic.”

Participants did not provide details on what an authentic learning experience was or what an authentic measure or assessment consisted of. In summary, participants did point to authentic experiences/assessments as something that is ideal within their instructional practices and something that is currently absent from assessments that are embedded within a specific accountability system.

**Traditional practices/measures**

Participants identified their specific context as one that is different from traditional school contexts. Participants identified how working in this specific context influenced their instructional practices. Some participants also made points about traditional mindsets of what schooling is like. Furthermore, participants also made references to previous educational experiences that were “traditional” in nature. Some representative statements follow.

Teaching at this school I’m housed in the math department, so I’m only expected to plan and prep for one content area, as opposed to maybe six or seven if you were in a traditional school district, so I can focus all my time and energy on math and really target areas that help my students grow and reach their fullest potential (Teacher).

You’ve also got parents that have all gone through an educational experience themselves, and understand exactly what they did and what they feel to be a successful model. They also have aspirations for their own children and look to see kind of a traditional experience. The traditional sense of success is a college education (Administrator).

Another administrator said, “I have a lot more freedom and flexibility in this environment than I would in a traditional district.”
Participants did not define what they meant by “traditional” when referencing other contexts. Participants simply said “other districts” or “other schools” when referencing traditional practices.

**Small group instruction/interventions**

Small group instruction/interventions emerged as a theme that was discussed in depth by teachers. Instructional coaches and administrators also discussed small group instruction, but not at the length that teachers did. Light was shed on how the embedded assessments within an accountability system impacted small group instruction/interventions and the impact they had on instructional practices. Many participants referenced Response to Intervention (RTI), which is a multitiered approach to supporting students who have identified learning or behavior needs. Participants also referenced Measures of Academic Progress (MAP) testing, which is an assessment embedded within an accountability system that is an online personalized assessment measure for students, which they participant in three to four times a year as a way to identify benchmarks. Some representative statements follow.

In some regard we actually go back to the data and look at previous skills that kids are maybe struggling in and that’s where our “Number Sense Fridays” [teacher-specific remediation curriculum] come in. So, we do some RTI in the classroom beyond what’s already being planned (Teacher).

I use my MAPs data to track the students that I work specifically with in my small group instruction during math. Typically, these students are students with special needs. What is kind of nice about MAPs is it breaks down into several categories and it tells you areas where kids need extra support, whether it’s numbers and operations or geometry. I would
say three to four days a week I would try to pull a small group of kiddos and work on those areas (Teacher).

I get to use PSSA data and MAP data frequently. Those are more of our statistical bench markings. Those help with informing RTI groups or other small group practices. We also use unit tests and quizzes and other formal assessments within each classroom. Those are shared with me during those RTI meetings so we kind of get a bigger picture of a child’s data profile, rather than just those two pieces with PSSAs and MAPs (Administrator).

So looking at MAP scores, understanding reports, being able to look at it more as a diagnostic tool to pick out skills, strengths and deficits, and planning small group instruction. You’d also see me working on curriculum planning and unpacking standards to really understand the content (Instructional Coach).

I think our school has done an excellent job trying to group our kids in classrooms to be successful. So, we might have a group where kids are fast finishers, you might have a group where kids are very slow finishers. We have small group instruction now, so they’re not being as distracted [as] if they were in a whole group setting. So I think our school has taken the initiative to improve the overall dynamic of that aspect and they’ve done a good job with it (Teacher).

These supporting quotes do a great job of demonstrating of how instructional practices are impacted by embedded assessments within the accountability system. When participants
discussed small group instruction they did not identify how many students were involved in a small group atmosphere or provide many details of what happened in the small groups.

**Growth and development**

Growth and development was identified as a theme among the data. It was recorded at a high frequency, but was not discussed by each participant. “Growth” and “development” can be thought of as broad terms in the field of education, but in most instances participants used the term “growth” when referencing students. Some used “growth” in a generic way, but it was inferred they were referencing student growth. Some participants specifically talked about how assessments within the accountability systems impact student growth. Others discussed what their instructional practice looks like based on the accountability system that is in place. Some representative statements follow.

I would love to be able to say, okay, if we didn’t spend the month of March focused on that test (PSSA) we could be doing student interviews or we could be doing portfolio development or teaching kids about character, or thinking about how that time could be utilized differently to show student growth. We lose upwards of five to six weeks a year. Whether it is in the background of test prep teachers are doing or actually testing and then the fluffy activities that surround testing because we don’t want to stress kids out too much, right? So, I feel like it’s a wasted six weeks of time that could be better spent doing those types of things if we were really thinking about growth and student achievement (Administrator).

With probably 85 to 90% of my clients, the accountability measures are not driving the work, so you’re going to see more work around student centered learning, around
integrated practice, around a more contextual learning model, and embedding content within a context. You would see talking through ways to document student learning and growth in maybe less traditional ways than tests and more ways of looking at student work and student reflection (Instructional Coach).

I mean I feel lucky that I’m not driven by the PSSA data. I’m not driven to complete a certain amount of content because it’s going to be assessed on the PSSA. I don’t feel like anybody’s saying to me, “Hey, your students need to be 95% proficient.” In previous schools, I remember we did set those thresholds, we said that our goal is 70% of the students are proficient on the PSSA math test. Here I don’t really feel that pressure. My ultimate goal has always been, and continues to be, student growth (Teacher).

Participants did not define “growth” or “development.” Also, indicators of what student growth is were not mentioned. Participants did use words like “projects,” “portfolios,” “measures,” and “interviews” when talking about growth. These words were used when discussing instructional practices and the work that participants complete within their specific contexts.

Of the 11 participants who participated in the surveys and interviews, five participated in the focus group. The focus group consisted of two administrators and three teachers. The data from the focus group mainly consisted of generating a driver diagram (Figure 12), which outlines a plan to seek improvement. However, an aim, a driver diagram (with primary and secondary drivers), and a working definition of authentic assessment were generated during the focus group. Participants were given a focus question by the researcher to drive the work of the group, which was “How can we develop and test new authentic assessments?” The participants first loosely defined “authentic assessment” in their own words or phrases. Phrases and words such as
“doing something placed in reality,” “not pencil and paper,” “natural,” “integrated,” “ongoing,” “room to master,” “contextual,” and “demonstration of knowledge” were all used to define authentic assessment. The focus question served as a guide for participants to generate the driver diagram. Participants then identified all of the primary drivers, which are detailed in Figure 12 below. Participants then agreed upon identifying secondary drivers for one of the primary drivers. Participants indicated that implementing a project-place-problem–based learning (PBL) experience was the primary driver in which they wanted to expand and identify secondary drivers. The secondary drivers are also evident in Figure 12 below. Participants did provide details about each of the secondary drivers, except for the time driver. For the space driver, participants indicated that they were referencing students and teachers and how both operate within defined spaces. For the planning driver, participants discussed how standards were an important part of the planning process. Physical examples of PBL lessons were indicated as a very important resource to have access to. Finally, making sure students feel comfortable during the process and indicating that staff members should take risks were part of creating the culture driver. At the end of the focus group, with the assistance of the researcher, the participants articulated an aim for the driver diagram. The aim identified was to increase the development and testing of authentic assessments. This aim serves as the collective goal of the participants in the focus group. The driver diagram will be discussed in fuller detail later in this paper as a discussion of an improvement effort will be discussed at length.
Interpretation of Data

The data collected during this study is both eye-opening and informative. In this section, an interpretation of the data will take place, which will set the stage for an improvement plan. This discussion represents major takeaways from the surveys, interviews, and focus group. It will meld some of these takeaways together in order to provide some clarity in moving towards an improvement plan. The interpretation of the data will be organized around answering the two research questions of this study. It is important to make note of the different perspectives that were provided during this study. Three different groups (administrators, teachers, and instructional coaches) all participated in this study. There is variability in regards to each group’s perspectives. For example, administrators’ perspectives focused quite a bit around parents, community members/general public, and federal reporting. On the other hand, teachers’
perspectives focused a lot on their past experiences as educators (comparative) and their instructional practices. The teachers’ perspectives also painted a picture of what life was like in the classroom (learning environments). Lastly, instructional coaches provided more of an evaluative/data perspective. All of the instructional coaches shed light on what assessments were used within the context and how those assessments are evaluated and used to inform instructional practices. It is important to understand these three very different perspectives, as it will help to frame the interpretation section as well as paint a picture of the different mindsets of the participants.

The first research question honed in on how instructional practices are impacted by accountability systems. The intention of the second research question is to gain an understanding of teachers’ perceptions about the assessments that are embedded with the accountability systems. Throughout the study, three types of assessments were discussed: federally mandated tests (PSSAs), MAPs testing, and authentic assessments. The data yielded from the study assisted the researcher to formulate interpretations and discuss the data in a way that addressed both of the research questions. The following discussion speaks to both research questions and is supported by quotes from participants who engaged in the study.

Federally mandated tests were discussed in both the surveys and interviews. During the survey, participants responded to questions specifically relating to PSSA tests during questions 7–10. The overall consensus from the surveys was that participants did not strongly agree that PSSA tests assisted with the design and development of learning environments, or that PSSAs are useful forms of assessment that inform learning, provide data that can inform instructional practice, and allow students to demonstrate their knowledge in a meaningful way. This consensus rang true in the interviews as well. When asked in interviews, “To what extent do
accountability measures influence student learning?” participants responded in various ways. One participant, an administrator, responded, “I don’t think they impact it. I mean, accountability measures don’t drive learning. They don’t.” Two different participants, a teacher and an administrator, responded that they think accountability measures narrow student learning. An instructional coach indicated that there was a focus on accountability measures, saying

At certain times with instructional coaches or with administration I think we feel connections to the accountability measures, but I don’t think it filters down to the teachers in the same way and therefore to the students. So, I honestly think it minimally impacts student learning.

Student learning is what we strive for in schools, and the federally mandated assessments that are designed to showcase that learning are doing a poor job of demonstrating student learning. One would think that the data from the federally mandated tests would at least be released in a manner that allowed teachers to use this data to inform student learning and drive their instructional practice. However, this is not the case. During the interview, some participants received a prompt question asking whether they thought the data from the federally mandated tests (PSSAs) was released in a timeframe that allowed staff to use the data to inform learning. All participants who were asked this question did not think PSSA data was provided in a timeframe where the data could be used to inform learning. An administrator stated,

We don’t get PSSA scores, they’re not official. We’ll get them over the summer, probably July–August, they won’t be considered official until September. Then the problem is that a teacher has already left that year behind, and so all they can do then is inform their practice for the next year. In our situation, as long as they’re within the loop it could inform their practice but if a fifth-grade teacher is handing off those kids to sixth
grade, there’s not much that they can do to inform the practice with that student. I think really for accountability measures to be important they have to impact that child, and be descriptive for that person’s learning pathway, rather than just like your whole curriculum.

This statement does a good job of summing up the feelings of many of the participants. The unique aspect of this specific context is that there is a looping model in place. The model consists of K–first, second–third, fourth–fifth, and sixth–eighth grade loops. Therefore, if teachers are at the beginning of their loop then they can use the data from the previous year to inform their instructional practices because they will have the same students and the data will then be relevant. In a traditional setting, students would be passed on to the next grade, typically with new teachers, and the data will have a low impact on informing instructional practices.

The clear question that I found myself asking is, “Why do we have assessments embedded within accountability systems that do not drive instructional practice or inform student learning?” It is our responsibility as a field to advocate what is right for our students and schools. The field of education is capable of building assessments and accountability systems that focus on student growth and development, but we are hindered in our ability to do this work because of imposed measures that are mandated by the federal government. Looking at other forms of assessment that actually inform student learning, drive instructional practice, and assess for learning is a good place to start this revolution.

Participants also commented on MAP testing as an assessment that was embedded within an accountability system. MAP assessments are an accountability system enacted by the school and not a federal mandate. One participant, an administrator, described MAP assessments by saying, “The school was able to choose their own in using MAPs as one measure. But that’s
more an internal measure because that’s nothing that’s reported out to the state or anyone beyond here.” This internal assessment seemed to be well received by participants. Participants displayed more positive perceptions when discussing MAP assessments during the interview. One teacher said,

One type of assessment that we use to help drive our instruction is the MAP assessment. We essentially test our students three times a year—usually it’s in the fall, winter, and spring. It provides us with relevant information with benchmarks, and where we want our kids to be in certain areas that they might need extra support or areas where we could enrich for our kids. So, I actually think it’s a valuable source of information that teachers should use.

Another teacher said, “I’d say the MAP tests are more useful in the classroom to help drive instruction, because they are taken throughout the year, so there’s actually time to design the instruction around the results.” Using data from assessments to drive instruction and inform learning should be the goal of any assessment. MAP assessments seem to yield data, which accomplishes just that. The data from MAP assessments are instantaneous and can be used right away to inform instructional practices. One participant, an administrator, made reference to the benefits of the looping model and MAP data when they stated,

I think it’s easier in the looping, but to me the benefit of the looping is I’ve got those kids already, I know where they are. I don’t need the PSSA to tell me that. And, we have the MAPs data from May–June. So, we’ve got more recent data than that and, I hope, better data.

Participants also indicated that data from the MAP assessments informs small group instruction or interventions. The downside to MAP assessments is that it still requires students to sit in front
of a computer and it takes time away from the classroom to complete these assessments. MAP assessments seem to yield valuable individualistic data for students, which assists teachers and administrators in helping drive instruction. However, the improvement enthusiast might ask, “Is there something better? Something that does not place a student in front of a computer, but rather places the student within a context where they are able to be creative and collaborative while displaying their knowledge in a more meaningful way?” Again, as a field it is our responsibility to build this capacity. Are PSSAs and MAPs useless? The short answer is “No,” but these assessments only capture a moment in time. These assessments kill creativity, which is considered to be a coveted 21st-century skill. Looking at more authentic assessments that capture these 21st-century skills is a natural place to gravitate.

The data from the study demonstrated that a problem exists with the accountability systems that are in place and the assessments that are embedded within those systems. All participants indicated they thought there was a problem and they were asked to provide some insight as to what they thought could be done to address the problem. Responses to this question varied. One participant, an administrator, stated,

I think empowering teachers. I mean there are multiple things you can do. One of the powerful ones is to empower teachers to articulate in front of fellow teachers the work that they do to push the boundaries of educational delivery and outcomes. Teachers work really hard and uniquely understand their own practice.

Giving teachers the opportunity to share their work, both struggles and successes, allows for learning to happen within our field. The administrator went on to say,

When teachers get up and share their practice and are complimented and admired by their fellow teachers, that’s enormously empowering and transformational. And I think a
school like us needs to do a better job of building opportunities for teachers to do that—both internally and externally.

Providing teachers platforms and outlets to conduct this work is often lost in the grind of the profession. Teachers are experts within the their practice and oftentimes are devalued or not included in the process of seeking improvement. Creating environments where teachers have opportunities to share work, engage in discussions, and learn from one another is something to strive for within the field.

Another solution identified by a participant focused on measures of dispositions and building those types of skills as opposed to focusing efforts on building knowledge. This is evident when the participant, an instructional coach, said,

I think spending more time coming up with measures of disposition or, for us, “beings” and putting more value on dispositions/beings is a really neat part of the solution or a really helpful part of the solution. And maybe the whole country, the whole society needs to be thinking more about building skills and less about building knowledge.

These dispositions or “beings,” as the instructional coach refers to them, is a really powerful idea that seems to be an area of uncharted territory in the field of education. As a field we talk about 21st-century skills such as problem solving, collaboration, innovation, creativity, and reflection, but we have no way of assessing these skills or articulating the fact that the students demonstrate these skills. If these are the skills companies and businesses are looking for in potential employees, as a field we need to figure out how to assess these skills and work towards building the capacity to allow this work to flourish within our field.

The biggest takeaway from all of the data is that there is work that needs to be done. There is an opportunity for improvement to be sought. The data paints a picture of how the
system within this specific context is actually operating. The results the system is producing are not ideal. Part of the reason is due to imposed accountability systems, but another reason is because alternative measures have not been developed or implemented. If the status quo is going to be challenged, then risks must be taken. Failure must be viewed as an opportunity to learn, and failure must be embraced within a context that will allow improvement to happen. The context in which this study took place is ideal for a natural, grassroots improvement plan to be developed and implemented. The following chapter will lay out the improvement effort and discuss why improvement efforts prove to be difficult in the field of education.
Chapter 4

Chapter four will roll out the improvement effort. The chapter will start with previous reform efforts and transition to seeking improvement for this problem of practice. Improvement science and networked improvement communities (NICs) will be introduced as tools that could make significant contributions during the improvement effort. The chapter will conclude by outlining two frameworks that will be introduced which can be utilized and assist during the improvement effort. These frameworks focus on the mindset of the people who are engaging in the work as well as the design and development of SCLEs.

Previous Reform Efforts

When we think of current forms of improvement within the context of education, there is a lack of research and development (R&D). LeMahieu, Edwards, and Gomez (2015) state

Typically, education R&D applies traditional research approaches to what are development problems. This traditional research, with its privileging of causal attribution, necessarily imposes constraints (e.g., there must be a singular treatment and it must be implemented with great fidelity) and controls (e.g., exogenous factors eliminated, managed, controlled to the extent possible) that greatly reduce its ability to produce knowledge that informs, much less ensures, the use of the object practices in real, practical (and most often varied) settings. (p. 1)

This approach to seeking improvement has not benefited the field of education. Often a one-size-fits-all approach is implemented when a problem exists. However, this is not the case in other fields. For example, the medical field has spent time and effort on investing in R&D aspects to really drive improvement. There is a substantial gap between educational researchers and educational practitioners. In the medical field, there are many practitioners who are also
researchers. Atul Gawande is just one example of someone who is working in the medical field as a surgeon and who is also scholar. His scholarly work is focused around improving protocols in the operating room to reduce errors, improve safety measures, and ultimately increase efficiency. Gawande (2007) writes, “What does it take to be good at something in which failure is so easy, so effortless?” (p. 3). In asking this question with an educational lens, Gawande makes us ponder our education system and its design. When thinking of the whole system, we have numerous students failing within the current system, and students are doing failing effortlessly. We have a system full of content and curriculum that teachers must dig through each year. We have a system that overlooks relationships and social interactions, which are essential for students to develop at a young age. Gawande (2007) writes, “How each interaction is negotiated can determine whether a doctor is trusted, whether a patient is heard, whether the right diagnosis is made, the right treatment is given. But in this realm there are no perfect formulas” (p. 82). Again, if we apply an educational lens, we have a system operating that is designed universally instead of allowing for differentiation and adaption. We know each student is unique and learns differently from their peers, yet parts of our system are standardized and universal. We have an obligation as educators to each and every student. Meeting students on a personal level and making choices about how to instruct them is tough work. Not all choices are going to be the right ones; however, it is necessary for educators to make these choices and not allow students to get swallowed by the system. Gawande (2007) goes on to write of a physician’s work, “The relationships are deeply personal, involving promises and trust and hope, and this is what makes doing well as a clinician more than a matter of outcomes and statistics. One must also do right” (p. 83). This statement rings true in education as well. Teachers will advocate for their students, but often run into systematic issues that make the teachers’ role difficult. Again, it
goes back to the system that we as a field have created. If we think about the system, it is huge. There are thousands of schools in each state and countless students whom educators are tasked with teaching. It is easy for educators to get lost in the system and even question the value of their profession and their worth as teachers. One of Gawande’s books is titled, *Better: A Surgeon’s Notes on Performance*. The reason for mentioning this specific piece of work is that in this book Gawande provides suggestions about how to become what he refers to as a “positive deviant.” Being a positive deviant, in Gawande’s mind, means making a worthy difference. Deciding how and where to make this difference is up to each individual person. As educators we are always told to make a difference in the life of a child. But, how do we go about doing that? Oftentimes as educators we are being suffocated by systems that can inhibit us from making a worthy difference in a child’s life. We should not let these systems hold us back from making a difference in a child’s life. Gawande offers five suggestions to assist us in the process of becoming a positive deviant:

1. Ask an unscripted question  
2. Don’t complain  
3. Count something  
4. Write something  

These suggestions can certainly be applied to the field of education. As educators, we need to start a revolt organically. We cannot wait any longer for the system to be fixed. We need to ask questions, stop complaining, try something new, count it, write about it, and continue to seek change within our own specific contexts. Who knows where our ideas and conversations will take us? If we remain stagnant, the system will defeat us.

Dr. Gawande is reflecting on his role as a surgeon and identifying real-life problems and working on making improvements. Many times in education, we have people working
individually or in a static context when their colleagues are working together to seek improvement. One goal of the improvement effort will be to develop NICs. As stated earlier, this theoretical antecedent comes from the work of Anthony Bryk, Louis Gomez, and Alicia Grunow. There is a loud call for the work of practitioners and researchers to intersect and create a dynamic approach for improvement, as opposed to the current individualized, static approach, which is evident within the state of the school systems. Bryk et al. (2011) indicates that a clearer focus needs to be considered when dissecting a problem, writing that “once problems like this cross some public policy threshold, a spate of uncoordinated research and development activity ensues” (p. 3). In essence, some researchers are wasting their time and effort by engaging in activity that is erroneous from the start. However, there are a number of issues that could be contributing to the big problem, all of which need to be considered and broken down. When breaking down the parts of these problems, one should identify them as components of the problem and seek to find connections among these components. If this process is used, Bryk et al. (2011) indicate that it is the “problem system” that is important to reveal in order to direct the work that needs to be done to seek improvements (pp.1–42). Another important aspect of NICs is addressing the question of who will be engaged in the work. Oftentimes when there is a problem, it is isolated locally where a single person or group works towards addressing the problem without really accessing others who can provide crucial support. Specifically, when education problems arise, “silver bullet” solutions are immediately sought and little is done to create a diverse group of colleagues who can come together to dissect the problem and break it into components. Bryk et al. (2011) state that “while innovations abound in education, we argue that the field suffers from a lack of purposeful collective action” (p. 4). This collective action is an important piece we need to start considering. The education community needs to be viewed as a
whole community instead of parts, which are broken down by countries, states, districts, and schools. Reorganization is in order for the educational community and it should be one that seeks collective action in order to promote improvement.

Furthermore, collective action is needed to break down the current accountability systems that are in place in order to better understand the system. The problem identified in this study, accountability systems negatively impacting the design and development of SCLEs, aligns perfectly with the aforementioned point from Bryk et al. (2011) about “a spate of uncoordinated research and development activity” ensuing. Currently, there are scholars, practitioners, and policymakers who are engaged in different theories about how we assess our students and who are trying to find solutions to the problems mentioned here. Why can’t we bring this work into a collective arena where a diverse group of people could work collaboratively towards a common goal and break the problems into components? If a collective action is truly achieved, we must also have the ability to describe the problem to others. For, if we are going to bring people to this work, we will need to educate people about the problems and be able to describe them in an analytical way.

Seeking Improvement

If we want to see a reform of the current state of accountability systems, then the status quo must be jolted until we see a shift in the way we are assessing students. This transformation will not be easy or quick. Rather, it is going to take a lot of hard work and will depend on people who advocate on behalf of students to create equitable accountability systems that are grounded in deeper learning and student agency. The improvement effort must seek to challenge normative practices that are imposed on schools. The consequences of not solving this problem were mentioned earlier. NCLB and federally mandated assessments already have known consequences
such as labeling students, narrowing curricula, increasing retention of students, and stripping students of opportunities. If this problem persists, accountability systems will continue to prevent the enactment of effective learning environments. The improvement effort will not confront the federal government directly, but work in the direction of challenging the policymakers who hold privileged positions within the government and who currently exercise their power to impose these solutions. Holding students, teachers, and schools accountable is important. Schools need to be held accountable to the taxpayers and to the communities they are situated in. As one participant, an administrator, said, “Accountability measures in some form are important to keep a bunch of yahoos from not doing what’s best for kids.” However, current accountability systems are the brainchild of the government, and the pressure they have placed on students, teachers, schools, and communities to achieve has created a competitive atmosphere. Imposing a universal accountability system on all schools across the nation has brought about an array of unintended consequences, which the government does not have any solutions for. This rings true as we have seen numerous states ask for waivers after not meeting the lofty goals of NCLB. The sad truth is we are not going to see these accountability systems disappear anytime soon. There is too much political and economic power at risk that trumps providing students with a meaningful education. Furthermore, even after this study, the field of education will still need to search for a way to establish a meaningful accountability system that is socially just and fair; however, an improvement effort within the school where the study took place will be recommended in chapter 5.

If we seek to transform the status quo practices that are currently being carried out in the field of education, then we must give students a voice in their education and allow them to tap into deeper learning skills and dispositions. Allowing students the opportunities to demonstrate
their knowledge through a variety of means instead of forcing them down the standardized testing tunnel should be considered. The improvement effort will challenge this one-way tunnel, and seek to empower the people who can make the biggest improvements: students, teachers, administrators, and parents. Transforming the status quo will not be an easy process. The improvement effort will be a long journey. Starting the process in a specific context and scaling it outward will allow for small improvements to be made which then can lead to generative impacts. The improvement effort should also consist of people becoming educated and informed of this problem so that they can ultimately contribute to seeking improvement.

We must seek improvement with the hand we are dealt. This means taking a serious look at the environments that are created based on these accountability systems and understanding them in specific contexts. This allows us to be informed and learn from one context before we scale up and make sweeping changes across the field. LeMahieu et al. (2015) write, “Context matters greatly when attempting to get promising, yet often complex, ideas into practice” (p. 1). Reform efforts within the field of education are prominent; however, they often consist of “silver bullet” solutions and tend to not work as a universal solution across the field. Bryk, Gomez, Grunow, and LeMahieu (2015) state, “It is rare to find an educational intervention that consists of a single action that has direct and immediate effect on some targeted aim” (p.15). Each context is different and one-size-fits-all approaches have proven to not be the best approach to seeking improvement. Bryk et al. (2015) go on to write, “Improvement requires attending to each of the component processes that combine together to determine how well the overall system functions” (p. 15). Understanding each component of a system is just one tenet of seeking improvement and changing learning environments to be more student centered. How to develop this change and ultimately make an improvement within the field of education is worthy of a
Improvement Science

Improvement and change concepts are very similar in that they share some of the same defining aspects. However, Langley et al. (2009) point out, “All improvement requires change, but not every change is improvement” (p. 109). Therefore, we have to be very critical of the work in order to ensure that the change we are seeking does in fact result in improvement. Langley et al. (2009) lay out three aspects that must be evident in order for fundamental changes to result in improvement:

1. Alter how work or activity is done or the makeup of a product
2. Produce visible, positive differences in results relative to historical norms
3. Have a lasting impact

(p. 16).

In creating a plan for improvement, these three aspects will drive the change effort and will be the desired results of the improvement plan. The field of education and the accountability systems within the field are complex. During the change process, certain aspects will surface that were unintended or not expected. Bryk et al. (2015) write, “Achieving successful change in complex work systems means recognizing that one cannot predict ahead of time all of the details that need to be worked through nor the unintended negative consequences that might also ensue” (p. 7). In making this comment, Bryk et al. remind us that this work is difficult and there will be bumps in the process, but how we react and learn from these bumps will eventually assist us in achieving improvement.

More recent work has been done around the theory of consequential engagement. This work should be examined and utilized when we think about constructing designs for
improvement. If we are going to implement useful designs, they should be ones that consist of engaging students in authentic assessments while allowing them to examine the contents of the assessment within the context of the real world. Snowman and McCown (2013) offer the following description: “Consequential engagement is ‘a situation that occurs when learners choose certain tools (a procedure or concept, for example) to understand and solve problems and when they evaluate the effectiveness of the tools they have chosen’” (p. 234, original italic). Gresalfi, Barab, Siyahhan, and Christensen (2009) also note that engaging consequentially “can be quite difficult to accomplish in the contexts of schools where students rarely have opportunity to experience the use-value of the formal content they are learning in the classroom” (p. 22). We are preparing students for the real world after high school and therefore should provide them with real-life experiences. Currently, the way we assess students does not engage them in real-world experiences. So much is learned by the actions we take and the rewards or consequences we receive based on those actions. When we perform in a certain way, the subsequent consequences can affect how we can engage in the future. Our experiences as humans pave the way for our future and shape our identity. Learning is the result of a harmony between doing and reflecting. One must reflect upon the actions one takes and use that reflection to form an understanding of a theory or concept. From there, one can accept or challenge that theory based on one’s personal experience. Gresalfi et al. (2009) go on to write, “Consequential engagement is a central aspect of deepening conceptual understanding, because when one uses disciplinary knowledge to examine the world, they gain richer insight into and from the world, while simultaneously pushing back on theories about the world” (p. 22). The field of education lags far behind when it comes to developing ideas, such as consequential engagement. There seem to be
a vast number of research topics within the field of education, but little is done to develop those ideas into meaningful action that seeks improvement.

Within the context of the charter school where I conducted my research, administrators, instructional coaches, and educators have been grappling with different frameworks and aspects to create an instructional vision. The engagement and thoughtfulness of this work has generated a clear path and goal towards authentic learning for the charter school. At the charter school, authentic learning involves real-world tasks and tools, makes real impacts on the world, and speaks to students’ personal concerns, interests, and identities. Two major underpinnings that assist in the movement towards authentic learning are culture and differentiation. The charter school has established a variety of tenets that in combination provide a solid foundation for authentic learning to flourish. The foundation consists of systems, classroom structures, and established conditions for learning. Furthermore, by focusing models such as co-teaching, small group instruction, and classroom culture, the school has established a strong instructional foundation, which is essential for their movement towards authentic learning. However, the path to authentic learning runs deeper than models, systems, and tenets. Therefore, the charter school has defined six different frameworks that work as a gear system to drive authentic learning. The six frameworks are: integration of subject matter; knowings/doings/beings framework (KDB); outdoor education; project-problem-place–based learning; student growth/assessment; and visible thinking routines. These gears were produced as the result of people at the charter school engaging in thinking about the instructional vision and landscape of the school. In doing so, they focused on the connections between instruction and the evidence of learning that instruction produces. If we consider these the tools the charter school is using to engage in this work then
we must seek to understand how these tools work together in a system that ultimately graduates a student who is ready to meet the challenges of their next educational endeavor.

The improvement effort will start within the specific context of the study. Embedded in the plan is an action step that seeks to network different communities to produce generative impacts across the field of education. Networking communities is one of six core principles of improvement that the Carnegie Foundation for the Advancement of Teaching and Learning (2015) identify. The core principles of improvement are identified below:

1. Make the work problem-specific and user-centered
2. Variation in performance is the core problem to address
3. See the system that produces the current outcomes
4. We cannot improve at scale what we cannot measure
5. Anchor practice improvement in disciplined inquiry
6. Accelerate improvements though networked communities

(Carnegie Foundation for the Advancement of Teaching, 2015).

The improvement effort will be organized around these six core principles. When setting out to conduct this study, one of the main objectives was to seek improvement to a problem of practice within the field of education. LeMahieu et al. (2015) write, “Where attribution has served as the gold standard for education research until now, improvement science posits a different and complementary standard, one that is every bit as necessary as the historical gold standard—replication” (p. 1). The researcher will make recommendations for the school where this study took place. These recommendations serve as the improvement effort and need to happen naturally within the contexts of the school instead of being imposed upon the school. After the improvement step is outlined, a quick summary of the action steps will be provided for the
school to reference as well as a cognitive process for the school to consider when engaging in this work. However, in order for this work to seek generative impacts, the improvement effort within the charter school will be experimented and replicated in other formal and informal settings. Hannan, Russell, Takahashi, and Park (2015) write that “improvement science harnesses the power of learning by doing through iterative experimentation, and focuses on tailoring change and innovation to specific contexts” (p. 496). With that said, exact replication will not be sought, as the context of each setting will need to be taken into account.

The identified problem, that accountability systems negatively impact the design and development of SCLEs, is specific and user-centered. Typically, what would happen after a problem is identified is that a solution would be sought and implemented. This is common practice in many fields, but seems to be extremely evident within the field of education. Bryk et al. (2015) refer to this phenomenon as “solutionitis” (p. 16). Their stance is that people jump to conclusions before the problem is actually understood and a proper analysis of the problem is conducted. Therefore, this study engaged people from the actual learning environments and sought their insight in order to better understand the problem. The reason this approach was used is that the educators situated in the specific learning environments are the ones who are well informed of the work. Bryk et al. (2015) write, “Far too many efforts at improvement are designs delivered to educators rather [than] developed with them” (p. 34). When you involve people in the process there is a sense of buy-in, and typically there is more active engagement among participants during the improvement effort.

Federally mandated assessments operate under a complex accountability system. The accountability system requires students to participate in the mandated assessments. As one could guess, student performance varies on these assessments. The results that are generated from these
assessments could easily be represented as a bell curve. Bryk et al. (2015) argue that this is a typical result for complex systems, writing, “It is common across many fields to find variability in performance that resembles the familiar bell-shaped curve” (p. 54). The variation in student performance is key data to look at when seeking improvement. If actual assessment data were in fact represented by a typical bell curve, then the goal of the improvement effort would be to shift the curve so that it was illustrating growth on the positive side of the curve and reducing the negative side. When engaging in this work, Bryk et al. (2015) remind us that “quality improvement—getting more of the outcomes one wants—requires attention to how these various processes are currently conducted, to identifying opportunities for carrying them out better, and to testing these changes over time against data” (pp.46–47). Therefore, the improvement efforts for this study focus on improving instructional practices around assessments. Enacting authentic assessments would allow for learning environments to be more student centered and allow for 21st-century skills or deeper learning dispositions such as creativity, collaboration, and commitment to be sought instead of students filling out bubbles on a sheet or answering multiple choice questions. In order to accomplish this, the improvement effort will focus on developing effective practices within the charter school. The driver diagram (Figure 12) presented in chapter three should be considered a starting point for these practices to be carried out. In order for this work to be carried out, a full understanding of the current system needs to be sought.

Systems are evident in just about any line of work. The word system can vary in meaning and depth, but Bryk et al. (2015) state,

In general, the performance of any social system, whether a hospital, a school, or any other organization, is the product of interactions among the people engaged with it, the
tools and materials they have at their disposal, and the processes through which these people and resources come together to do work (p. 58).

As mentioned previously, the accountability system that federally mandates students to participate in assessments is complex. The intentions of NCLB were positive, but the system is so complex that lawmakers were unable to envision all of the consequences that would surface due to this system being implemented. The main argument of this study is that current accountability systems, such as NCLB, negatively impact the design and development of SCLEs. Therefore, the study investigated the charter school as one specific context in order to understand how the accountability system was operating and to understand the outcomes the system was producing. Oftentimes when a system is not producing the results one wants, changes are made. However, these changes are often uninformed and made as a reactive response. Bryk et al. (2015) refer to this as “attribution error” and argue, “When we see unsatisfactory results, we tend to blame the individuals most immediately connected to those results, not recognizing the full causes” (p. 61). Furthermore, Langley et al. (2009) write, “Another ineffective response to the need for change is to try to define the perfect change” (p. 35). These two statements are common reactions to problems within the field of education. Many participants in the study made comments about how the charter school is unique and vastly different from traditional schools. At the charter school, it is common for staff to take risks within their instructional practices. Furthermore, there is a mindset within the walls of the school that if you fail at something, it is a great opportunity for learning to take place. Bryk et al. (2015) write, “In high-performing organizations, failures are seen not principally as a reason to cast blame, but as occasions to learn” (p. 61). This makes the charter school ideal for this improvement effort to be carried out. Tools were used in this study (i.e., survey protocol, interview protocol, and the driver diagram)
that assisted in understanding how the accountability system was operating within the charter school. The protocols allowed for a conversation to unfold about the perceptions of how the system operated. The purpose of these protocols was twofold. First, it was a way to collect data for the study. However, it also allowed the participants to start thinking of this problem and begin to understand it. Bryk et al. (2015) indicate this thinking and understanding as steps in seeing the system when they write, “Engaging diverse perspectives and discerning the connections among them are key to fully seeing the system” (p. 66). The driver diagram is the meat of the improvement effort and is the result of engaging diverse perspectives to this work. The driver diagram represents the actual change ideas that were developed and should ultimately be tested. One unique aspect of this diagram is that it is a form of visible thinking. Visible thinking is a framework that uses thinking routines to map out thoughts and organize them in a visible form. Ritchhart, Church, and Morrison (2011) write, “These simple procedures, usually consisting of only a few steps, provide a framework for focusing attention on specific thinking moves that can help to build understanding” (p. 45). Many teachers at the charter school use visible thinking as a framework within their instructional practices. It is important to note that the driver diagram is not an answer or solution. Rather, it is a first step after thoughts have been organized. The provisional nature of the improvement effort is intentional. As the work progresses, the people who are carrying out the work must continue to analyze their work and collect evidence from the improvement efforts. Langley et al. (2009) remind us that “as people advance in their skills at making improvements, they realize that further improvements can be made by putting processes in the context of the system in which the processes are embedded” (p. 37). Systems impact people and therefore the charter school should spend time and effort to orient the people who operate within the system. Refinement and continued revisions will be
necessary until the desired improvement is sought. NICs will be utilized to spread the improvement effort to a wider audience and to seek generative impacts. The framework for the NICs will be discussed shortly. If this improvement effort is going to be scaled to a wider audience, we must first discuss how we are going to measure it.

The federally mandated tests that are imposed on schools are actually a form of measurement. Under NCLB, schools are required to measure student performance annually and submit this data to the governing agency for accountability purposes. This data is aggregated from all school districts in each state and generic reports are then developed that indicate the effectiveness of the accountability system. Although this is a great way to measure all students across every state, the data lacks clarity. The lack of clarity within the data proves to be difficult for schools to use the data to inform improvement efforts. Bryk et al. (2015) would agree with this line of thought when they write, “However, this generic quality also exacts a price: while the measures can signal where improvements are needed, they rarely provide the detail needed to help teachers and schools actually improve” (p. 91). This statement hones in on an important notion that we must start to consider when seeking improvement. Current accountability systems have forms of measurement woven within their frameworks that measure for accountability. Rather, we need measurements that measure for improvement. Bryk et al. (2015) go on to state, “The validity of a measure is established for some specific set of uses (or consequences); measures do not have the property of being valid in general” (p. 92). Therefore, we must start thinking about measuring for improvement. When measuring for improvement, Bryk et al. (2015) write, “The goal is to provide useful information for improving the specific process or processes represented in this working theory” (p. 92). For this study, the driver diagram that was presented in chapter 3 (Figure 12) serves as the tool for illustrating the process and also
represents the working theory. By using the driver diagram as the tool, we can determine whether our change efforts are actually improvements. The driver diagram allows us to measure processes on a frequent basis and naturally allows for changes or modifications to be made. Also, the driver diagram can be implemented in the day-to-day operations of the school and the data that it yields can be shared with administrators, teachers, and instructional coaches to inform instructional practices. This type of measurement is vastly different from the measurements that are embedded within the current accountability systems. Under NCLB, schools or districts are measured simply to identify struggling schools/districts that are in need of a corrective action plan. The summative measurement happens once a year and the data proves to be difficult to inform instructional practices. Typically, school administrators are the only ones who use the data to form end-of-year reports. The drivers in the diagram should be considered the big goals of the improvement plan. Each of the primary drivers is informed by secondary drivers, which are the change efforts that need to be made to achieve the primary driver. Bryk et al. (2015) state, “These measures operationalize the concepts articulated in the driver diagram and generate data that allows community members to learn from each other and improve together over time” (p. 111). This learning process is what is needed within the field of education. We need to start measuring for improvement rather than accountability. People within the charter school generated the improvement plan; it was not imposed on the school by a governing agency. The driver diagram will provide data that can provide insight as to how the system is operating and what changes are actually improvements. This process should be frequent and continuous, as improvement should be considered an ongoing process. Looking at how to drive the improvement process and set up frequent and continuous cycles is the next core principle that will be discussed.
When developing the improvement plan for this study, the context played an important role in the process. Bryk et al. (2015) write, “Developing initiatives that achieve effectiveness reliably at scale begins with a careful analysis of the institutional context for change” (p. 118). Being situated in only one context did not mean that a recommendation for a large-scale change would be implemented. Remember, the improvement effort that is recommended for this study is not a solution to a problem. Rather, it is an action plan for small cycles to be implemented. The Plan-Do-Study-Act (PDSA) cycle will serve as the framework for actions that will be carried out. Hannan et al. (2015) write, “PDSA cycles build the knowledge, will, and engagement of improvement teams” (p. 496). The work will be broken down into cycles that will focus on different parts of the system within the context. Understanding the parts of a system and learning how the change effort impacts the system will yield greater learning within the network. Langley et al. (2009) state, “The cycle can be used to turn ideas into action and connect action to learning” (p. 97). The learning that takes place within these cycles can then be used to reform or change the improvement efforts until system-wide implementation is within reach. Hannan et al. (2015) go on to write

Furthermore, giving implementers the chance to try new ideas and processes, refine them based on their specific needs, and then to see those ideas and processes succeed is pivotal for building will for and commitment to new programs as they are developed and implemented (p. 497).

For the purpose of this study, the participants within the study have indicated that implementing a PBL experience is a place they would like to start working to seek improvement within the system. By identifying this as a starting point, the first step of the improvement effort is to start planning the first cycle. The researcher of this study will not design and develop a PDSA cycle,
as it is important to involve people who are invested within the context. Rather, the researcher is making the recommendation that a PDSA cycle be developed by the network that hones in on implementing a PBL experience. When constructing a PDSA cycle, Bryk et al. (2015) inform us that “the heart of the cycle is articulating hypotheses, based on a working theory of improvement, and then gathering data to test them” (p. 121). Figure 13 outlines steps within each phase of the cycle.

Figure 13: The Plan-Do-Study-Act Cycle

Under the planning phase of the cycle, people within the network need to organize their thoughts about the plan that this cycle is going to focus on for implementing a PBL experience. Ensuring that responsibilities are designated and that data will be carefully collected are essential aspects to carrying out a successful cycle. Once the plan is constructed, it is time to activate the other phases of the cycle. Along the way, there may be unexpected aspects that surface. These aspects should be documented as they can be used to inform future cycles. Bryk et al. (2015)
indicate that “often multiple PDSA cycles are needed to develop a change idea that actually works. Each cycle builds on what was learned in previous cycles until a team has discerned how to effect improvements reliably under different conditions” (pp.121–122). It is important to remember that the intention of these cycles is to test a change effort; however, we can also use the cycles to construct knowledge. Running multiple cycles at once allows for rapid knowledge to be built and to test multiple change efforts that ultimately result in improvement. Figure 14 represents the repeated use of a PDSA cycle.

Figure 14: Repeated Use of a PDSA Cycle

As you can see from Figure 14, data is the common factor within each cycle. Langley et al. discuss the need for “learning loops” to be established in order to assist in the learning process. They indicate that a good spot for learning loops to be housed within the PDSA cycle is within the study phase (Langley et al., 2009, pp.102–103). The learning that takes place within the study phase can inform the act phase where changes to the next cycle are made. Using the PDSA cycles as a framework for driving the change efforts provides a strong foundation to
produce better outcomes within a system. It is the recommendation of the researcher that the charter school strongly consider the use of PDSA cycles. The people within the school must do the work. It is essential for this work have natural roots within the context. Expanding the learning outside the context is also a desired outcome of the improvement effort if true generative impacts are being sought. How to accelerate learning through networked communities will be the final aspect of the improvement effort that will be discussed.

**Networked Improvement Communities**

This study has demonstrated that there is a clear problem with current accountability systems within the field of education. It is common practice in any field for someone or a group of people to try to solve problems when they arise. There are clear advantages to groups of people working together to solve a problem. When multiple people work together, more thought, more ideas, and more creativity prevail. However, the structure of the team and the goals of the team are important aspects to consider when assembling a team. It is the researcher’s recommendation that the charter school implement an NIC during the improvement effort. Bryk et al. (2015) state, “NICs are intentionally designed social organizations, and participants have distinct roles, responsibilities, and norms for membership” (p. 144). They also outline four characteristics that make up the framework for NICs. NICs are:

1. Focused on a well-specified common aim
2. Guided by a deep understanding of the problem, the system that produces it, and a shared working theory to improve it
3. Disciplined by the methods of improvement research to develop, test, and refine interventions
4. Organized to accelerate the diffusion of these interventions out into the field and support their effective integration into varied educational contexts (Bryk et al., 2015, p.144).

Assembling NICs is just like assembling a sports team. If you take football, for example, you need many different people who are experts at different positions in order to create a whole team.
A football team consists of kickers, quarterbacks, running backs, receivers, special teams players, and defensive players. When forming NICs it is important to assemble a team of experts who bring unique skill sets to the group or work. Furthermore, aligning the team under a common aim ensures that everyone is working in the same direction even if the work they are engaged in varies. Bryk et al. (2015) write, “Getting these structuring agents right is key to understanding individual creativity while advancing joint accountability for problem solving” (p. 144). Martin and Gobstein (2015) bring to our attention an important consideration when initiating a NIC, stating, “Those contemplating launching a new NIC need to carefully attend to the leadership and organizational functions addressing the complexities of the network they are creating” (p. 492). Therefore, effective leadership is an essential aspect of a NIC initiation. The researcher will provide professional development for leadership within the charter school to familiarize and train them in order to initiate an effective NIC. Oftentimes in education, people work in static states with different goals and different agendas. Martin and Gobstein (2015) would support this contention, stating,

In what is typically the case, promising ideas and improvements develop sporadically in various locations across the educational landscape, and their dissemination can vary significantly with little regard to how these programming ideas can be actualized in particular settings and with little shared learning across sites involved in the implementation (p. 490).

For the purpose of this study, we have a system that is producing undesirable results and we have people within the context who have identified this as a problem. Experts from the school, such as teachers and administrators, could form a NIC to address the problem within their specific context. However, if they look at this problem as one that is larger than just their context, they
could start to develop a NIC of experts from the greater Pittsburgh region and all over the world who also share similar beliefs about current accountability systems and this will allow them to scale their improvement efforts while also seeking improvement within their own context. There are people who are asking questions about accountability systems and assessment and conducting their own investigations. All this work lives in different silos and if we are truly going to get to the bottom of these problems we need to bring our expertise together and break down the silos. Contributions from the learning that takes place in this broader NIC will accelerate the overall improvement effort and seek to bring about a change in current accountability systems. NICs provide a great framework for the joining of experts or, as Bryk et al. (2015) call it, NICs are an “engine for innovation” (p. 144). However, as previously stated, the researcher is recommending the school start with its own NIC. The charter school already has a type of learning community set up called “citizen circles,” which promote community through peer learning. Using the citizen circles as a vehicle to initiate a NIC would be a good starting point for the charter school. When structuring the NIC, Bryk et al. (2015) indicate that participants must “make a commitment to pursue specific measureable aims, set targets to guide continuous improvement, develop a common language, and adopt common measures of success” (p. 144). These key elements to NIC participation are vital for the success of a NIC. It is also important to note that these elements should be designed and developed as a grassroots effort by the school and not imposed by the researcher. For if this improvement effort is going to be successful, capacity has to be built naturally within the context of the school. It is also important to note that participation in a NIC must be voluntary. Therefore, people need to have a certain mindset and motivation to participate. This mindset is something that should not be overlooked.
Therefore, the next section will discuss using cognitive processes as a framework to form this mindset.

**Cognitive Processes as a Mindset**

A theoretical antecedent that should be considered and interwoven into the NIC will be from Roger Schank’s work on cognitive processes. Schank (2011) claims, “Everything we do as human beings is goal-directed” (p. 8). From engaging in a conversation with someone to taking the dog for a walk, there is a purpose or goal to the activity. Schank (2011) goes on to state, “If school related to the goals that children actually had, that they were working on at the very moment that they entered school, school would seem like a natural and helpful experience” (p. 8). For far too long, as a field, we have been telling students what to do and having them do it. However, imposing curricula and subject matter on students has yielded sub-par results. Let’s think deeply about this for a minute. How many times during your education career have you heard someone tell you that you will need it (the skill) later in life? I know for a fact that I have not used the Pythagorean theorem in a real-life context since I learned about it. Granted, I did not pursue a field that required much mathematical knowledge. The point here is that we must think about the type of environment that has been created due to this tendency of imposing learning on students. Students need to be in charge of their learning and set their own goals. Schank (2011) states, “When the stuff that is being taught does not relate to the inherent goals of the students, it will be forgotten” (p. 11). The assessments embedded within current accountability systems are a great example of what Schank is talking about. Students engage in these tests and memorize useless information that is forgotten right after the test. Schank (2011) goes on to write, “In our society we have set up schools to teach knowledge. We concern ourselves with what facts children know, we test to make sure they know them, and then we complain that the schools are
failing when they don’t” (p. 75). Take a moment and think to yourself about a lesson that you would teach if the goal were for the student to take some sort of assessment a year after they completed the coursework. What would your lesson look like? What would your assessment look like? Isn’t the expectation of school for students to take skills from school and apply them to the real world? Well, then instead of memorizing formulas and facts, why not spend time teaching students how to think and how to understand the “why” behind the problems presented? To do this, Schank recommends focusing on scientific reasoning. He argues, “Science is about creating hypotheses and gathering evidence to support or refute those hypotheses” (Schank, 2011, p.11). Students intuitively do this every day. People do this every day. Humans are curious; we have conversations with others and ourselves and are constantly thinking of hypotheses and engaging in activities to find meaning behind something. Knowing why something happens and being able to prove it is considered a cognitive process, according to Schank (2011, p. 12). In order to achieve this understanding, we need to rethink the meaning of education. Schank (2011) makes a recommendation, writing

As long as we see ourselves as rational beings who can think logically and make carefully reasoned decisions about our daily lives, then education indeed should be about the promotion of reasoned deliberation and the gaining of knowledge that will enhance our ability to reason (pp. 17–18).

In order to accomplish this outcome, Schank argues that learning has to be experiential in nature (2011, p. 39). Kolb’s (cf., Kolb, 1984) experimental learning theory also supports this train of thought. Schank provides some insight as to how we might rethink how students learn. The framework that he proposes is one the charter school should utilize as a mindset when engaging in their improvement efforts. He writes, “Learning is not any one process, but many processes,
depending on what you are learning” (Schank, 2011, p. 46). He breaks the cognitive processes that underlie learning into three different groups: conceptual, analytic, and social. Within these groups are different processes that spur learning. The processes outlined by Schank reside with humans, but are ability-based. Schank’s processes are outlined in detail below:

**Conceptual processes:**
1. Prediction: Making a prediction about the outcome of actions
2. Modeling: Building a conscious model of a process
3. Experimentation: Experimentation and replanning based on success and failure
4. Evaluation: Improving our ability to determine the value of something on many different dimensions

**Analytic processes:**
1. Diagnosis: Making a diagnosis of a complex situation by identifying relevant factors and seeking causal explanations
2. Planning: Learning to plan; needs analysis; conscious and subconscious understanding of what goals are satisfied by what plans; use of conscious case-based planning
3. Causation: Detecting what has caused a sequence of events to occur by relying on a case base of previous knowledge of similar situations (case-based reasoning)
4. Judgment: Making an objective judgment

**Social processes:**
1. Influence: Understanding how others respond to your requests and recognizing consciously and unconsciously how to improve the process
2. Teamwork: Learning how to achieve goals by using a team, consciously allocating roles, managing inputs from others, coordinating actors, and handling conflicts
3. Negotiation: Making a deal; negotiation/contracts
4. Describing: Creating and using conscious descriptions of situations to identify faults to be fixed

(Schank, 2011, pp. 46–54).

Schank’s framework of cognitive processes aligns well with the tenets of improvement science and NICs. One of the major commonalities between Schank’s work and improvement science is the process of practicing and/or cycling. Schank (2011) states, “All these processes require practice in order to master them. You cannot learn to master a process without practicing it again and again” (p. 46). Therefore, by interweaving improvement science, NICs, and cognitive processes, and creating a somewhat hybrid approach to the design of the improvement
effort, we will be able to better understand the system and allow for improvement to be accelerated. Organizing this work under a common aim or goal allows for knowledge to be created around the accountability systems in question. Schank (2011) writes, “Knowledge acquisition is a natural result of engaging in cognitive processes that are being employed to satisfy a truly held goal” (p. 79). Acquiring knowledge around this problem is a process. This study investigated one specific context. If we want to seek generative impacts, the investigation has to continue and other contexts must be investigated.

**Establishing the Learning Environment**

Before we discuss the impacts of this work and how to accelerate the improvement, a quick recommendation will be made for the charter school to consider. The notion of this work discusses the design and development of SCLEs. Therefore, some discussion must take place around organizing the learning environments or classrooms. To lead this discussion, Ron Ritchhart’s work on the eight cultural forces that define our classrooms will be utilized. Ritchhart’s work defines eight forces that should be present in a classroom if we want students and teachers to engage in the learning process (Ritchhart, 2015). Table 5 represents Ritchhart’s work.

Table 5: Eight Cultural Forces That Define Our Classrooms

<table>
<thead>
<tr>
<th>Cultural Force</th>
<th>Directed Toward Thinking by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Allocating time for thinking by providing time for exploring topics in more depth as well as time to formulate thoughtful responses</td>
</tr>
<tr>
<td>Opportunities</td>
<td>Providing purposeful activities that require students to engage in thinking and the development of understanding as part of their ongoing experience of the classroom</td>
</tr>
<tr>
<td>Routines &amp; Structures</td>
<td>Scaffolding students’ thinking in the moment as well as providing tools and patterns of thinking that can be used independently</td>
</tr>
<tr>
<td>Language</td>
<td>Using a language of thinking that provides</td>
</tr>
</tbody>
</table>
students with the vocabulary for describing and reflecting on thinking

Modeling  
Modeling who we are as thinkers and learners so that the process of our thinking is discussed, shared, and made visible

Interactions & Relationships  
Showing a respect for and valuing of one another’s contributions of ideas and thinking in a spirit of ongoing collaborative inquiry

Physical Environment  
Making thinking visible by displaying the process of thinking and development of ideas. Arranging the space to facilitate thoughtful interactions

Expectations  
Setting an agenda of understanding and conveying clear expectations. Focusing on the value for thinking and learning as outcomes opposed to mere completion of “work”

(Ritchhart, 2002)

Teachers and administrators have a lot to consider when planning and preparing for learning. Ritchhart’s eight cultural forces provide a nice framework to consider when designing and developing SCLEs. The intention of recommending Ritchhart’s work is not to analyze it; rather, it is to provide the charter school with a quick reference when engaging in the work of enacting SCLEs. If these cultural forces are taken into consideration when planning and preparation takes place, teachers will be intentionally engaging in work that truly values thinking and learning that is student centered.
Chapter 5

The final chapter of this investigation will focus on the impacts of this investigation. The chapter will start with a section on generative impacts that focuses on the importance of spreading this improvement effort in other settings. Next will be a section outlining the specific impacts (both internal and external) that will be evident as a result of this investigation. A section on improvement inquiry will be included, demonstrating an opportunity for the field of education. Finally, a conclusion will be included that seeks to bring an end to this investigation. However, this conclusion presents a new focus: an opportunity for the field of education to engage and dig deeper into seeking improvement within our field as a whole.

Generative Impacts

The improvement effort has the potential to be executed immediately within the walls of the charter school. The improvement effort will consist of PDSA cycles and therefore data will be utilized on a regular basis to impact practice within the charter school. Focus group participants have honed in on a starting point; however, there is still potential for this work to be expanded and scaled. Once the improvement effort is enacted within the charter school, impacts will be felt internally. However, this work has the potential to have external impacts as well. As the work progresses within the school, the goal will be to spread and test models from the charter school in other settings (both formal and informal). Langley et al. (2009) state, “Spreading improvement means having people implement good ideas beyond some initial locations” (p. 195). It is the researcher’s belief that the models from the charter school can be applied and tailored to other contexts. Therefore, setting up NICs outside of the charter school will be another impact that is sought. However, the work in the charter school is of primary concern for this study. Therefore, in the following section, a summary of the recommendations will be
provided along with a discussion of the internal impacts. Following that section, a framework for spreading the improvement effort externally and its possible impacts will be provided.

**Internal/External Impacts**

The proposed recommendations are listed below for the charter school to utilize. These recommendations are in a particular sequence in order to design and develop effective SCLEs.

**Summary of Recommendations:**

1. Engage people within the context
2. Implement NICs
3. Work under an aim that seeks to enact authentic assessments
4. Establish a cognitive processes mindset among participants
5. Spend time and effort to orient people who operate in the system
6. Develop effective instructional practices
7. Create measurements (assessments) that measure for improvement
8. Intentional plan and prepare utilizing the eight cultural forces
9. Carry out PDSA cycles
10. Scale up for generative impacts and accelerated improvement.

The data generated from each cycle should be analyzed in order to inform the next cycle.

This cyclical process will allow the charter school to make adjustments until they are able to enact effective SCLEs. The internal impacts of this work will be felt throughout the school. In order to encapsulate the impacts, three domains will be identified in which significant impacts will thrive: instructional practice, school culture, and thinking capabilities.

**Instructional practice**

Developing effective instructional practices and creating measurements/assessments are two of the recommendations within the improvement effort. Both of these recommendations correlate with instructional practices. These two recommendations may seem broad, which is intentional. It is imperative that members of the NIC within the school design and develop the instructional practices and measurements. This will ensure that the work is specific to the charter school, which would more likely elicit implementation from staff. During the design and
development process, the NIC should highly consider establishing a cognitive processes mindset among the participants and utilizing the eight cultural forces framework. These two frameworks allow for the work to be framed in a way that will promote the enactment of effective SCLEs.

There is a calling for the education field to entrust the teachers and administrators to start to influence and craft their own practice. Bryk (2015) writes,

> Districts and states lacked the individual expertise and organizational capacity to support these changes at scale. And many policymakers ignored arguably the most important factor for any of this to work: developing the will and agency among our nation’s teachers and principals to engage productively with these reform efforts (p. 468).

By participating in this improvement effort, the charter school can start the process of building the will and agency within their context to improve and reform systems that are yielding undesirable results. Again, letting this work occur naturally and allowing people to participate in the work under their own will allows for capacity to be built.

**School culture**

If the charter school carries out the recommendations, the school culture will be impacted in a number of ways. First, you will have a cultural shift in the way teachers and instructional coaches plan and prepare for instruction. The ideal for the charter school will be to establish an intentional planning process that focuses on creating units and lessons that foster effective SCLEs. The charter school should not think of effective SCLEs as something different from their goal of achieving authentic learning. Rather, establishing effective SCLEs should be married with their frameworks and be part of their instructional landscape. Once the planning is complete and some of the lessons are being implemented, teachers will be able to run cycles and collect data on what was implemented and use the data to inform the next cycle. Empowering teachers
to collect data and use data to inform their instruction will also be a cultural shift. By engaging in this process, teachers will also be reflecting on their practice. Data are a powerful tool if used properly. Time and space to engage in this work are elements that are often overlooked. The data that are produced is a way to measure student improvements and provide a method for learning to improve within the charter school’s specific context. Carving out time and a process for reviewing data is essential to improving practice. Finally, if learning environments are transformed to be more student centered, students are going to be more engaged, motivated, and successful. Students thrive when they are in charge of their learning and not pigeonholed. Our goal as educators should be to create environments for students to thrive in. When thinking of any improvement effort, student impact is the most significant impact sought. However, in order to achieve positive student impact, the aforementioned actions need to be successful. Although this is not a comprehensive list of all of the internal impacts, it does provide three major impacts that are realistic and achievable for the charter school to build capacity within their context.

Thinking capabilities

By keeping students at the forefront of this improvement effort, we must focus on building intellectual character within students. This means that we must understand how students think and what dispositions we want them to acquire in order to build student agency. The charter school has a framework in place that identifies some of these dispositions. The KDB framework the charter school has established consists of dispositions they have identified as ones they want their students to graduate with. Examples of these dispositions include: empathetic, human centered, enthusiastic, committed, collaborative, creative, innovative, resourceful, connected, ambilingual, and reflective. Instructional practices and the school culture need to be aligned with these dispositions when enacting SCLEs. On top of considering these dispositions
when planning for SCLEs, students need to demonstrate their thinking. One way to accomplish this is through visible thinking routines. As noted earlier, the charter school already utilizes visible thinking as one of its frameworks. One visible thinking routine that is utilized within the charter school is “rose, bud, thorn.” The LUMA Institute (2012) defines this as “a technique for identifying things as positive, negative, or having potential” (p. 54). This routine is commonly used at the end of a lesson in order to visualize both student learning and aspects that were frustrating or need clarification. This is a very simple routine that allows students to display their thinking. SCLEs need to consider building student agency and allowing for students to demonstrate their thinking capabilities. The charter school has positioned itself with the framework they have in place to allow for students’ thinking capabilities to be visualized. This is a very powerful impact that yields data for both students and teachers, which can inform learning.

The improvement effort that has been recommended to the charter school has potential to yield impacts externally. The capacity that is built within the charter school and the impact it has on certain systems could influence the design and development of external systems.

The models of intentional instructional planning, creating a school culture, and promoting thinking capabilities can be applied and tailored to other contexts. Therefore, it is the researcher’s hope that the recommendations are carried out by the charter school. If carried out, the researcher plans to come back to this work in order to set up a NIC outside of the charter school. This external NIC will have members from the specific context where the original study is conducted, but will also seek involvement from other outside organizations. The researcher and members from the charter school of this study will serve as the network initiation team. The initiation team will seek membership from stakeholders that are situated in other K–12 schools,
higher education (both teacher education programs and technology departments), and informal learning environments. Bringing people to this work from a variety of contexts will allow for growth and development of this work. In order for this NIC to work efficiently, the network initiation team will articulate the problem that will be investigated, provide an analysis of the system that produces current undesirable outcomes, develop an aim statement, and establish an initial working theory of practice improvement. It is important for the initiation team to demonstrate why working on this problem is essential and why working under this framework is the most promising approach to this work (Bryk et al., 2015). Setting up the external NIC is key to advancing our understanding of establishing SCLEs.

**Improvement Inquiry as an Agenda for Educational Leadership**

What has been learned from the preceding investigation suggests that it might be useful for the field of education to engage more deeply in improvement inquiry. There are a number of educational practice venues in which improvement inquiry might contribute. By way of conclusion and as potential next steps in my agenda as an educational leader, I offer four venues of educational practice in which improvement inquiry might contribute: (1) higher education; (2) PK–12 schools; (3) centers of improvement that represent partnerships between higher education institutions—typically colleges or schools of education—and schools or school districts; and (4) community partnerships in education.

Educational theories and frameworks abound in higher education environments. Specifically, in schools of education, theories and frameworks inform the training of future practitioners and ultimately impact instructional practices within learning environments. All the training and fieldwork that is required of students who are enrolled in schools of education does not train and/or equip them to address all of the problems that will surface during their tenure as
practitioners. However, if teacher preparation programs start (or continue in some cases) to utilize improvement inquiry as an epistemological framework, future practitioners will have a mindset of seeking to understand complex systems and methods for seeking improvement for these systems. Hannan et al. (2015) argue,

> Because improvement science offers a framework for data-driven explorations of practice while integrating change into complex systems, it is a promising method for activating and executing meaningful feedback routines in diverse contexts to help novice teachers develop, improve, and remain in the profession (p. 495).

If this epistemological shift happens within the higher education environment it has the potential not only to lower teacher attrition rates, but also to create a focus on seeking improvement rather than seeking solutions. This shift must start with how future practitioners construct knowledge around the practice of teaching and learning. By allowing future practitioners to engage in improvement inquiry, colleges and universities will start to graduate students who are knowledgeable about how to identify problems within the practice, understand the systems that are producing these problems, and design strategies that seek improvement for the identified problems. These newly graduated students will enter classrooms and school districts across the nation equipped with the tools to lead improvement efforts within their specific contexts. If we continue to train students the same way and maintain the status quo, then the field of education will still be seeking solutions to problems that do not accommodate each specific context.

Furthermore, there is room for colleges and universities to initiate centers for improvement. Specialized centers and laboratory schools are common within departments of education. A center for improvement could serve as a catalyst for seeking improvement within both higher education and K–12 education. These centers would be ideal for improvement
inquiry to thrive. Additionally, the centers could build partnerships with schools and lend support in seeking improvement within the schools’ specific contexts. These centers of improvement could continue and extend the work of improvement science and NICs. Hannan et al. (2015) argue, “The use of data in improvement science stands in stark contrast to this more common use, but it must be better and more widely understood to gain greater currency” (p. 506).

Established norms for how data is used within the field of education create a barrier to rethinking how to use data more efficiently. Data should be used to inform decisions, identify change agents, and to scale across contexts. Furthermore, there is still much to be learned about initiating and designing NICs within the field of education. NICs need to be constructed with accessibility and affordability in mind. Small NICs housed within one or two contexts have the ability to thrive. However, as NICs start to expand and expert stakeholders are recruited from a variety of locations, accessibility and affordability must be considered in order for basic functioning of the NIC. The centers of improvement would undoubtedly have a variety of avenues to explore and continue the application of improvement science and NICs to the variety of educational contexts. Designs for learning should be created which provide opportunities for educational deans and provosts to engage critically in this work and to understand the importance of the (positive) impact improvement inquiry can have on the field of education.

Additionally, there is space for improvement inquiry to exist within K–12 schools. Schools are made up of multiple systems that are dense and complicated. If school leaders and staff started to think about these systems and started investigating them, then a better understanding of how each system is operating and the results it is producing would allow them to make more informed decisions. Improvement inquiry can drive organizational shifts, which align systems with visions. Often, organizations (such as schools) will shift their vision and fail
to revisit the systems that are in place to ensure they align with the new vision. They plan strategically, but fail to engage with opposing interpretations. Under this approach, organizations fail to tease out what would happen if some of the opposing interpretations actually came to fruition. It is only a matter of time before the old systems deteriorate and produce undesirable results. Old systems become stressed due to the new vision and eventually force a problem to surface. Therefore, a systemic (and mindset) shift that is underpinned by improvement inquiry needs to be considered. As professional educators begin to engage in improvement inquiry and improve their practice, it allows for systemic capacity to be built and a legacy of leadership to be established. When engaging a school staff in improvement work, the sole purpose should not be to solve the problem of practice, but to build capacity for improvement inquiry to flourish. If school staffs start to engage in improvement inquiry and therefore identify problems of practice, seeking to understand systems and use driver diagrams to map out change agents, then capacity is starting to be built. The culture will shift and staff will start to think about problems differently. Staff will also take the initiative to seek improvement and not wait for the administration to give them solutions. The staff will be the servants of their practice and be empowered to lead improvement efforts. The empowerment of staff during this grassroots (systemic) shift naturally allows for autonomy. The autonomy that is created should be captured and centered with a common aim in order to align with the spirit of improvement science. Engaging staff in this kind of interrogation establishes a leadership agenda that allows for capacity to be built to identify and address problems at the school level, and that engages the community, staff, parents, and students. There should also be a clear effort to create capacity within the research and development aspects that are lagging in the field of education in order to establish professional communities of improvement. These communities can morph into
powerful networks that seek to connect the work across contexts and create generative impacts across the field of education. As Orr (2005) writes,

The plain fact is that the planet does not need more successful people. But it does desperately need more peacemakers, healers, restorers, storytellers, and lovers of every kind. It needs people who live well in their places. It needs people of moral courage willing to join the fight to make the world habitable and humane. And these qualities have little to do with success as we have defined it (p. 12).

Success has been defined differently in the field of education, but it is filled with the type of people whom Orr has identified. These people are the ones we need to engage in improvement inquiry. The current landscape of education is in need of a paradigm shift. LeMahieu et al. (2015) write, “We aim to further a conversation about opening up room, within traditional academic research opportunities, for contributions to a growing body of practical knowledge that rigorously advances the development and scaling of effective practice” (pp. 447–448). Creating space for this work will require people within the field to apply the tenets of improvement science to their research/work. Improvement inquiry should be at the forefront of this shift and embedded within agendas across the field.

Finally, there is space for community partnerships within education to be revisited and/or reinterrogated. Guajardo, Guajardo, Janson, and Militello (2016) state, “Community is not something that stands alone but is a generative structure informed by a set of ideas, practices, struggles, hopes, and dreams” (p. 5). Ideas, practices, struggles, hopes, and dreams can be in constant flux and go unaddressed. More importantly, all of the aforementioned aspects within each community matter greatly. As a field we need to rethink how we approach community partnerships. We should intentionally think about people, relationships, and places. Guajardo et
al. (2016) have presented a theory called the Community Learning Exchange (CLE). This theory is grounded in relationships, assets, and place (Guajardo et al., 2016). The field of education can and should do a better job of establishing healthy and vibrant relationships with communities and with the people situated in these communities. We cannot engage in the work of seeking improvement within the field of education if we do not seek the insights, stories, and assistance from the specific communities in which we are working. There is a great opportunity for improvement inquiry to be utilized in all of the above-mentioned contexts. However, if we want to see a transformational shift within our field, we must unite the power of place and the wisdom of people (Guajardo et al., 2016). Improvement inquiry has the ability to thrive if we seek to reframe community partnerships and engage people in the inquiry process.

**Conclusion**

This study focused on a problem within a specific context. Understanding the context and the systems operating within the context were both intentional and essential to truly understanding the problem at hand. The goal of this work was not to find a solution. “Solutionitis” has been observed throughout the field of education and historically solutions fail to completely address the problem at hand. Therefore, this work focused on establishing an improvement effort. Focused on improvement science research and the use of NICs to drive the effort, these two tools should be considered when investigating problems within the field of education. The major takeaway from this study is that there is a need for a paradigm shift in the field of education. The shift needs to focus on students and how we can improve the systems that we put students through. Bryk (2015) has his own thoughts about this paradigm shift, describing

A paradigm that keeps measureable improvements in valued student outcomes as its “north star.” A paradigm that integrates extant research-based knowledge and draws on
the analytic and empirical orientation of applied social science inquiry. A paradigm that also places primacy on addressing the specific questions that practicing educators confront and embraces their learning-by-doing orientation. Equally important, a paradigm that sees educators as active inquirers who are now bound together by norms and structures akin to a scientific community (p. 469).

Focusing on what Bryk refers to the “north star” is truly where we, as a field, need to spend our time and effort. A paradigm shift can start and live within the charter school. The frameworks and the goals the charter school has established make it a very realistic environment for this work to flourish. Systems within the field of education are complex and the complexity of these systems is often overlooked. But, when laser-focused on a specific context, learning can take place, which can help develop capacity and inform the scaling process. It is my hope that the charter school will take the recommendations from the researcher and work towards improvement and building capacity within their context. It is also my hope that this study informs others to utilize improvement science and NICs within their specific contexts in order to drive their own personal improvement efforts. As a field, we need to develop our systems to actually seek improvement and make environments better for students.

In conclusion, I hope this small study assists in the acceleration of learning on how to improve within the field of education. For if we are going to see true reform, we need to rely on the power of networks and the ability of people to build capacity within these networks. True improvement is a collaborative effort, which embraces the wisdom of crowds.
References


Appendix A

Survey Protocol

1. Please indicate your role at your institution.
   1. Teacher
   2. Administrator
   3. Instructional coach
   4. Governing board member
   5. Community member

2. Please indicate the number of years you have worked at your institution.
   1. Less than 1
   2. 1–2
   3. 3–5
   4. 5–8

3. How much do you agree with the following statement: teachers in my school . . .
   Work together on teams to improve their instructional practices
   1  2  3  4
   Strongly agree  Strongly disagree

4. How much do you agree with the following statement: teachers in my school . . .
   Use multiple forms of achievement data to improve instructional practices
   1  2  3  4
   Strongly agree  Strongly disagree

5. How much do you agree with the following statement: teachers in my school . . .
Receive helpful training on the use of student achievement data to improve their instructional practices

1  2  3  4

Strongly agree  Strongly disagree

6. How much do you agree with the following statement: teachers in my school . . .

Use their own forms of assessment to inform their instructional practices

1  2  3  4

Strongly agree  Strongly disagree

7. How much do you agree with the following statement: PSSA tests . . .

Assist with the design and development of learning environments

1  2  3  4

Strongly agree  Strongly disagree

8. How much do you agree with the following statement: PSSA tests . . .

Are useful forms of assessments that inform student learning

1  2  3  4

Strongly agree  Strongly disagree

9. How much do you agree with the following statement: PSSA tests . . .

Provide data to inform instructional practices

1  2  3  4

Strongly agree  Strongly disagree

10. How much do you agree with the following statement: PSSA tests . . .

Allow all students to demonstrate their knowledge in a meaningful way

1  2  3  4
11. How satisfied are you with NCLB and the federally mandated tests that are required under the policy?

1 2 3 4

12. How much do you agree with the following statement:

Formative assessments assist in improving my instructional practices

1 2 3 4

13. How much do you agree with the following statement:

Too much time is spent on administering formative assessments

1 2 3 4
Appendix B

Interview Protocol:

1. How do you as a teacher or administrator understand the accountability measures that are in place within your specific context (e.g., school, classroom, or district)?

2. Can you describe the assessment accountability measures that are in place within your specific context?

3. How are you informed of these? Can you describe how that info is relayed to you?

4. How aware are you of these accountability measures within your specific context?

5. To what extents do the accountability measures influence your practice? How? Do they impact your teaching, grading, culture, assessment, or behavior?

6. How do the accountability measures that you are aware of influence the way you approach your work?

7. What does your practice look like based on the accountability measures that are in place?

8. Does it impact other opportunities for your students or schools?

9. Do you think accountability measures negatively impact learning environments? If so, how? If not, why?

10. To what extent do you think accountability measures impact student learning?

11. Do you see this as a problem within the field of education?

12. How does this problem impact you?

13. What do you think can be done to address this problem?
Appendix C

Detailed Narrative of Each Survey Question

The first two questions of the survey protocol were designed to gather demographic data. Question three of the survey asked participants to respond to a statement about whether they thought teachers in their school worked together on teams to improve their instructional practices. Six of the 11 participants strongly agreed with this statement. Another four of the participants responded that they agreed with this statement. There was only one participant who responded that they disagreed with this statement. Within the context there is a looping and coteaching model in place. These two models allow for teachers within the building to work together on instructional practices. It can be assumed that these two models are somewhat responsible for the overwhelming agreeing responses. Furthermore, a coaching model is also in place within this context. The instructional coaches assist teachers and design and development of content and curriculum. It should be noted that the one participant who responded that they disagreed with this statement was a teacher. There is not a definitive assumption as to why the participant responded this way, but an assumption would be a detrained relationship with a coteacher or coach.

Question four of the survey asked participants to respond to whether they thought teachers in their building used multiple forms of achievement data to improve instructional practices. The responses to the question varied. Four participants responded that they agreed, four responded they disagreed, and three responded that they strongly agreed. The majority of the responses fell on the side of agreement, but the four that disagreed should not be taken lightly. Of the four participants who disagreed, three were teachers and one was an administrator. It is difficult to understand what participants are thinking through a survey, but the four who
disagreed surely have reasons for their responses. Whether they thought that this was simply not the case within their context or they thought that multiple forms were not used is not evident though survey results.

Question five sought insight from participants about whether they thought teachers in their schools received helpful training on the use of student achievement data to improve their instructional practices. There was an overwhelming disagreeing response to this statement. Eight of the participants disagreed with this statement, while three participants strongly disagreed. This identifies an area where the school can provide a resource to their staff if they see fit. All participants felt as though teachers did not receive adequate training on how to use student achievement data to improve their instructional practices.

Question six asked participants to indicate whether they felt teachers in their school used their own forms of assessment to inform their instructional practices. Seven participants strongly agreed with this statement and three others agreed. One participant, who was a teacher, responded that they disagreed with this statement. Of the seven participants who strongly agreed with this statement, three of them were teachers. Furthermore, one of the participants who agreed with this statement was also a teacher. Of the five teachers who participated in the survey, four stated that they used their own forms of assessment within their classrooms. Teachers are typically the ones who administer assessments within their classrooms, so this data point indicates that teachers are generating and implementing their own forms of assessments within their classroom. It is also safe to make the assumption that these specific teachers think that the assessments they are administering inform their instructional practices.

Question seven shifted gears to asking participants about PSSA tests. Question seven asked participants to indicate how much they agree that PSSA tests assist with the design and
development of learning environments. The response to this question tilted towards the disagree side of the scale. The majority of the participants disagreed with this statement. Five participants disagreed, three strongly disagreed, and three agreed. Of the three who agreed, two were teachers and one was an administrator. Again, it is hard to tell what participants are thinking through a survey, but it would be interesting to understand participants’ thinking about how learning environments are designed and developed based on PSSA tests.

Question eight asked participants whether or not they felt PSSA tests were useful forms of assessment that informed learning. The majority of participants disagreed with this statement. Three strongly disagreed, five disagreed, and three agreed. Of the three who agreed, two were teachers, and one was an administrator. The major takeaway from this question is that not one participant strongly agreed with the statement. An assumption that could be made is that the results from PSSAs do not come back in a timely fashion for educators to review the results and ultimately to use the data to inform teaching. However, three participants did agree with the statement, so it can also be assumed that the data from PSSA tests are informing learning in some way.

Question nine asked participants whether they think PSSA tests provide data to inform instructional practices. This yielded results similar to those from question eight. Four participants strongly disagreed, four disagreed, and three agreed. Again, no one strongly agreed with this statement. An interesting nugget is that the same three participants who agreed with question eight’s statement agreed with question nine’s statement. The two questions do ask about how PSSA tests inform both learning and instructional practices. Some may argue there is a direct correlation between the two and that could be why the data from these two questions are similar.
Question 10, the last statement regarding PSSA tests, asked participants whether they agree that PSSA tests allow all students to demonstrate their knowledge in a meaningful way. The number of participants who disagreed with this statement was tremendous. Eight strongly disagreed, two disagreed, and only one participant agreed with this statement. The one participant who agreed, interestingly enough, was a teacher. However, the overwhelming disagreement indicates that participants feel PSSA tests may limit students’ abilities to demonstrate their knowledge in meaningful ways.

Question 11 probed participants on NCLB, asking them how satisfied they were with the mandate and the tests that they are required to administer under that mandate. Again, participants tended to disagree with this statement. Five strongly disagreed, five disagreed, and one agreed. The responses to this statement can really paint a picture of what participants think about NCLB as a federal mandate. The only participant who agreed with this statement was the same teacher who agreed to the last four statements as well.

Question 12 asked participants whether they felt formative assessments assisted in improving their instructional practices. Six of the participants strongly agreed, three agreed, and two disagreed. Both of the participants who disagreed were teachers. An assumption could be made that these two teachers either struggle with formative assessments or just do not care for this form of assessment. However, neither of the teachers strongly disagreed with this statement, which could also indicate that they use formative assessments, but do not feel they improve their instructional practices.

Finally, question 13, the last question of the survey, asked participants whether they felt too much time was spent on administering formative assessments. The responses to this question yielded a greater variance. However, the majority of participants still disagreed. Four participants
strongly disagreed, four disagreed, two agreed, and one strongly agreed. The participant who strongly agreed was an administrator. The other two participants who agreed were teachers.

In order to sync the data from the table and the data from the narrative, significant aspects will be discussed. As the researcher and the primary person disaggregating the data, I have identified four significant aspects from the data.

First, question five yielded data that indicated participants within this specific context believe that teachers do not receive helpful training on how to use student achievement data to improve their instructional practices. What this tells us is that there is an opportunity for leaders in this context to think about supplying professional development for teachers to be trained in how to use student achievement data to better inform their instructional practices. It also tells us that either teachers are already comfortable using student achievement data to inform their instructional practices or they are not using student achievement data properly to inform instructional practices. In the latter case, there could be a variety of reasons why this is happening (i.e., lack of training, lack of time, etc.). However, as the primary researcher, I would say that pursuing training for teachers to properly learn about how to use student achievement data to inform learning would be beneficial to this specific context.

Second, not one participant strongly agreed that PSSA tests are useful forms of assessment that inform student learning. This is a significant aspect due to the fact that PSSAs are mandated by the federal government and are highly valued, yet participants in this group overwhelmingly did not think that PSSAs inform student learning. It is concerning when we are using a form of assessment that educators do not deem appropriate for informing student learning. Although there were only 11 participants in this study, it would be interesting to see results from this question if it were asked more broadly throughout the field of education.
The third significant aspect was that question 10 yielded eight participants who strongly disagreed that PSSA tests allow all students to demonstrate their knowledge in a meaningful way. The question is why are we using an assessment that educators feel is not allowing students to demonstrate their knowledge in a meaningful way? Again, educators feel that a federally mandated test is not hindering students from demonstrating their knowledge.

Finally, the fourth and last significant aspect deals with participants’ thoughts around NCLB. The scale was heavily tipped to the disagreement side when participants were asked whether they were satisfied with NCLB and the tests that are administered under this mandate. There is a correlation between all of these significant aspects that were identified. However, the major takeaway from this data is that there is a federal mandate (which requires certain assessments) that is not informing learning, and that teachers are not using data from the assessments to inform their instructional practices.