An Examination of Adaptive Leadership Processes Using Action Research

Margaret Bright
Clemson University, mbright@oconee.k12.sc.us

Follow this and additional works at: https://tigerprints.clemson.edu/all_dissertations
Part of the Educational Leadership Commons

Recommended Citation
https://tigerprints.clemson.edu/all_dissertations/857

This Dissertation is brought to you for free and open access by the Dissertations at TigerPrints. It has been accepted for inclusion in All Dissertations by an authorized administrator of TigerPrints. For more information, please contact kokeefe@clemson.edu.
AN EXAMINATION OF ADAPTIVE LEADERSHIP PROCESSES USING ACTION RESEARCH

A Dissertation
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy
Educational Leadership

by
Margaret Bright
December 2011

Accepted by:
Dr. Russ Marion, Committee Chair
Dr. Megan Che
Dr. Antonis Katsiyannis
Dr. Curtis Brewer
ABSTRACT

School districts are knowledge producing organizations faced with adaptive challenges that require new learning, innovation, and new patterns of behavior. Traditional, entity-based models of leadership rely on the knowledge of only a handful of leaders at the top of the bureaucratic ladder and fail to tap collective creativity inherent at all levels of a school or district. The purpose of this study was to engage in action research to identify emergent, interactive dynamics that resulted in a creative solution to an adaptive special education problem of closing the achievement gap for students with disabilities in one geographical area of a school district.

The theoretical framework underlying this study is that of Complexity Leadership Theory (CLT) which supports mechanism-based theorizing and an entanglement of three forms of leadership: adaptive, enabling, and administrative. Qualitative methods were used to collect data and NVivo 8 assisted in the coding, analysis and presentation. The results showed that while under conditions of enabling leadership participants responded to the adaptive challenge by engaging in information flow leading to learning and increased creativity. Furthermore, six mechanisms that fostered adaptability and creativity were identified: attractors, storytelling, bonding, patterning of attention, elaboration, and conflicting constraints. Finally, artifacts serving as barriers to creativity were identified and complex group dynamics were examined as participants worked around these barriers and derived a final strategic plan for the purpose of improving outcomes for students with disabilities.
The findings of this study expand the work of previous researchers in the area of CLT by examining complex group dynamics as they unfolded in an educational setting. The outcome has implications for educational leaders as it supports ground-up problem solving and sharing the leadership role with education faculty and staff at all levels of a school or district.
DEDICATION

I dedicate this work to my extraordinary husband for it would have not been possible without his love and ongoing support; my children, for whom I am immensely proud; my mother and my husband’s parents who were always there to help in any way possible; my dad and stepmother, who encouraged me to value education and ultimately love learning; and my grandmother, I miss her dearly. I also want to thank my professors and my committee for their assistance and feedback, especially Dr. Marion, who devoted his Sunday afternoons to our weekly phone collaboration to keep me on track. Finally, I am thankful to God. Through Him all things are possible.
ACKNOWLEDGMENTS

It is with deepest gratitude that I express thankfulness to my committee for guiding me through this arduous endeavor. I am appreciative of Dr. Che and Dr. Brewer for introducing me to action research and for calling me to a high standard while conducting this qualitative study. I am also appreciative of Dr. Katsiyannis for continually fueling my passion for special education ever since my first class with him nearly eight years ago. I especially want to thank Dr. Russ Marion, my chair, who was always there to encourage and challenge me through critical questioning. We spent several Sunday afternoons on the phone for long durations discussing my research. I couldn’t have done it without him. I am also thankful for my friends, Dr. Jackie Malloy and Dr. Bill Hanson, who were there when I needed feedback, support, and prodding to delve forward. I am appreciative of the participants who sacrificed personal time after school in an effort to improve outcomes for students with disabilities in our district. Your genuine care and compassion for children is evident. Many thanks to my personal and professional friends who stood by me throughout this process. Lastly, I am immensely thankful to my husband, Ronald, and my children, Amanda, Hannah, and Julia, for your unremitting love and encouragement.
TABLE OF CONTENTS

Page

TITLE PAGE .................................................................................................................... i
ABSTRACT ..................................................................................................................... ii
DEDICATION ................................................................................................................ iv
ACKNOWLEDGMENTS ............................................................................................... v
LIST OF TABLES .......................................................................................................... ix
LIST OF FIGURES ........................................................................................................ xi

CHAPTER

1. DESCRIPTION OF THE PROBLEM ........................................................... 1
   Introduction ............................................................................................................. 1
   Background of the Study ..................................................................................... 2
   Statement of the Problem ................................................................................... 8
   Purpose of the Study ......................................................................................... 12
   Significance of the Study .................................................................................. 12
   Definition of Key Terms ................................................................................... 15
   Theoretical Framework ....................................................................................... 18
   Research Questions ............................................................................................ 21
   Limitations .......................................................................................................... 21
   Delimitations ...................................................................................................... 22
   Assumptions ....................................................................................................... 22
   Organization of the Study .................................................................................. 23

2. REVIEW OF LITERATURE ...................................................................... 24
   Heroic Leadership Theories ............................................................................... 25
   Non-Heroic Leadership ...................................................................................... 30
   Complexity Theory ............................................................................................. 33
   Complexity Leadership Theory ......................................................................... 39
   Summary ............................................................................................................. 43
Table of Contents (Continued)

3. METHODOLOGY ................................................................. 44
   Selection of Participants .................................................. 45
   Instrumentation ............................................................... 47
   Data Collection ............................................................... 48
   Data Analysis ................................................................. 58
   Procedural Fidelity .......................................................... 61
   Role of the Researcher .................................................... 63
   Ethical Considerations .................................................... 68
   Chapter Summary .......................................................... 69

4. RESULTS .............................................................................. 70
   Themes and Definitions .................................................. 70
   Research Question One ................................................... 75
   Research Question Two ................................................... 86
   Research Question Three ................................................ 105
   Additional Analyses ....................................................... 119
   Summary ........................................................................... 131

5. SUMMARY, DISCUSSION, AND CONCLUSIONS .................. 133
   Summary of the Study .................................................... 133
   Discussion of the Findings .............................................. 134
   Implications for Practice ................................................ 149
   Recommendations for Further Research ......................... 152
   Conclusions .................................................................... 156
APPENDICES ............................................................................................................. 158

A: Letter from Superintendent ................................................................. 159
B: IRB Notice of Approval ............................................................... 160
C: Lesson Plan Day One ............................................................... 161
D: Lesson Plan Day Two ................................................................. 163
E: Lesson Plan Day Three ............................................................ 165
F: Instructions for Small Group Breakouts ............................... 166
G: Information Concerning Participation in a Research Study ... 167
H: Final Thoughts from the Groups ................................................ 170
I: Final Plan from each CAS ........................................................... 172
J: Final Group Strategic Plan ......................................................... 174
K: Semi-Structured Individual Interview Questions .................. 176
L: Statement of Confidentiality ..................................................... 178
M: Project Diary .................................................................................. 179

REFERENCES ............................................................................................................ 184
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Summary of Adequate Yearly Performance (AYP) for All Schools in the Focus District</td>
<td>10</td>
</tr>
<tr>
<td>2.1</td>
<td>Empirical Case Studies Relevant to Complexity Science</td>
<td>38</td>
</tr>
<tr>
<td>3.1</td>
<td>Number of Participants Based on School Level and Title of Position</td>
<td>46</td>
</tr>
<tr>
<td>4.1</td>
<td>Summary of Tree Nodes Created Using NVivo 8 for Small Group and Whole Group Sources of Data</td>
<td>72</td>
</tr>
<tr>
<td>4.2</td>
<td>Definitions of Parent, Child and Grandchild Tree Nodes</td>
<td>74</td>
</tr>
<tr>
<td>4.3</td>
<td>Adaptive Processes Tree Nodes with Illustrations</td>
<td>77</td>
</tr>
<tr>
<td>4.4</td>
<td>Frequency of Adaptive Processes Combinations from Figure 4.1</td>
<td>82</td>
</tr>
<tr>
<td>4.5</td>
<td>Illustrations of Idea Emergence, Information Flow and Learning from Selected Individual Structured Interviews</td>
<td>84</td>
</tr>
<tr>
<td>4.6</td>
<td>Summary of Mechanisms Tree Nodes with Illustrations</td>
<td>87</td>
</tr>
<tr>
<td>4.7</td>
<td>Illustrations of the Mechanism Attractors from Selected Individual Structured Interviews</td>
<td>90</td>
</tr>
<tr>
<td>4.8</td>
<td>Illustrations of the Mechanism Storytelling from Five Individual Structured Interviews</td>
<td>92</td>
</tr>
<tr>
<td>4.9</td>
<td>Illustrations of the Mechanism Bonding from Individual Structured Interviews</td>
<td>95</td>
</tr>
<tr>
<td>4.10</td>
<td>Illustrations of the Mechanism Patterning of Attention from Individual Structured Interviews</td>
<td>98</td>
</tr>
<tr>
<td>4.11</td>
<td>Illustrations of the Mechanism Elaboration from Individual Structured Interviews</td>
<td>101</td>
</tr>
<tr>
<td>4.12</td>
<td>Illustrations of the Mechanism Conflicting Constraints from Individual Structured Interviews</td>
<td>104</td>
</tr>
</tbody>
</table>
List of Tables (Continued)

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.13</td>
<td>Summary of Barriers to Creativity Grandchild Nodes with Illustrations</td>
</tr>
<tr>
<td>4.14</td>
<td>Illustrations of the Barrier Lack of Information or Knowledge from Individual Structured Interviews</td>
</tr>
<tr>
<td>4.15</td>
<td>Illustrations of the Barrier Lack of Parent Support or Home Life from Individual Structured Interviews</td>
</tr>
<tr>
<td>4.16</td>
<td>Illustrations of the Barrier Bureaucratic Controls from Individual Structured Interviews</td>
</tr>
<tr>
<td>4.17</td>
<td>Illustrations of the Barrier Time from Individual Structured Interviews</td>
</tr>
<tr>
<td>4.18</td>
<td>Illustrations of the Barrier Finance from Individual Structured Interviews</td>
</tr>
<tr>
<td>4.19</td>
<td>Summary of Complexity Dampening Tree Nodes with Illustrations</td>
</tr>
<tr>
<td>4.20</td>
<td>Summary of Additional Working Around Barriers Tree Nodes with Illustrations</td>
</tr>
<tr>
<td>4.21</td>
<td>Illustrations of Participants Working Around Barriers from the Individual Structured Interviews</td>
</tr>
<tr>
<td>4.22</td>
<td>Illustrations of Psychological Safety from the Individual Structured Interviews</td>
</tr>
<tr>
<td>4.23</td>
<td>Summary of Child Nodes for Structured Interview Comments Created Using NVivo 8</td>
</tr>
<tr>
<td>4.24</td>
<td>Summary of Child Nodes for Structured Interview Comments with Illustrations</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>A meso model of complexity leadership theory depicting the entanglement of administrative, enabling, and adaptive leadership functions ................................................................. 20</td>
</tr>
<tr>
<td>4.1</td>
<td>A model of information flow leading to elaboration and the emergence of a final strategic plan .......................................................... 79</td>
</tr>
<tr>
<td>4.2</td>
<td>Bar graph showing the percentage of coverage coded for the mechanism attractors for each transcript from the small group and whole group work sessions by date ........................................... 89</td>
</tr>
<tr>
<td>4.3</td>
<td>Bar graph showing the percentage of coverage coded for the mechanism storytelling for each transcript from the small group and whole group work sessions by date ........................................... 91</td>
</tr>
<tr>
<td>4.4</td>
<td>Bar graph showing the percentage of coverage coded for the mechanism bonding for each transcript from the small group and whole group work sessions by date ........................................... 93</td>
</tr>
<tr>
<td>4.5</td>
<td>Bar graph showing the percentage of coverage coded for the mechanism patterning of attention for each transcript from the small group and whole group work sessions by date ........................................... 96</td>
</tr>
<tr>
<td>4.6</td>
<td>Bar graph showing the percentage of coverage coded for the mechanism elaboration for each transcript from the small group and whole group work sessions by date ........................................... 99</td>
</tr>
<tr>
<td>4.7</td>
<td>Bar graph showing the percentage of coverage coded for the mechanism conflicting constraints for each transcript from the small group and whole group work sessions by date ........................................... 102</td>
</tr>
<tr>
<td>4.8</td>
<td>Bar graph showing the percentage of coverage coded for the barrier lack of knowledge for each transcript from the small group and whole group work sessions by date ........................................... 108</td>
</tr>
</tbody>
</table>
List of Figures (Continued)

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.9</td>
<td>Bar graph showing the percentage of coverage coded for the barrier lack of parent support or home life for each transcript from the small group and whole group work sessions by date.</td>
<td>111</td>
</tr>
<tr>
<td>4.10</td>
<td>Bar graph showing the percentage of coverage coded for the barrier bureaucratic controls for each transcript from the small group and whole group work sessions by date.</td>
<td>113</td>
</tr>
<tr>
<td>4.11</td>
<td>Bar graph showing the percentage of coverage coded for the barrier time for each transcript from the small group and whole group work sessions by date.</td>
<td>115</td>
</tr>
<tr>
<td>4.12</td>
<td>Bar graph showing the percentage of coverage coded for the barrier finance for each transcript from the small group and whole group work sessions by date.</td>
<td>117</td>
</tr>
<tr>
<td>5.1</td>
<td>The adaptive function</td>
<td>147</td>
</tr>
<tr>
<td>5.2</td>
<td>Process Model of Adaptive Leadership</td>
<td>148</td>
</tr>
</tbody>
</table>
CHAPTER ONE  
DESCRIPTION OF THE PROBLEM

Introduction

The birth of special education can be traced back to the eighteenth century when a French physician, Jean-Marc-Gaspard Itard, found a homeless pre-teen without clothes, shelter or a family living in the woods in France (Humphrey, 1962). Dr. Itard’s work with this boy was the first account of someone using behavior modification and education to improve the abnormal and antisocial behavior of a child with a disability and is the foundation on which special education services are delivered to this day (Hulett, 2009). Unfortunately, the provision of special education services in this era in the United States is replete with social, financial, and political problems.

Disproportionate representation of minority students and inadequate funding are issues that have plagued special education since the passage of Public Law 94-142 or the Education for all Handicapped Children Act (EHA, 1975). The EHA was reauthorized and renamed in 1990 and became Public Law 101-476 or the Individuals with Disabilities Education Act (IDEA, 1990). Although the most recent reauthorizations of IDEA (2004) and the Elementary and Secondary Education Act (ESEA, 1965), also known as the No Child Left Behind Act (NCLB, 2001), sought to work hand in hand to remedy disproportionate representation of minorities in special education, the conflict of interest in these two pieces of legislation (Bouck, 2009) added yet another layer of complexity to existing problems in special education.
Unfortunately, traditional forms of leadership have been largely unsuccessful in resolving these and other persistent problems in special education at the national, state, and local levels. Bureaucratic or top-down leadership models rely on a few brains at the top to learn, understand, and solve complex challenges. This form of leadership is suitable for addressing technical challenges where the problem is defined and the solution is clear (Heifetz, Grashow, & Linsky, 2009; Parks, 2005); however, the adaptive challenges in the field of special education are complex and require leadership practices that foster learning and stakeholder involvement. The only way to resolve the intractable and complex problems plaguing special education is to shift from a person-centered perspective of leadership to a collective perspective. Through this lens, leadership is viewed as distributive whereby creativity and innovation flow from the bottom-up. A model of leadership grounded in complexity versus bureaucracy will permit adaptive outcomes to complex adaptive challenges. In other words, it will take complexity to overcome complexity (Ashby, 1960).

**Background of the Study**

Snowden and Boone (2007) contend that effective leaders learn how to adjust their decision-making styles to match the ever-changing context of an organization’s climate. For example, they describe simple contexts as having clear cause and effect relationships with a right answer. In simple contexts a leader’s job is to establish proper processes, ensure best practices, and to delegate via clear communication. They go on to describe complicated contexts as having more than one right answer and that cause and
effect relationships are not readily apparent. In this context, Snowden and Boone (2007) advise leaders to sense, analyze, and listen to conflicting advice from panels of experts before responding.

Similarly, the persistent problems in special education can also be described as having a context of complexity. Snowden and Boone (2007) describe a complex environment as unpredictable where there are no apparent correct solutions and several competing ideas. The leader’s job in a context of complexity is to create environments conducive to interaction, communication, experimentation, and the emergence of novel ideas. The social, financial and political problems presented in this paper are complex and require an equally complex form of leadership in response.

Traditional leadership models in special education have not been able to resolve the social injustice of disproportionate representation of minorities in special education. Skiba et al. (2008) describe disproportionate representation of minority students in special education programs as “Among the most-longstanding and intransigent issues in the field” (p. 264). They go on to define disproportionality as “…the representation of a group in a category that exceeds our expectations for that group, or differs substantially from the representation of others in that category” (p. 266). Despite abundant attention to the issue, the problem is unresolved and the complexity of minority disproportionality, including the causes, is not understood (Donovan & Cross, 2002). Blanchett (2009) points out several concerns most frequently cited by researchers with regard to the experiences of African American students with disabilities in the American special education system:
(a) the persistent problem of disproportionate representation of African American students in special education, (b) the trend of placing African American students with disabilities into segregated instead of inclusive or general education settings, (c) the lack of culturally responsive interventions and instructional practices in both general and special education classrooms, and (d) the significant shortage of fully credentialed special education teachers including teachers of color. (p. 377).

In recent years, risk indexes have been used to determine the presence of disproportionality. According to the U.S. Department of Education (2005), a risk index was used to examine specific disability categories by race/ethnicity which revealed that African American students are 3.0 times more likely to be labeled as having mental retardation and 2.3 times more likely to be identified as needing special education and related services in the area of emotional disturbance. Blanchett (2010) also explains that while overrepresentation and disproportionate representation of children of color in classrooms serving students for mild mental retardation has been an unresolved problem for more than 40 years, “…as other socially constructed disabilities categories (e.g., Learning Disabilities, Emotional and Behavior Disabilities) have been developed and incorporated into legislation, similar trends of disproportionality have been associated with them as well” (p. 6). Overcoming the persistent problem of disproportionality at the nation level will require local special education leaders to foster collective accountability at the district level where factors contributing to the issue are going to vary.
A new model of special education leadership is also needed to foster the emergence of creative ways to provide a free and appropriate public education (FAPE) to every child identified with a disability despite the lack of full federal funding for the Individuals with Disabilities Education Act (IDEA, 2004). The IDEA authorizes federal funding for the education of children with disabilities and requires the provision of FAPE as a condition for receiving funds (Jones, Apling, & Smole, 2004). For FY 2008, the most recent year with data available, IDEA federal funding paid 17.1 percent of the estimated excess cost of educating students with disabilities (New America Foundation, 2011). The same percentage was covered in FY 2007 and this is less than what was covered in FY 2006 when federal funding paid 17.7 percent of the cost. In order to fully fund FY 2008, approximately $14.54 billion more than what was actually appropriated would have been needed. Jones et al. (2004) explain that the state funding formula authorizes a maximum allotment per disabled child served of 40% of the national average per pupil expenditure (APPE) and that annual appropriations have never been sufficient to provide states the current maximum allotment. Unfortunately, the controversy surrounding the lack of full funding is ongoing and local education agencies are strapped with the burden of making up the difference using general funds; therefore, it is imperative that school districts get the most out of tax-payer dollars when it comes to providing services for students with disabilities. Leadership that allows for the emergence of creativity from the bottom-up is needed to ensure resourcefulness.

Better models of leadership are needed to help districts implement the assessment guidelines of the No Child Left Behind Act (NCLB, 2001) while also fulfilling the legal
requirements of IDEA to provide meaningful education benefit to students with disabilities. The NCLB is the most recent incarnation of the Elementary and Secondary Education Act of 1965 and was founded on four pillars: stronger accountability, greater local control for states and communities, use of educational methods based on scientific research, and increased parental choice (Bouck, 2009). The ultimate goal of NCLB is a 100% proficiency rate for all students in reading and math by 2013-2014 as measured by state determined standardized tests. Likewise, the reauthorization of IDEA also “emphasized access for students with disabilities to the general curriculum and participation in general large scale assessments, in alignment to NCLB” (Bouck, 2009, p. 3). Unfortunately, NCLB does not appear to leave room for a functional curriculum when determined appropriate by Individualized Education Program (IEP) teams for students with severe disabilities or secondary students with mild mental impairment.

Patton, Cronin, Bassett, and Koppel (1997) describe the components of a functional curriculum to include the functional application of skills from major academic subject areas, vocational education, community involvement, daily living skills, finances, independent living, transportation, social/relationships, and self-determination. However, due to the assessment mandates of NCLB, there are cases in South Carolina where certificate track secondary students with mild mental impairment are sitting beside college bound diploma track students in courses like physical science and biology because state assessment guidelines require access to the general curriculum and end of course examinations for all students except those eligible for alternate assessment (1%). Bowen and Rude (2006) explain “It has been argued that focusing on a set curriculum
and linking it to state high-stakes assessments narrows the curriculum to include only core academic content thus excluding other curriculum areas that may be as important to students with severe disabilities” (p. 25). A researcher and commenter to a progress report on the implementation of NCLB and IDEA conducted by the National Council on Disability stated “NCLB should have more varied testing and accountability standards for students with disabilities given the differences in disabilities. NCLB should be more sophisticated in its requirements for proficiency, not just one standard” (National Council on Disability, 2008, p. 66). Another commenter and administrator made this statement with regard to setting expectations for students with disabilities:

…some have real problems because of their disability, and we negate the importance of their IEP and individualized learning process because we are trying too hard to get them to pass the NCLB tests. Even their parents know they will never pass the grade-level test, and the parents just want them to learn some important life skills. (National Council on Disability, 2008, p. 67)

Furthermore, some believe the focus on accountability has taken attention away from improving other areas that can lead to better educational outcomes for students with disabilities. Another commenter argued “States, districts, and schools are still engaged to a large extent in compliance with the requirements of NCLB, which is preventing them from focusing their efforts on instructional change and teacher development” (National Council on Disability, 2008, p. 65). A leadership model that seeks to enable networking and collaborative problem-solving will help regular and special education administrators
work together to create an environment conducive to meeting the high, and arguably conflicting, expectations of NCLB and IDEA.

In summary, the persistent social, financial, and political problems paramount in special education have a better chance of being resolved if current entity-based perspectives of leadership are replaced with a leadership framework that identifies leadership as a process and not as a person. Complexity Leadership Theory (CLT) is a process oriented framework for leadership “that enables the learning, creative, and adaptive capacity of complex adaptive systems (CAS) in knowledge-producing organizations or organizational units” (Uhl-Bien, Marion, & McKelvey, 2007, p. 304) and is the theoretical construct on which this study is based.

**Statement of the Problem**

Heifetz (1994) describes adaptive challenges as problems that require new learning, innovation, and new patterns of behavior. Without question, school districts are knowledge producing organizations faced with adaptive challenges. In particular, the school district for which this study is focused is faced with the adaptive challenge of meeting state defined performance targets to meet the accountability requirements of NCLB. South Carolina administers the Palmetto Assessment of State Standards (PASS) test to all South Carolina public and charter school students in grades three through eight. PASS results are used to determine the standard of Adequate Yearly Progress or AYP at the school, district and state levels. In order to earn “met” for AYP purposes, each school and district must earn met on three overall objectives for all subgroups: performance;
participation; and, attendance rate for elementary and middle school levels or graduation rate for high school. The subgroups used to determine AYP include the following: all students, White, African-American, Asian/Pacific Islander, Hispanic, American Indian/Alaskan, limited English proficient, subsidized meals, and disabled. Since the beginning of public reporting in 2003, neither the state nor the focus district for this study has earned the status of met for AYP purposes. More specifically, in 2010, the focus district earned met for AYP for the three overall areas for all subgroups except students with disabilities. In order to earn met for this subgroup, all 18 schools would have needed to earn met in English Language Arts (ELA) and math for the subgroup of students with disabilities. Table 1.1 provides a summary of AYP results for all schools in the focus school district. Of the 18 schools, 10 were reported as having an insufficient sample size to be determined as having a subgroup with students with disabilities. Of the remaining eight schools, three met AYP for both ELA and math for their subgroup of students with disabilities. The other five did not earn met due to not meeting the performance standard for either ELA or math or both for students with disabilities. If these five schools had earned met for their disability subgroup, then the focus district as a whole would have earned met for AYP—a target that has not been reached for all eight reporting periods.
Table 1.1

Summary of Adequate Yearly Performance (AYP) for All Schools in the Focus District

<table>
<thead>
<tr>
<th>School</th>
<th>AYP Status Earned</th>
<th>ELA</th>
<th>Math</th>
<th>Reason for Not Making AYP Other Than Performance of Students with Disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES1</td>
<td>Not Met</td>
<td>Yes</td>
<td>Yes</td>
<td>• Did not test at least 95% of disabled population</td>
</tr>
<tr>
<td>ES2</td>
<td>Not Met</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>ES3</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
<tr>
<td>ES4</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
<tr>
<td>ES5</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
<tr>
<td>ES6</td>
<td>Met</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>ES7</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
<tr>
<td>ES8</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
<tr>
<td>ES9</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
<tr>
<td>ES10</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
<tr>
<td>IS</td>
<td>Met</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>MS1</td>
<td>Not Met</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>MS2</td>
<td>Not Met</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>MS3</td>
<td>Not Met</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>MS/HS</td>
<td>Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
</tr>
</tbody>
</table>
Table 1.1

Summary of Adequate Yearly Performance (AYP) for All Schools in the Focus District (Continued)

<table>
<thead>
<tr>
<th>School</th>
<th>AYP Status Earned</th>
<th>ELA</th>
<th>Math</th>
<th>Performance Objective Met for Disabilities Subgroup</th>
<th>Reason for Not Making AYP Other Than Performance of Students with Disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS1</td>
<td>Not Met</td>
<td>No</td>
<td>No</td>
<td></td>
<td>• Graduation Rate • Performance in ELA and Math for All Students, African-Americans, and Subsidized Meals subgroups</td>
</tr>
<tr>
<td>HS2</td>
<td>Not Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
<td>• Graduation Rate • Performance in ELA and Math for Subsidized Meals subgroups</td>
</tr>
<tr>
<td>HS3</td>
<td>Not Met</td>
<td>I/S</td>
<td>I/S</td>
<td></td>
<td>• Graduation Rate • Performance in ELA and Math for Subsidized Meals subgroups and Performance in Math for All Students</td>
</tr>
</tbody>
</table>

Note: ES=elementary school; IS=intermediate school (grades 4 and 5); MS=middle school; MS/HS=middle and high school combined; HS=high school; I/S=insufficient sample size for subgroup.

Considering that little to no research has been conducted on the applicability of CLT in the educational arena, exploring how complexly interactive agents respond to adaptive challenges in the presence of a CLT model may provide a source of valuable information for educational leaders, especially if the outcome results in enhanced learning, innovation and creativity as purported by complexity theorists (Chiles, Meyer, & Hench, 2004; Lichtenstein et al., 2006; Marion & Uhl-Bien, 2011; Uhl-Bien et al., 2007).
Purpose of the Study

The purpose of this study was to examine the interaction of agents working in a public school district when provided with an adaptive challenge (reducing the achievement gap of students with disabilities) and CLT training in the context of enabling leadership behaviors (i.e., fostering heterogeneity, interaction, interdependency, conflicting constraints, information flow, and a culture of expectation). A second purpose was to identify the mechanisms that emerged during participant interaction that either fostered or suppressed adaptability and creativity. A third purpose of the study was to examine the influence of artifacts (e.g., bureaucratic controls and institutional pressures) in the presence of complex group dynamics and how they influenced adaptability and creativity. In summary, this purpose of this study was to identify emergent, interactive dynamics that resulted in adaptive outcomes and solutions to an adaptive special education problem in one geographical area of a school district.

Significance of the Study

The significance of this study is vital as regular and special education administrators are continually faced with various adaptive challenges for which resolutions require learning, new knowledge, and creativity. Although there have been empirical studies examining the emergence of self-organization, creativity, and innovation within the framework of CLT in organizations such as industry, churches, and the expansion of cities (Chiles et al., 2004; Koch & Leitner, 2008; Plowman, Baker, et al., 2007; Plowman, Solansky, et al., 2007), there has been little to no research examining
the effects of enabling leadership in education settings. Therefore, the results of this study would extend current CLT research beyond the business sector and could prove extremely valuable to education administrators as practitioners continually faced with persistent social, financial, and political problems in their districts.

The results of this study are timely as the acceptable standards for student performance in South Carolina are increasing across time and the bar of accountability for making AYP will increase significantly in the 2010-2011 school year. The South Carolina Education Accountability Act (EAA) was amended in May of 2008 to provide for the development of a new statewide assessment program as mandated in Chapter 18, Title 59 of the 1976 Code. This program, known as the Palmetto Assessment of State Standards (PASS), replaced the Palmetto Achievement Challenge Tests (PACT) and was first administered in the spring of 2009. The performance levels are categories that reflect the overall knowledge and skills exhibited by students on each test. The PACT had four performance level categories identified as below basic, basic, proficient, and advanced. The current PASS has three performance level categories identified as not met, met, and exemplary. From school year 2007-2008 to 2009-2010, the target for making AYP in the area of ELA was at least 58.8 percent scoring proficient and above (2008) or scoring met and exemplary (2009 and 2010). The target for math was at least 57.8 percent scoring proficient and above (2008) or scoring met and exemplary (2009 and 2010). Beginning school year 2010-2011, the bar will be raised significantly requiring at least 79.4 percent of all students and students in subgroups to score met or exemplary on the PASS ELA for the purpose of calculating AYP in the area of student performance.
At least 79 percent of all students and students in subgroups will need to score met or exemplary in math to achieve met status for student performance. Considering the percentage of students with disabilities who earned met or exemplary on the 2010 PASS administration, only two of the 18 schools in the focus district will earn met in 2011 in ELA and none will earn met in the area of math under the new bar for accountability (i.e., if all schools had a sufficient sample size to form a sub group in the area of students with disabilities).

This study is also significant as preparation programs have been historically ineffective in providing future general and special education administrators the training needed to successfully and confidently address special education matters (McHatton, Boyer, Shaunessy, & Terry, 2010; DiPaola & Tschannen-Moran, 2003; Wakeman, Browder, Flowers, & Ahlgrim-Delzell, 2006). A study conducted by Angelle and Bilton (2009) revealed the following:

…recent graduates of principal preparation programs felt no more comfortable with special education than graduates of fifteen or more years. This finding suggests that principal preparation programs have failed to address an area pertinent to the success of novice principals, that is, improving the knowledge base in special education issues. (p. 8)

Wigle and Wilcox (2002) surveyed 240 special education administrators with regard to their perceptions of their own level of competency in each of the Council for Exceptional Children’s (CEC’s) standards for administrators of special education. Alarmingly, participants reported feeling highly skilled in less than half of the standards.
Furthermore, Voltz and Collins (2010) contend that in order to be prepared for leading in the 21st century, special education administrators “…need new knowledge and skills to rise to the challenge of facilitating the successful inclusion of diverse students with disabilities in standards-based classrooms” (p. 72). The results of this study may prove valuable for practitioners of general and special education administration by revealing the benefits of additional training in Complexity Leadership Theory.

**Definition of Key Terms**

The following terms are used throughout this study:

- *Complex Adaptive Systems (CAS).* Neural-like networks of interacting, interdependent agents who are bonded in a collective dynamic by a common need (Cilliers, 1998; Holland, 1995; Langston, 1986; Marion, 1999).

- *Complexity.* Refers to CAS dynamics that result from a rich, evolving interaction of simple elements responding to the limited information with which each of them is presented (Cilliers, 1998).

- *Complexity Leadership Theory (CLT).* A leadership paradigm that focuses on enabling the learning, creative, and adaptive capacity of complex adaptive systems (CAS) within a context of knowledge-producing organizations (Uhl-Bien et al., 2007). It seeks to enable Complex Adaptive System (CAS) dynamics within larger organizing frameworks (e.g., bureaucracy). It recognizes three broad types of leadership:
- **Adaptive Leadership.** Refers to adaptive, creative, and learning actions that emerge from the interactions of CASs as they strive to adjust to tension (e.g., constraints or perturbations). It is an informal emergence dynamic that occurs among interactive agents (CASs) and is not an act of authority.

- **Administrative Leadership.** Refers to the actions of individuals and groups in formal managerial roles who plan and coordinate activities to accomplish organizationally-prescribed outcomes in an efficient and effective manner. It is the act of managing systems and structures to drive business results.

- **Enabling Leadership.** Acts in interface between adaptive and administrative leadership to create the leadership climates and complexity conditions necessary for the adaptive function.

- *Complexity Science.* The study of the behavior of large collections of simple, interacting units, endowed with the potential to evolve with time (Coveney, 2003, p. 1058).

- *Complex System.* It is described as “one whose component parts interact with sufficient intricacy that they cannot be predicted by standard linear equations” (Levy, 1992, p. 7).

- *Context.* “Unplanned and uncontrolled mechanisms that emerge naturally among interactive, adaptive agents acting in situations” (Uhl-Bien & Marion, 2009, p. 638).
• **Emergence.** The interaction and exchange of information between organizational members or lower level system participants that occurs without coordination from a central figure and results in unintended changes at higher levels within and beyond an organization (Johnson, 2001; Lichtenstein, Dooley, & Lumpkin, 2006; Lichtenstein & Plowman, 2009).

• **Entanglement.** Describes a dynamic relationship between the formal top-down, administrative forces (i.e., bureaucracy) and the informal, complexly adaptive emergent forces (i.e., CAS) of social systems (Uhl-Bien et al., 2007).

• **Mechanisms.** “A set of interacting parts—an assembly of elements producing an effect not inherent in any of them” (Hernes, 1998, p. 74).

• **Network Dynamics.** The contexts and mechanisms that enable adaptive leadership (Uhl-Bien et al., 2007).

• **Nonlinearity.** A change in a causal agent does not necessarily yield a proportional change in another agent (Uhl-Bien & Marion, 2009).

• **Social Dampening.** A phenomenon that occurs when previously unrestrained creative systems are influenced by constraining rules, policies, or regulations and respond in a way that results in an increased dynamic response to those pressures (e.g., working around the constraints, identifying alternate strategies, or neutralizing the constraining regulations) (Marion, 2012).
- **Storytelling.** Acts as a reference signal in recurrent feedback loops and helps guide adaptation in a system. It also facilitates information flow that provides a source of interconnectedness among organizational agents and a structure for knowledge flows across an organizational system (Boal & Schultz, 2007; Uhl-Bien & Marion, 2009).

**Theoretical Framework**

The framework surrounding this study is that of Complexity Leadership Theory (CLT). CLT describes an entanglement of administrative leadership, adaptive leadership and enabling leadership that results in innovation, learning, adaptability and new organizational forms (Uhl-Bien & Marion, 2009). Uhl-Bien and Marion (2009) constructed a meso model illustrating the CLT framework in bureaucratic organizations presented in Fig. 1. The top cone of the figure represents an organization comprised of administrative, enabling and adaptive leadership functions. The arrows below the cone separate these three forms of leadership to show how enabling leadership works to coordinate administrative and adaptive leadership functions. The circles represent Complex Adaptive Systems (CAS) comprised of interacting and interdependent agents responsible for the adaptive function of leadership. Adaptive leadership is not an entity-based characteristic of a person in a position of leadership. It is, rather, an interactive process whereby knowledge, action preferences, and behaviors change which in turn stimulates increased adaptability in the system (Lichtenstein et al., 2006). Adaptive leadership is “an emergent, interactive dynamic that produces adaptive outcomes in a
It emerges non-linearly from the spaces between agents as they struggle over conflicting needs, ideas, or preferences and results in new understanding or learning (Uhl-Bien et al., 2007). In CLT, the emergence of learning and creativity is proposed to be driven by the adaptive function which involves the interaction of adaptive leadership and CAS dynamics (Uhl-Bien & Marion, 2009). The model in Figure 1.1 shows how the enabling leadership function works to foster the necessary conditions to enhance the adaptive leadership function. It also works to integrate the outcomes of emergence (i.e., innovation, new products, new processes, etc.) back into the formal administrative system. The cone in Figure 1.1, representing the administrative leadership function, shows three levels of bureaucracy at work in organizations: executive, organization and production. Administrative leadership occurs in typical managerial roles to provide the structure within which complex dynamics take place by structuring tasks, engaging in planning, building vision, allocating resources needed to achieve goals, and by managing tension and organizational strategy (Uhl-Bien et al., 2007). Enabling Leadership works to catalyze the conditions in which adaptive leadership can thrive and manages the entanglement between bureaucratic (administrative leadership) and the emergent (adaptive leadership) functions of an organization (Uhl-Bien et al., 2007).
Figure 1.1

Research Questions

The following research will explore answers to these questions:

1. **How do interactive agents from varying backgrounds (i.e., general and special education, administration, and guidance) and grade levels (PreK-12) respond to adaptive challenges under conditions of enabling leadership?**

2. **What mechanisms emerge within complex interactive groups that foster adaptability and creativity?**

3. **How do artifacts (e.g., bureaucratic controls, accountability regulations, institutional pressures), in the presence of complex group dynamics, influence adaptability and creativity?**

Limitations

The findings of this action research study are limited and cannot be generalized to an entire population due to the qualitative methods used to collect and analyze data. The bounded system of this study was limited to one geographical area of a moderately sized school district (total population estimated at 10,650) and included one high school, one middle school, one intermediate school (fourth and fifth grades only) and three elementary schools.
**Delimitations**

The method of analysis for this study required observations of participant interactions collected via audio and video recordings. Due to the large sample of data collected over three phases of small group and whole group work sessions in addition to individual semi-structured interviews, only 13 participants were included. Furthermore, only one geographical location out of four within a moderately sized district was selected for participation so the outcomes could be compared to the other geographical locations that did not participate at a later date.

**Assumptions**

This study recognized the following assumptions: (a) the selected participants contributed to the best of their ability during the work group sessions, did not withhold ideas for fear of psychological safety, and treated other members of their group with respect for the purpose of encouraging an open flow of information; (b) the selected participants responded to the structured interview questions accurately and indicated their perceptions regarding group interaction dynamics; (c) the data collected measured group interaction dynamics, described how complexly interactive agents responded to adaptive challenges, and described the emerging mechanisms that fostered and suppressed adaptability and creativity; and (d) the interpretation of the data accurately portrayed the perceptions of the participants.
Organization of the Study

The research of this study is presented in five chapters. Chapter one includes the introduction, purpose of the study, social injustices in special education, funding special education, political challenges, research questions, definition of key terms, theoretical framework, limitations and delimitations, significance of the study, and organization of the study.

Chapter two presents a review of the literature pertaining to CLT including the results of recent empirical studies. Chapter three describes the case study methodology used for this study and includes a description of the bounded system, participants, data collection, and data analysis processes. Chapter four presents the findings of the research including the themes identified during coding and analysis and it provides the answers to the research questions. Finally, chapter five provides a summary of the study in entirety, discusses the findings, suggests implications of the findings for theory and practice, and offers recommendations for future research and concluding remarks.
CHAPTER TWO
REVIEW OF LITERATURE

This chapter provides a conceptual review of historic leadership theories and rationale for the exercise of complexity leadership in the increasingly complex educational arena. Sources were obtained through database searches (i.e., Expanded Academic, Business Source Premier, Education Research Complete, Educator’s Reference Complete, and PsycInfo), recommendations from dissertation committee members, and “snowballing” as I found other articles and sources applicable to my research while reading. Search terms entered individually and in combinations included complexity leadership theory (CLT), complexity theory, leadership, adaptive leadership, complexity science, emergence, and self-organization. Searches were limited to scholarly peer-reviewed articles with full-text.

This literature review examines leadership theories categorized under two domains: heroic leadership and non-heroic leadership. First, I present forms of heroic leadership and explain why they are not effective in our current knowledge era. Then I describe non-heroic forms of leadership and provide rationale for a collective-based approach to leadership. Finally, I propose complexity leadership as a vehicle for transporting organizations to enhanced creativity and innovation.

Although the primary purpose of this action research study is to identify the emergent, interactive dynamics that result in adaptive outcomes and solutions to an adaptive special education problem concerning statewide accountability measures, an ancillary purpose is to advance complexity leadership theory and practice as a viable tool
for educational leaders. Administrators of education are constantly being asked to do more with less despite the current unstable economic climate. Accountability measures are omnipresent. The public education system is increasingly in competition with charter schools, private schools, and online for-profit education companies. A fundamental assumption of organizational theory and practice is that our world is somewhat predictable and ordered (Snowden & Boone, 2007) and there are prescriptive measures leaders can take to effectively address complex problems. This is true up to a certain point. As environmental conditions become more complex, the number of correct solutions available diminishes as we enter the realm of “unknown unknowns” (Snowden & Boone, 2007, p. 74) where leaders must patiently wait for the correct path to be revealed. Complexity leadership theory is a leadership paradigm that focuses on allowing the learning, creative, and adaptive capacity of complex adaptive systems (CAS) to unfold and reveal the best way of handling complex problems (Uhl-Bien et al., 2007).

**Heroic Leadership Theories**

The heroic leader is described as “…the proactive person who charges out front and valiantly leads his or her troops to ‘victory’ over organizational goals” (Marion, 2002, p. 337). This type of leader is perceived as a visionary possessing the ability to foster widely accepted and clearly communicated organizational mission statements. Examples of heroic leaders include Winston Churchill, Franklin Roosevelt, and Dr. Martin Luther King. Although heroic leadership may seem like the answer to any and all
organizational woes, Corwin (1987) argues that change is a complex process and simply being a good leader is not enough. He adds that while heroic leaders tend to be outstanding communicators and excellent visionaries, their management skills may be inadequate (Corwin, 1987). Furthermore, timing is critical to the heroic leader. If they single-handedly attempt to tackle issues that aren’t ripe their efforts may be for naught. Marion (2002) explains that “heroic leadership often succeeds only because conditions allow it to succeed” (p. 338).

The following leadership theories are more about heroic forms of leadership centered on the traits and actions of leaders and less about the processes and contexts of leadership espoused by complexity theorists.

**Educational Leadership in the Industrial Age**

In 1925, Calvin Coolidge declared “The business of America is business”. Organizational success during the Industrial Age was typically defined by the acquisition of assets. Callahan (1962) explains that American society and education after 1900 were affected by industrial capitalism and monetary gain in two primary ways: business and industry were considered prestigious and influential and America became obsessed with business-industrial practices and values. These business values greatly impacted the governance of public schools as superintendents were expected to run districts like businesses.

In 1905 at the annual meeting of the National Education Association, the first topic of discussion was the comparison of modern business methods with educational
methods. During his presentation, George H. Martin (Martin, 1905), the first speaker and secretary of the Massachusetts State Board of Education, stated “the contrast between modern business methods and the most modern methods in education is so great as to suggest some searching questions. In the comparison, educational processes seem unscientific, crude, and wasteful” (pp. 320-321). Comments like these spurred on changes to the structure and supervision of educational organizations to more closely resemble that of businesses. Taylor’s (1967) principles of Scientific Management became the blueprint for efficiency as he declared the remedy for inefficiency “…lies in systematic management, rather than in searching for some unusual or extraordinary man” (p. 7). Leadership in the industrial age was about productivity. Bureaucracy was the preferred organizational style and authoritarian or top-down leadership was the norm.

Since the industrial age, a number of traditional leadership theories and styles have been presented and practiced by educational leaders. For example, according to Machine theorists, leaders are charged with establishing organizational goals and seeing them through to fruition. In order to accomplish this, leaders must possess certain traits to be effective. Stogdill (1948) analyzed the characteristics of 124 individuals considered leaders in their field and ultimately identified six categories of traits possessed by effective leaders: capacity, achievement, responsibility, participation, status, and situation. Machine theorists believe these traits cannot be developed. You are either born a leader or you are not.

In contrast, Human Relations theorists contend good leaders are successful because of their ability to foster cooperation, fulfill human needs, and provide for
personal growth of subordinates (Marion, 2002). According to Hackman and Oldman (1976) there are five actions leaders can take to foster positive working conditions: (1) use worker’s talents and skills, (2) inform workers how their contributions impact overall mission of the organization, (3) show them how their work impacts the lives of other people, (4) provide some autonomy in decision making, (5) and acquire information about their performance.

Marion (2002) explains that the Structuralists’ perspective on leadership “emphasizes tension between organizational rationality and productivity on the one hand, and irrational social needs structures of workers on the other” (p. 74). Reducing this tension leads to improved organizational outcomes. Chester Barnard (1938) proffered aligning organizational goals with workers’ goals as much as possible thereby reducing the chasm between rationality and irrationality in the system.

Finally, Contingency theorists contend the leader is responsible for monitoring and changing an organization’s structure in an attempt to keep it in sync with environmental conditions (Marion, 2002). If the environment is stable and predictable then minimal supervision is required. Fred Fiedler (1973) identified three contingencies that can be used to guide appropriate leadership behaviors: (1) leader-member relations, (2) task structure, and (3) position power. Combined optimally, these contingencies create a favorable situation for heroic leadership defined as “the degree to which the situation enables the leader to exert his influence over his group” (Fiedler, 1967, p. 13).

While traditional leadership models may have been successful for most bureaucratic businesses, the challenges faced by our public education system today are
more complicated and complex than those presented during the Industrial Age. According to Uhl-Bien and Marion (2009), traditional leadership models are insufficient for understanding the ever-changing contextual environment of organizations; therefore, a new collective perspective of leadership grounded in complexity theory is needed. Marion and Uhl-Bien (2007) explain how complexity theory is in direct contrast with bureaucratic styles of management as it “focuses on patterns of interaction among the members (or agents) of a complex adaptive system and how these interactions generate adaptability and new (emergent) ideas and structures” (p. 276). Building upon the foundation of complexity science, Complexity Leadership Theory (CLT) is a framework for leadership that enables the learning, creative, and adaptive capacity of complex adaptive systems (CAS) in knowledge-producing organizations or organizational units (Uhl-Bien et al., 2007). Qualitative research in the form of case studies is needed to provide a rich description of what happens when enabling leadership is practiced in a bounded system over time. Presently, there are more theoretical papers about complexity and creativity than research papers (Marion, 2011).

**Creativity and Innovation**

Creativity and innovation are essential in our knowledge producing era. Meeting the expectations of No Child Left Behind (NCLB, 2001) and local accountability mandates will require novel ideas, processes, and approaches to our persistent educational dilemmas. It is important to define creativity and innovation when considering the research proposed in this paper as the emergence of creativity and
execution of innovation are two distinct phenomena. Mumford and Gustafson (1988) define creative behavior as “the production of novel solutions to significant social problems” (p. 28). Innovation differs from creativity as it refers to “the implementation of ideas at the individual, group, or organizational level” (Shalley & Gilson, 2004). As such, creativity might be considered a requirement for subsequent innovation. Although there has been extensive entity-based research on creativity, Marion (2011) asserts that little is known about group dynamics and how they impact the emergence of creativity. The research presented in this paper investigates collective creativity where particular interactions of agents yield creative insights; however, those insights cannot be attributed to particular individuals (Hargadon & Bechky, 2006).

**Non-Heroic Leadership**

As discussed earlier, heroic leadership theories are concerned about power and control exercised by leaders to get followers to act a certain way. Non-heroic leadership is about creating conditions where adaptive change and learning can flourish. Schreiber and Carley (2006) explain that tapping collective intelligence “moves the paradigm away from the single “heroic” leader who has all the strategic answers to one where the responsibility for learning and reasoning about strategic change falls on the collective organization” (p. 63).
The Knowledge Era

Our new economic age can be described as a competitive landscape driven largely by globalization and the technology revolution (Uhl-Bien et al., 2007). Shreiber and Carley (2006) explain that our postmodern knowledge economy is characterized by uncertainty, turbulence, and rapid continuous change. In order to survive, organizations have had to increase the rate at which they learn (Bettis & Hitt, 1995). This is also true in the educational realm. For example, Christensen, Horn, and Johnson (2008) predict disruptive innovation will change the way the world learns. They contend current monolithic—all students taught the same thing at the same time in the same way—public school methods will be disrupted by online modular education for sale by private companies. In other words, public education in the United States is at risk of going out of business if educators are incapable of creating innovative student-centric classrooms rich with technology that are able to intrinsically motivate students. The knowledge era requires that traditional theories of leadership be replaced with one capable of enabling the learning, creative, and adaptive capacities of individuals in knowledge producing organizations.

Problems with Entity-Based Approaches to Leadership

Uhl-Bien (2006) explains that entity perspectives assume individual agency whereby individuals are the entities “with a clear separation between their internal selves and external environments” (p. 656). Leader-Member Exchange Theory (LMX) is an example of an entity-based approach to leadership because it focuses on the properties
and behaviors of people as they engage in an interaction or exchange sequence process (Uhl-Bien, 2006). Hollander’s Theory (1964) is another example of an entity-based approach to leadership. According to Hollander & Julian (1969) leadership is a process whereby the leader has influence over followers who believe rewards will be granted for desired behaviors. Like LMX Theory, Hollander’s Theory describes processes that are components of individual perceptions and cognitions of participants exchanging communication (Uhl-Bien, 2006). Hollander (1995) clarifies that “a major component of the leader-follower relationship is the leader’s perception of his or her self relative to followers, and how they in turn perceive the leader” (p. 55).

According to Uhl-Bien (2006), entity-based theories of leadership are limited as they have “done little to highlight the processes by which relationships develop to produce effective leadership” (p. 666). Rousseau (1998) adds to the limitations of entity-based theories as he reminds us that we know little about the actual processes of LMX. Similarly, Marion (2012) agrees that entity-based studies of creativity fail to identify how creative outcomes are influenced by the interaction of individuals and groups.

Need for a Collective-Based Approach to Leadership

The complex problems faced by educational institutions are far too challenging to be solved by a few brains at the top. Improving the graduation rate of high school students and ensuring that every student is reading on grade level, particularly students with disabilities, is a daunting charge. Heifetz et al. (2009) propose that the responsibility for leadership be evenly distributed throughout organizations. To do this,
leaders must disseminate information to organizational members and mobilize everyone to generate and implement solutions (Heifetz et al., 2009).

The need for a collective-based approach to leadership is further supported by Hamel’s (2009) report of a two-day workshop organized by Management Lab where 35 management scholars and practitioners met to develop an agenda that would reinvigorate management and leadership in the twenty-first century. Twenty-five moon shots [emphasis added] were proposed of which several were collaborative in nature. For example, it was recommended that management systems “reflect on the ethos of the community and citizenship, thereby recognizing the interdependence of all stake holder groups” (pp. 92-93), “rely more on peer review and less on top-down supervision” (p. 93), and “create an environment where every employee has the chance to collaborate, innovate, and excel” (Hamel, 2009, p. 93). Similarly, Marion (2012) explains that creative collectives foster the outcomes of complexity (i.e., creativity, adaptability, and learning) as they are functions of interaction and interdependency.

**Complexity Theory**

Complexity science is the “study of the behaviour [sic] of large collections of simple, interacting units, endowed with the potential to evolve with time” (Coveney, 2003, p. 1058). According to Koch and Leitner (2008), it is applicable to several fields (i.e., physics, biology, society, and economy) as it explores the dynamics and evolution of complex systems in general. Complexity theorists study the interactive networks of actors and ideas and how they adapt to each other’s needs and differences under
conditions of conflict and interdependence (Marion & Uhl-Bien, 2011). Applying the science of complexity to educational dilemmas can help administrators view issues from a balcony perspective and analyze their interactive dynamics with external organizations (e.g., the state Department of Education, the County Council, other school districts, and business partners) and within their own school district (e.g., School Board, Parent-Teacher Organizations, School Improvement Councils, and individual schools). Snowden and Boone (2007) suggest complex systems present the following characteristics:

- They involve several interacting elements and agents.
- Interactions are non-linear and small perturbations are capable of producing significant change.
- Creative solutions emerge.
- The dynamic whole is greater than the sum of the individual parts.
- The organization’s past influenced the present as they evolved together in an irreversible path.
- They are constantly changing and unpredictable.
- Interacting elements and the organizational system constrain one another.

Marion and Uhl-Bien (2011) explain that an important assumption of complexity is that change is a product of interaction and can occur without any involvement by a central authority. Complexity dynamics (or mechanisms) are considered to be self-organizing as they constitute an emergent process that transpires “without an external designer or the presence of some centralized form of internal control” (Uhl-Bien &
Marion, 2009). Furthermore, Uhl-Bien and Marion (2009) describe complexity dynamics as non-linear and recurrent whereby the past is co-responsible for current conditions.

**Complex Adaptive Systems**

The basic unit of analysis for complexity theory is the complex adaptive system (CAS) which is defined as “open, evolutionary aggregates whose components (or agents) are dynamically interrelated and who are cooperatively bonded by a common purpose or outlook” (Uhl-Bien et al., 2007, p. 5). Holland (1995) explains that CASs are comprised of several agents who operate in a non-linear fashion according to local procedures or rules. Others have described CASs as neural-like networks of interacting agents (Mason, Jones, & Goldstone, 2008; McKelvey, 2001; Wycisk, McKelvey & Hülsmann, 2008). Agents might be individuals, populations, organizations, departments, teams, or even cells. An example of a CAS in an educational setting would be the Parent Teacher Organization (PTO) as it is comprised of individuals who aggregate for the common purpose of improving a school’s culture and student outcomes. PTO members are interrelated and interdependent as they can accomplish more as a group than would be possible as individuals.

An important characteristic of CAS is that their contributions cannot be predetermined as agents, events and ideas interact in unexpected ways producing change. Koch and Leitner (2008) point out that although agents of a CAS “behave according to simple behavioral routines at the individual level; they exhibit complex patterns of
behaviour [sic] at the aggregate level” (p. 217). CAS are important to organizations as they are capable of learning and adapting quickly and solving problems creatively.

In addition to being interrelated and interdependent, Uhl-Bien and Marion (2009) propose that the adaptive function of a CAS “requires conditions of heterogeneity (i.e., fostering appropriate amounts of heterogeneity enables greater complex adaptive behavior)” (p. 643). They explain that heterogeneity is important to complex behavior because “it feeds the bonding and nonlinearity dynamics of complexity” (p. 642) and enhances conflicting constraints which yields increased creativity as participants work around task related conflicts. Heterogeneity catalyzes adaptive behavior by bringing ideological differences and diverse experiences to the same table for consideration (Kauffman, 1993; 1995; cf. Baer & Oldham, 2006; Gregory, 2006; Leung, Maddux, Galinsky, & Chiu, 2008).

**Empirical Studies of Emergence Based on Complexity Science**

The application of complexity science in empirical research of organizations has largely examined the emergence of change. Lichtenstein and Plowman (2009) explain that complexity scientists describe emergence as a process whereby lower level system participants interact outside the coordination of higher level system participants (i.e., administration) and this exchange of information results in unintended change throughout the organization. Table 2.1 provides a summary of empirical research based on complexity science. In each of these cases, emergent outcomes were the product of bottom-up processes versus orchestrated top-down directives.
Chiles et al. (2004) explain how four dynamics of emergence proposed by complexity theory’s dissipative structures model supports the self-organizing logic behind the emergence of Branson, Missouri from a one store, one post office town to a teeming tourist attraction with over six million visitors annually. Plowman and Baker et al. (2007) successfully draw on complexity theory to explain how a dying church, Mission Church, evolved into a homeless ministry providing medical, dental, job training, laundry services, shower facilities and meals to over 20,000 people a year. It all started when a group of young people met for dinner and started talking about an alternative to the Sunday morning traditional service they were not interested in attending. Someone suggested serving hot breakfast to the homeless and the idea took off from there.
Table 2.1

*Empirical Case Studies Relevant to Complexity Science*

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Methodology</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiles et al. (2004)</td>
<td>Narrative, grounded case analysis, longitudinal regression analysis</td>
<td>There are four dynamic mechanisms of emergent self-organization: (1) spontaneous fluctuations that initiate a new social order, (2) autocratic feedback loops amplify and reinforce fluctuations, (3) coordinating mechanisms help stabilize emergent order, and (4) reorganizations of preexisting resources renew the social order, add variety, and fuel positive feedback processes.</td>
</tr>
<tr>
<td>Plowman, Baker, et al. (2007)</td>
<td>Qualitative, grounded theory development</td>
<td>Emergence and self-organization can occur in the context of bounded instability where adaptive tensions or fluctuations are interacting with one another</td>
</tr>
<tr>
<td>Plowman, Solansky, et al. (2007)</td>
<td>Qualitative case study, inductive approach</td>
<td>Enabling leaders disrupt existing patterns of behavior, encourage novelty, and make sense of emerging events for others.</td>
</tr>
<tr>
<td>Koch &amp; Leitner (2008)</td>
<td>Qualitative case study</td>
<td>Self-organizing dynamics strongly influence the front end of innovation. Inventors rely mainly on the support of their colleagues for new product development. Intrinsic motivation was the prime force for self-organized innovation activities.</td>
</tr>
</tbody>
</table>

Plowman, Solansky et al. (2007) conducted a qualitative case study of Mission Church to determine how leaders enable emergent self-organization. They found that the leadership of Mission Church fostered emergence by engaging in three mechanisms: (1) disrupting existing patterns, (2) encouraging innovation, and (3) acting as sensemakers (i.e., interpreting emerging events versus directing them and managing words versus people). Finally, based on their study on new product development (NPD) in the semiconductor industry, Koch and Leitner (2008) contend that self-organization acts to
overcome formal organizational barriers to innovation and is initiated when individuals search for opportunities to innovate without a directive from top-down management.

Empirical research suggests that while emergence is unpredictable, there are actions leaders can take to increase the likelihood of emergent creativity and innovation. Based on their examination of three empirical studies, Lichtenstein and Plowman (2009) propose four behaviors for what they have coined leadership of emergence: (1) disrupt existing patterns by creating controversy and embracing uncertainty, (2) encourage novelty by supporting experimentation and collective work, (3) engage in sensemaking and sensegiving by using creative language and symbols, and (4) stabilize feedback by integrating local constraints.

The results of these empirical studies further support the value of CASs and their ability to be adaptive and creative, particularly in environments characterized by disequilibrium. Uhl-Bien et al. (2007) describe CASs as “unique and desirable in that their heterogeneous, interactive, and interdependent structures allow them to quickly explore and consolidate solutions to environmental pressures” (p. 7). Give them leeway and they will take on tough challenges faced by organizations and come up with viable solutions worth pursuing.

### Complexity Leadership Theory

Complexity leadership theory (CLT) takes complexity science a step further by applying its principles to organizational leadership. Uhl-Bien and Marion (2009) define CLT as “the study of the interactive dynamics of complex systems (CAS) embedded
within contexts of larger organizing systems” (p. 632). While traditional forms of leadership focus on the top-down actions and behaviors leaders can take to exert influence over workers, CLT proposes an entanglement of informal and complexly adaptive forces with formal bureaucratic leadership functions. Child and McGrath (2001) refer to this challenge as the organizational design paradox where leaders must somehow balance the fostering of collective intelligence and innovation with administrative control over efficiency and organizational outcomes. Uhl-Bien et al. (2007) explain the CLT framework “seeks to foster CAS dynamics while at the same time enabling control structures appropriate for coordinating formal organizations and producing outcomes appropriate to the vision and mission of the system” (p. 304). To do this, CLT proposes the entanglement of three forms of leadership: (1) administrative, (2) adaptive, and (3) enabling. While administrative leadership operates at the upper echelon and describes individual leaders, adaptive and enabling leadership behaviors permeate the bureaucratic structure (Uhl-Bien & Marion, 2009) and can occur at any level in an organization through individuals or collectives.

**Administrative Leadership**

Administrative leadership is largely bureaucratic and encompasses typical managerial tasks that are carried out at the middle or upper level echelon (Marion & Uhl-Bien, 2007). Roles and responsibilities of administrative leaders include planning and coordinating activities, advancing an organizational vision, acquiring and distributing resources, managing crises and personnel issues, and implementing organizational
strategies (Uhl-Bien et al., 2007). The administrative leadership role is an important component of CLT as CASs often need upper level support and resources to be able to implement or experiment with their ideas.

**Adaptive Leadership**

Adaptive leadership refers to the creative, adaptive, and learning behaviors of individuals and groups in informal contexts (Marion & Uhl-Bien, 2011). It can occur anywhere in an organization as a result of interaction within and between CASs. Uhl-Bien et al. (2007) explain that although adaptive leadership involves individual people, it does not assign the leadership function to individuals but rather to a complex and dynamic process. They contend it is the proximal source of change in an organization” (Uhl-Bien et al., 2007), p. 306). Uhl-Bien and Marion (2009) propose that adaptive leaders (individuals or collectives) foster the flow of information and the structure of organizational knowledge flow by participating in dialogue that connects the past, present and future through storytelling. They describe this as an ability to look at an issue in the present with a sense of the past and an awareness of the future (Uhl-Bien & Marion, 2009).

**Enabling Leadership**

Enabling leadership is the glue that entangles administrative and adaptive leadership functions. Schreiber and Carley (2006) propose two functions of enabling leadership: (1) to create an environment conducive to collaborative work and adaptive
leadership, and (2) to channel the new ideas and solutions resulting from collective work to the administrative leaders for support and exploitation. Marion (2012) describes several enabling leadership behaviors capable of fostering collective creativity:

- encouraging open interaction of workers throughout the organization;
- creating pressure through interdependency;
- creating an environment of conflicting constraints where agents are in disagreement on how to perform an assigned task;
- embrace diversity in several areas (i.e., skills, preferences, ethnicities, worldviews, visions, and knowledge);
- perceive the organization holistically as a dynamic process versus individual collective parts;
- regulate social dampening by perceiving bureaucratic rules as negotiable;
- embrace uncertainty as a catalyst for creativity;
- inject knowledge into the interactive dynamic and support flow of knowledge;
- enhance the quality and scope of resources available to CASs;
- champion emerging ideas, adaptive behaviors, and leaning initiatives by facilitating the movement of ideas through administrative channels;
- engage in sense-making by looking at organizational conditions from multiple perspectives; and
- support psychological safety conducive to risk-taking.
Marion (2012) reminds us that anyone can take on the role of enabling leadership and effective organizations are complex systems with numerous informal enabling leaders.

**Summary**

Faced with unprecedented uncertainty and continuous change, it is imperative that educational organizations be characterized as resilient and adaptive. Traditional leadership theories and models fail to address the complex nature of our education system and are not capable of guiding administrators effectively through the turbulent and rapidly changing waters of the knowledge era. The purpose of this study is to investigate the outcomes of the application of complexity leadership behaviors within an educational organization as described by CLT. According to Ashby’s Law of Requisite Variety (1956), “Only variety can destroy variety” (p. 207). McKelvey and Boisot (2010) explain “The law holds that for a biological or social entity to be adaptive, the variety of its internal order must match the variety imposed by environmental constraints” (p. 421) and that we can treat variety as a proxy for complexity. In other words, school districts exercising complexity leadership will benefit from tailoring their approach to match the complex challenges confronting them.
CHAPTER THREE

METHODOLOGY

The purpose of this action research study was to explore the answers to the following research questions:

1. How do interactive agents from varying backgrounds (i.e., general and special education, administration, and guidance) and grade levels (PreK-12) respond to adaptive challenges under conditions of enabling leadership?

2. What mechanisms emerge within complex interactive groups that foster adaptability and creativity?

3. How do artifacts (e.g., bureaucratic controls, accountability regulations, institutional pressures), in the presence of complex group dynamics, influence innovation and creativity?

The researcher served as the primary data collection instrument during this action research study which involved participant observation using audio and video recordings and a structured interview with all participants. The methodology used to answer the questions is also presented in this chapter which is organized into seven sections: (a) selection of participants, (b) instrumentation, (c) data collection, (d) data analysis, (e) procedural fidelity, (f) role of the researcher, and (g) ethical considerations.
Selection of Participants

Guidelines provided by Lunenburg and Irby (2008) were used to select 13 participants. For qualitative research, they propose using “from 1 to 20 participants (on the lower end if you are using groups)” (p. 179). Lunenburg and Irby (2008) further explain that “Purposive sampling involves selecting a sample based on the researcher’s experience or knowledge of the group to be sampled” (p. 175). Purposive criterion sampling was exercised in this study as the researcher selected participants for the purpose of creating a heterogeneous complex adaptive system (CAS) based on area of service, grade level of service, and years of experience.

Participants included educators from varying backgrounds (i.e., general and special education teachers, administration, and guidance) and grade levels (i.e., pre-k through 12) representing one geographical area of a moderately-sized school district in South Carolina with an approximate enrollment of 10,600. Three elementary schools (grades preschool through fifth), one intermediate school (grades fourth and fifth), one middle school (grades sixth through eighth), and one high school (grades nine through twelve) participated in the study. The researcher contacted the principal of each participating school, explained the purpose of the study, and explained she would be contacting between one and three individuals from their schools to participate in the study based on their background, area of service and experience. Two of the four principals contacted were invited to participate.

The sample included 11 females and two males representing all six schools in the selected geographical area with experience in education ranging from one to 30 years.
All participants were white except one African-American female. Level of education ranged from a bachelor’s degree to a doctorate degree. Pre-school through high school was represented by educators serving in various roles including general education, special education, guidance counselor, school psychologist, administration, and a district office level director of assessment and evaluation. Table 3.1 describes the participants based on school level and the title of their position.

Table 3.1

Number of Participants Based on School Level and Title of Position

<table>
<thead>
<tr>
<th>School Level</th>
<th>Administration</th>
<th>Guidance or School Psychologist</th>
<th>Special Education Teacher (Itinerant or Resource)</th>
<th>Special Education Teacher (Self-Contained)</th>
<th>General Education Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Intermediate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Middle</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>High</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>District Office</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Educators agreeing to participate were offered 7 hours of Continuing Education Units (CEUs) to be used for renewing South Carolina teacher certification and a $50 gift certificate to a restaurant.
Instrumentation

The primary measurement techniques used in this action research study were observation and individual semi-structured interviews. Observations were collected during three meeting sessions conducted over a 29 day time span and were audio and video recorded with participant approval as evidenced by a signature on the Information Concerning Participation in a Research Study form (Appendix F). The observations were participatory as my role was to serve as the enabling leader to create the contextual conditions that foster complexity mechanisms: heterogeneity, adaptive pressure, information flow, interaction, interdependency, and psychological safety. Observations were transcribed by a transcriptionist who signed a statement of confidentiality (Appendix G).

An interview protocol (Creswell, 2009) (Appendix H) was developed for the semi-structured interview which according to Hitchcock and Hughes (1989) “allows depth to be achieved by providing the opportunity on the part of the interviewer to probe and expand the interviewee’s responses” (p. 83). Probe questions were developed in advance and were asked when the researcher was looking for the interviewee to expand a response. The structured interview questions were worded in a fashion described by Stringer (2007) as grand tour in that they were broad enough to allow participants to respond in their own terms. For example, they were stated in the form of “Tell me about…” or “Describe how….”

As recommended by Partington (2001), the researcher was particularly mindful of the physical context of the interview and the importance of minimizing interruptions and
establishing empathy and rapport. The researcher made an effort to consider the context of the interview and to ensure the interviewee was comfortable and free from distractions by driving to a location selected by the participant at a time that was convenient to each one. Interviews were conducted in an office or a classroom also designated by the participant. When the interviewee was speaking the interviewer limited talking and responded with supportive nods of affirmation. Empathy and rapport were established over the course of the proceeding four weeks or more before the interviews through face-to-face contact at the training sessions and through email communication.

**Data Collection**

Before data collection began, the researcher obtained permission to conduct the study from the district superintendent (Appendix A) and the Clemson University Institutional Review Board (IRB) (Appendix B). Lesson plans were developed for all three training sessions in advance (Appendices C, D, and E) and copies of handouts were prepared including instructions for small group breakouts (Appendix F). The researcher also worked with the district’s Director of Assessment and Evaluation to prepare handouts depicting an estimate of Adequate Yearly Progress (AYP) subgroups for the 2011 Palmetto Assessment of State Standards (PASS) for the geographical area in the district being studied and printed 2010 State Report Cards for each participating school for distribution during phase I of data collection. Signatures indicating informed consent were obtained for all participants (Appendix F). Course registration for certificate renewal hours for participants was applied for and Course Session Attendance Sheets
were printed. Name plates pre-designating each participant to one of three complex adaptive systems or groups were prepared for each work table.

The media center at a middle school in the geographic area being studied was offered by the principal for all three data collection dates. This meeting location was optimal as there were two small conference rooms in the media center that facilitated transition from whole group training to small group breakouts. A camcorder on a tripod, a voice recorder, a poster tablet and markers were placed in each of the conference rooms and in the media center for data collection during each of the three phases. Three 90-minute training and work sessions were held over a 29-day span of time at the middle school. During the three 90-minute meeting times, subjects participated in a whole group training session followed by break-out work sessions. For each of the three break-out work sessions the researcher organized participants into three complex adaptive systems (CAS) or workgroups each comprised of four or five individuals from varying educational backgrounds.

- Group 1 comprised an elementary level principal, an elementary level self-contained special education teacher, a middle school level general education teacher, and a high school level special education resource teacher.

- Group 2 comprised an elementary level special education resource teacher, an elementary level general education teacher, an elementary level guidance counselor, a middle school level principal, and a high school level school psychologist.
Group 3 comprised a pre-school level self-contained special education teacher, a middle school level special education resource teacher, a high school level administrator/general education teacher, and a district office level director of assessment and evaluation.

During the work sessions, each CAS was instructed to discuss the guiding questions and to brainstorm solutions to the adaptive challenge of reducing the achievement gap of students with disabilities in their geographical area. The researcher collected video and audio recordings of the exchange of communication within each of the three work groups and again when the CASs reassembled to present their written responses as a whole group.

Phase I

The researcher met with participants in the media center at the middle school after schools dismissed for the day. As participants arrived, they were directed to refreshments and were asked to sign the course session attendance sheet. One of 13 participants was absent for the first phase of data collection. Participants found their pre-designated seating in a group as identified by name plates on each table. The researcher followed the lesson plan for day one (Appendix C) and opened by introducing herself, explaining the general purpose of all three training sessions, then asked the participants to introduce themselves (i.e., their name, position, the name of their school, and one word they believe their colleagues would use to describe them). Following this activity,
meeting dates and times were determined as a group for the next two phases of data collection.

The researcher led the training by (1) providing a brief history of leadership models used in the industrial era, (2) explaining the framework for complexity leadership theory, and (3) leading discussion of the district’s AYP (adequate yearly progress) status with regard to students with disabilities. She framed the adaptive problem for participants by sharing data which clarified that students with disabilities is the only subgroup for the district that did make AYP as defined by the accountability benchmarks for the state of South Carolina. Before breaking into the three small work groups (CAS), the researcher stressed the importance of psychological comfort, safety, trust, and risk taking (Edmondson, 1999; Marion et al., 2010) during the small group activity by stating that group members were encouraged to share their ideas freely in an atmosphere of respect. Everyone agreed that confidences would not be breached by anyone talking negatively about each other’s participation outside the context of the training and work sessions.

Participants were then directed to form three heterogeneous groups by moving to their designated work areas. Two groups were relocated to the conference rooms in the media center where they could work without distractions. One group remained in the media center. Instructions for small group breakouts were on each work table (Appendix F) and explained how each group was to designate a captain to operate the recording equipment and a scribe for note taking. Participants were directed to discuss the following questions entering their comments on large sticky wall notes:
- Why is the achievement gap of students with disabilities a complex problem?
- What are some of the variables involved?
- What are your initial ideas for improving this gap?
- How can the elementary schools help the middle school?
- How can the middle school help the high school?
- What resources or information do you need in order to generate ideas for addressing this adaptive challenge?

Participants worked in small groups for 30 minutes (or a few minutes longer if needed) while data was collected via video and audio recordings. The researcher visited all three groups at the beginning of the small group activity to make sure the recording equipment was operating and to answer any initial questions. The same person assigned to start the recording devices upon entering the room was also responsible for stopping the devices when their group concluded their discussion. After each group responded to the guiding questions, they reassembled in the media center to take turns sharing their group responses outlined on the large wall notes. Each participant was given a copy of an article to read before the next work session titled Complexity Leadership in Bureaucratic Forms of Organizing: A Meso Model (Uhl-Bien & Marion, 2009). The researcher created a handout summarizing the final thoughts from each group during phase I of data collection listing their initial ideas for addressing the adaptive challenge of closing the achievement gap for students with disabilities (Appendix H) using the large
wall notes drafted by each of the three CAS. This document was emailed to them before the initiation of phase II of data collection.

**Phase II**

Fifteen days after phase I of data collection, the researcher met again with participants in the media center at the middle school after students were dismissed for the day. As participants arrived, they were directed to refreshments and were asked to sign the second course session attendance sheet. One of 13 participants was absent during phase II of data collection who was not the same participant who was absent during phase I. Participants found their pre-designated seating with members from their original group as identified by name plates on each table. The researcher followed the lesson plan for day two (Appendix D) and opened by recapping the last work session and describing the agenda for the next 90-minutes.

The chair of the researcher’s dissertation committee then led two complexity process simulation activities: (1) Swarm, and (2) Interdependency simulation. During the swarm intelligence activity, participants engaged in a game described by Eric Bonabeau (2001) that illustrates how adaptive rules can enhance or hinder adaptive outcomes. The whole group moved out of the media center to a spacious area at an intersection of hallways. Each participant was asked to select two other people in the group but to not reveal their choices. When the game began, participants were asked to begin moving in a way that kept the first person they chose in between him or her and second person they chose. This whole group movement resulted in a tight clustering of
the whole group. The game was replayed but the second time participants were asked to move in a way that kept him or her between their first and second choices. This movement resulted in a more dynamic movement with small, temporary clusters.

For the second activity, interdependency was simulated as participants were given an index card that had Yes written on one side and No written on the other. Participants were instructed to randomly select either the Yes or No and hold up their cards. This resulted in a mix of Yes and No responses. Participants were then asked to connect to another participant using a string until everyone was connected to two other people (i.e., by a string in the right hand and a string in the left hand). The objective of this exercise was to be connected to two other participants displaying the same card and to convince others to change their card to match yours if necessary. This required participants to also consider the cards held by others to determine how changing their answer might impact others. Eventually, all participants reached a grid lock as some were willing to change their cards but others were not. A discussion of dynamic interaction processes, interdependency, and conditions that foster creativity followed the simulation activities.

Before breaking into three small work groups, the researcher reiterated the importance of psychological comfort, safety, trust, and risk taking (Edmondson, 1999, & Marion et al., 2010) during the small group activity then provided each participant a handout of the final thoughts from all the groups drafted during phase I (Appendix H). Participants were then directed to form the same three heterogeneous groups, or CASs, as they did during phase I by moving to their designated work areas. Two groups were relocated to the conference rooms in the media center where they could work without
distractions. One group remained in the media center. Participants were directed to engage in the work group activity as described in the lesson plan for day 2 (Appendix D) while writing their responses on large sticky wall notes:

- Pick one or two of the ideas developed at the last session and develop a plan for implementation. You can combine ideas into one strategic plan.
- The plan must include participants from all levels of the organization (elementary through high school).
- Note the resources needed to implement the plan and how they will be acquired.

Participants worked in small groups while data was collected via video and audio recordings. The researcher visited all three CASs at the beginning of the small group activity to make sure the recording equipment was operating and to answer any initial questions. Since the simulation activities took longer to execute than expected, there was not enough time for each group to present their final responses to the whole group as each CAS worked to finish their responses to the guiding questions right up until time to leave. Each participant was given a copy of an article to read before the next work session titled *Leadership in a Permanent Crisis* (Heifetz et al., 2009). After the second phase of data collection, the researcher gathered the large sticky wall notes from the groups and prepared a document summarizing each CAS’s final plan for reducing the achievement gap of students with disabilities (Appendix I).
Phase III

The researcher met with the participants in the media center at the middle school 14 days after the second phase of data collection. As participants arrived, they were directed to refreshments and were asked to sign the third course session attendance sheet. One of 13 participants was absent during phase III of data collection who was not the same participant absent during phase I or phase II. Participants found their pre-designated seating with members from their original group as identified by name plates on each table.

The researcher followed the lesson plan for day three (Appendix E) and opened by recapping the last work session and describing the agenda for the next 90-minutes. The researcher explained that the groups would meet for about 20 minutes to refine their proposal for presentation to the whole group. Following individual presentations by CASs, the whole group would develop a unified strategic plan for the purpose of reducing the achievement gap of students with disabilities in the geographic area being studied.

Participants were then directed to form the same three heterogeneous CASs as they did during phase I by moving to their designated work areas. Two groups were relocated to the conference rooms in the media center where they could work without distractions. One person from each group turned on the camera and voice recorder upon entering. The researcher visited each group to make sure the recording equipment was working correctly and to answer any questions. Data was collected via video and audio while each CAS refined their final responses.
The three groups then reassembled in the media center and data was collected again via video and audio recordings as each CAS shared their final plan in response to the adaptive problem of closing the achievement gap for students with disabilities. After each group presented, the researcher led a discussion that required all participants to narrow the three responses down to one final plan. Data was again collected during this process via video and audio recording. A final strategic plan for connecting general and special educators for the purpose of improving outcomes for students with disabilities in the geographic area being studied was agreed upon by all participants (Appendix J).

**Phase IV**

After all three training and work sessions were concluded, the researcher communicated with participants individually to schedule a meeting date, time, and location of their choosing to conduct a face to face semi-structured interview. Before the interview, the researcher gave each participant their $50 gift card to a restaurant of his or her choice as a token of gratitude. The researcher then followed an interview protocol (Appendix K) and asked permission to audio record before proceeding. The participants were informed that they did not have to answer any questions that may make them feel uncomfortable and that they could exit the interview at any time. All interviews took between 10 and 20 minutes to conduct.

Data collected during all four phases was transcribed by a paid transcriptionist who signed a letter of confidentiality (Appendix L).
Data Analysis

The transcribed audio and video data collected during the work group sessions and individual structured interviews were analyzed using an eight-step strategy recommended by Lunenburg and Irby (2008):

Strategy One

All transcriptions were read and reread from beginning to end to get a feel for the whole (Creswell, 2007). Corbin and Strauss (2008) suggest “The idea behind the first reading is to enter vicariously into the life of the participant, feel what they are experiencing and listen to what they are telling us” (p. 163). The researcher wrote notes in the margin identifying interesting comments and potential themes during the first and second readings. Transcription errors were corrected as needed.

Strategy Two

The data sources were imported into NVivo 8 software and the researcher’s initial ideas were summarized in the form of memos and reflective notes created in the Project Diary folder (Appendix M). The researcher logged entries chronologically and made reference to annotations linked to specific quotes to remind herself why she chose to sort data into specific nodes.
**Strategy Three**

Data was reduced by developing first and second level tree nodes after the first and second readings. Three first level tree nodes were selected to correspond with my three specific research questions (i.e., adaptive leadership, influence of artifacts, and mechanisms). The preliminary second level nodes were developed based on my readings about complexity leadership theory and my expectations for identifying characteristics (i.e., adaptability, enabling leadership, entanglement, information flow, idea emergence, and learning) and mechanisms (i.e., attractors, bonding, conflicting constraints, patterning of attention, and storytelling). Tree nodes for barriers were identified as the researcher analyzed the transcripts.

**Strategy Four**

Coding involves identifying concepts from raw data. Corbin and Strauss (2008) define concepts as “Words that stand for ideas contained in data…Concepts are interpretations, the products of analysis” (p. 159). Data was sorted into coherent themes or concepts as I read through my transcripts a third time and coded specific references into my preliminary first and second level nodes. As I read, I also “free-coded” by creating additional secondary nodes and free nodes when I ran across an idea that did not fit into the existing nodes but needed to be coded as it was interesting or seemed notable.
Strategy Five

Once I determined my overall themes or nodes, I assigned each a color code using the coding strips in NVivo 8. Each reference entered into the nodes was a quotation from one or more participants during the data collection process. In addition to assigning colored coding stripes, I also hand-coded the nodes on the hard-copies.

Strategy Six

This process was continued for each theme or node. Since I created additional nodes while coding during the third reading I found it necessary to code the transcripts a second time from the beginning to make sure I entered all pertinent references from all collected transcripts. During the second re-coding, I re-read the transcripts a fourth time while watching the video without referring to preliminary coding in attempt to determine if my second coding would match the first. I noted the number and categories of new codes added and deleted during this check for self-reliability process.

Strategy Seven

Each first and second level node and free nodes were analyzed to determine if third-level nodes were needed. Those identified were also color coded using the coding strips in NVivo 8. Sufficient data was collected to reach conceptual saturation for the purpose of developing each node fully.
**Strategy Eight**

Member checks were conducted by giving participants a copy of their transcribed individual semi-structured interview and asking them to read it for accuracy and to identify any comments they felt may reveal their identity so those entries could be revised. Additionally, participants were given a list of the themes used in the coding process along with corresponding definitions and examples of references and were asked to provide feedback on the researcher’s interpretation of the themes. Lastly, participants were provided with models derived from the data (figures 4.1 and 5.2) and corresponding written summaries and were asked to provide feedback and to seek clarification for any questions they may have.

**Procedural Fidelity**

Stringer (2007) explains that “Rigor in action research is based on checks to ensure that the outcomes of research are *trustworthy*—that they do not merely reflect the particular perspectives, biases, or worldview of the researcher” (p. 57). The researcher considered the following guidance provided by Stringer (2007) to help herself and the participants trust the reliability of the research process used in this study:

**Prolonged Engagement**

Participants were provided with extended opportunities to “explore and express their experience of the acts, activities, events, and issues related to the problem being investigated” (Stringer, 2007, p. 58) over a period of time between 50 and 83 days.
(depending on when their individual semi-structured interviews were conducted).
Participants were also encouraged to communicate with their group members via email or telephone outside of the scheduled group activities.

**Persistent Observation**

Stringer (2007) states the credibility of research is enhanced when events are observed over time and “merely being present in a situation does not count as observation” (p. 58). The audio and video recordings collected over a 50 to 83 day time span increased the reliability of the study as what actually happened was transcribed and analyzed versus relying solely participants’ recall from memory collected via interview.

**Triangulation**

The credibility of a study is strengthened when multiple sources of data are considered. The observations, interviews, member checks, and project diary memos conducted during this research provide a bulwark for integrity.

**Member Checking**

As mentioned earlier in this chapter, member checks were conducted by giving participants a copy of their individual semi-structured interviews and asking them to read it for accuracy and to identify any comments they felt may reveal their identity so those entries could be revised. Participants were also provided a list of the themes used in the coding process along with corresponding definitions and examples of references and
were asked to provide feedback on the researcher’s interpretation of the themes. They were also asked to provide feedback on the interpretation of the final model and to seek clarification for any questions they might have. The researcher considered all feedback during this process. Based on participant responses, no changes were made to the transcripts, themes, definitions, or model.

Diverse Case Analysis

Stringer (2007) explains that the credibility of research is enhanced by “ensuring that the perspectives of all stake-holding groups are incorporated into the study” (p. 58). Credibility of this research was improved by including not only special education teachers but also administrators, general education teachers, a guidance counselor, a school psychologist, and a director of assessment and evaluation.

Role of the Researcher

As supported by Herr and Anderson (2005) for action research, I served multiple roles while conducting this study: researcher, insider in collaboration with other insiders, and supervisor. My role as researcher was to serve as an instrument for training, data collection, data analysis, interpretation and presentation while paying careful attention to trustworthiness and credibility. However, my position as director of special services in the district where the research took place also defined me as an insider in collaboration with other insiders (Herr & Anderson, 2005) working together to craft a strategic plan for
reducing the achievement gap of our students with disabilities during this action research study.

Herr and Anderson (2005) explain a major goal of action research is to generate local knowledge that is fed back into the setting and that action research “is inquiry that is done by or with insiders to an organization or community, but never to or on them” (p. 3). One paramount job responsibility of mine as director of special services is to work closely with other district personnel to ensure our students with disabilities are making adequate progress towards the general curriculum and/or goals in their Individualized Education Plans (IEPs). Working with special and general educators on this traditional action research study for the purpose of developing a plan to improve outcomes for our students with disabilities came naturally as that is the role I would normally assume according to my job responsibilities. However, my role as supervisor to the special education teachers participating in this action research necessitated continual self-monitoring or reflexivity via memos in the Project Diary (Appendix M).

Due to the reciprocal influence of this action research whereby the researcher and participants co-conduct the research or data collection together (Finlay, 2002), I had to be particularly mindful of my supervisory role over the special education teacher participants and watch for indicators that my authority might be stifling their input. As a preventative measure, I chose not to be physically present during the data collection phases involving small group work and I reiterated the imperativeness of psychological safety during the training sessions stressing that all opinions and ideas were valued and participants would not be judged based on their contributions.
The most pivotal role I served as insider in collaboration with other insiders was to create the contextual conditions that foster complexity mechanisms: heterogeneity, adaptive pressure, information flow, interaction, interdependency, and psychological safety (Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2009). This is the enabling leadership role described by Uhl-Bien et al. (2007).

One of the enabling leader’s responsibilities is to foster heterogeneous groups. George (2007) contends that heterogeneous groups are more creative than homogenous groups. A review of 50 years of research conducted by Mannix and Neale (2005) revealed that differences in skills and education positively affected creativity. Furthermore, heterogeneity feeds conflicting constraints (Marion, 2012) which is a contextual condition for creativity in and of itself. I promoted heterogeneity by selecting participants from multiple schools (i.e., 6), multiple grade levels (i.e., pre-school through grade 12), multiple backgrounds (i.e., general education, special education, guidance, school psychology, administration), and with various levels of experience (i.e., first-year teacher up to 30 years of experience).

Enabling leaders also generate adaptive pressures (McKelvey, 2008) or tension. Adaptive tension is “a pressure on a system to elaborate and adjust” (Uhl-Bien & Marion, 2009, p. 643) which can be enhanced by heterogeneity, interdependency, and conflicting constraints (Uhl-Bien et al., 2007). I applied adaptive pressure on the participants to elaborate upon their initial ideas for closing the achievement gap of our students with disabilities by requiring them to identify the specific individuals responsible for
implementing the plan and how resources would be acquired. They were also instructed
to develop a plan that involved contributions of effort from all levels of the organization.

Cilliers (1998) explains that complex adaptive systems are fueled by information.
Individuals and collectives engage in information flow when they envision and
collectively support novel ideas and possibilities (Hargadon & Bechky, 2006). I enabled
information flow in several ways including but not limited to the following:

1. by preparing a written summary of the work completed by the three
   individual complex adaptive systems and distributing it to all
   participants for consideration;

2. by emailing participants information about a webcast opportunity to learn
   how to improve parental involvement as this was a topic of concern
   mentioned by several participants during the work sessions;

3. by providing adequate yearly progress data for each school represented in
   the action research study and the district;

4. by sharing a newspaper article presenting the results of a study showing
   strong gains by kids who attend pre-kindergarten (Locker, 2011) as early
   intervention was a discussion topic mentioned by participants during the
   work sessions;

5. by providing reading material from scholarly peer reviewed journals about
   CLT, adaptive organizations, disequilibrium (Heifetz et al., 2009; Uhl-
   Bien & Marion, 2009); and,
6. by sharing my own ideas about improving our child find efforts by searching out siblings of our students already identified as having a disability to determine if they are considered at risk and in need of early intervention in attempt to prevent later identification.

Cilliers (1998) explains that complex systems have elements that interact in a way that allows them to shift and merge over time. Uhl-Bien and Marion (2009) contend that this dynamic interaction produces nonlinearity, coupling, and attractor dynamics characteristic of complex adaptive systems. I enabled dynamic interaction by scheduling work times conducive to participants’ schedules, by providing a comfortable workspace for small groups and the whole group, and by fostering interaction across groups to bridge silos.

Another essential condition for complex dynamics is interdependence which refers to “the extent to which individuals interact to accomplish a task, goal, objective, vision, etc.” (Uhl-Bien & Marion, 2009, p. 642). Uhl-Bien & Marion (2009) purport that complex adaptive behavior is not likely to occur without interdependence because agents will not be motivated to interact. I fostered interdependency during the training sessions by talking about the benefits of bridging communication channels across schools and how this practice can enhance creativity. I also asked participants to identify ways elementary schools could help the middle school and how the middle school could help the high school. Interdependency was further inspired by instructing participants that the final strategic plan needed to involve participants from all levels of the organization for implementation.
One last role I served as an enabling leader was to foster psychological safety which encourages collaboration, or a desire to interact with others and reveal information (Caruso & Woolley, 2008). While presenting a power point during phase I of data collection, I explained the importance of psychological safety as a necessary condition for enhancing complexity mechanisms. I also reiterated in subsequent work sessions that our environment was psychologically safe and that group members could exchange ideas freely without fear that confidences would be abused.

Finally, Corbin and Strauss (2008) describe sensitivity as the researcher’s ability to put him- or herself into their research by demonstrating insight and the ability to tune into relevant information collected during the research process. My experience and position as the special education director was advantageous as it increased the likelihood of being able to pick up on issues, events, or happenings specific to this action research study.

**Ethical Considerations**

The researcher obtained approval from Clemson University’s Institutional Review Board before conducting the study (Appendix B). The researcher also contacted each participant in-person, by phone, or by email and explained that participation was strictly voluntary and that their responses would only be known by other participants involved in the group discussions, the researcher, and the transcriptionist who committed in writing to confidentiality (Appendix L). Interview tapes were stored in a locked location and were only shared with the transcriber.
Each participant signed a consent form delineating measures that would be taken to ensure confidentiality (Appendix G) and that the audio and video recordings would be erased upon publication of a dissertation and journal article. It was further explained that the results would be shared with the district and published with no identifying information for any comments made by participants. With regard to the structured interviews, participants were assigned an alphanumeric identifier during analysis. Each participant was asked to read their transcribed interview for the purpose of identifying any comments that may reveal their identities so those entries could be revised.

**Chapter Summary**

This chapter opened with a review of the research questions to be answered in this case study. A description of the participant selection process, instrumentation used for the study, data collection, and data analysis was also provided. A portrayal of the role of the researcher noting the importance of reflexivity and sensitivity was provided. The chapter concluded with a description of ethical considerations.
CHAPTER FOUR

RESULTS

This purpose of this study was to identify emergent, interactive dynamics that resulted in adaptive outcomes and solutions to an adaptive problem of reducing the achievement gap of students with disabilities in one geographical area of a school district. It also intended to investigate mechanisms that emerged during interactive dynamics that either fostered adaptability or creativity while at the same time examining the influence of artifacts (e.g., bureaucratic controls and institutional pressures). The purpose of this action research study was achieved by analyzing transcripts from the small group and whole group work sessions and developing models showing information flow processes and adaptive leadership processes. This chapter reports the results of the analysis of the action research. The models were supported by responses to the semi-structured interview and member checks. A presentation of the themes and definitions identified is followed by the results of the data analysis for the three stated research questions. This chapter ends with the discussion of the results of additional analyses.

Themes and Definitions

The research questions were answered by analyzing the transcripts from the small group and whole group work sessions and identifying themes that were set up as parent, child, and grandchild nodes in NVivo 8. Table 4.1 provides a summary of all nodes identified from the small group and whole group sources of data. Three major themes corresponding to the three research questions of this study were identified and set up as
parent nodes using NVivo 8: adaptive processes, influence of artifacts, and mechanisms. The themes identified revealed evidence of adaptive processes and complexity mechanisms whereby ideas combined, diverged, were elaborated upon or dissolved as information was processed resulting in creativity, adaptability and learning (Uhl-Bien et al., 2007).
Table 4.1

*Summary of Tree Nodes Created Using NVivo 8 for Small Group and Whole Group Sources of Data*

<table>
<thead>
<tr>
<th>Parent Nodes</th>
<th>Child Nodes</th>
<th>Grandchild Nodes</th>
<th>Number of Sources</th>
<th>Number of References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive Processes</td>
<td>Idea Emergence</td>
<td></td>
<td>11</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>Information Flow</td>
<td></td>
<td>10</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Learning</td>
<td></td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Influence of Artifacts</td>
<td>Barriers to Creativity</td>
<td>Bureaucratic Controls</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Parent Support or Home Life</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financial</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Information or Knowledge</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Working Around Barriers</td>
<td>Social Dampening</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Lack of Parent Support or Home Life</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Financial</td>
<td></td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Lack of Knowledge</td>
<td></td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td></td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Mechanisms</td>
<td>Attractors</td>
<td></td>
<td>11</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Bonding</td>
<td></td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Conflicting Constraints</td>
<td></td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Elaboration</td>
<td></td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Patterning of Attention</td>
<td></td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Storytelling</td>
<td></td>
<td>9</td>
<td>29</td>
</tr>
</tbody>
</table>
Idea emergence, Information flow, and Learning were identified as themes and set up as child nodes under the parent node of Adaptive processes. The themes Barriers to creativity and Working around barriers were identified as child nodes under the parent node Influence of artifacts. The references under these child nodes were analyzed and further broken down into themes identified as grandchild nodes. The grandchild nodes under the child node Barriers to creativity included: Bureaucratic controls, Lack of parent support or home life, Finance, Lack of information or knowledge, and Time. Likewise, the references under the child node Working around barriers were analyzed and further broken down into grandchild nodes depicting the following themes: Social dampening, Conflicting constraints, Lack of parent support or home life, Finance, Lack of information or knowledge and Time.

Attractors, Bonding, Conflicting constraints, Elaboration, Patterning of attention, and Storytelling were themes identified as child nodes under the parent node Mechanisms. Table 4.2 lists definitions for 11 themes identified that are not commonly known and require further explanation: These are Attractors, Bonding, Conflicting constraint, Elaboration, Idea emergence, Information flow, Patterning of attention, Social dampening, and Storytelling. Common or self-explanatory themes not defined in Table 4.2 were Learning, Influence of artifacts, Barriers to creativity, Bureaucratic controls, Lack of parent support or home life, Finance, Lack of information or knowledge, Time, and Working around barriers.
Table 4.2

Definitions of Parent, Child and Grandchild Tree Nodes

<table>
<thead>
<tr>
<th>Node</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive Processes</td>
<td>A phenomenon whereby ideas combine, diverge, elaborate and dissolve as information is processed resulting in creativity, adaptability and learning in a complex system.</td>
<td>Uhl-Bien et al. (2007)</td>
</tr>
<tr>
<td>Attractors</td>
<td>“Attractors are phenomena that arise when small stimuli and probes (whether from leaders or others) resonate with people. As attractors gain momentum, they provide structure and coherence” (p. 75).</td>
<td>Snowden &amp; Boone (2007)</td>
</tr>
<tr>
<td>Bonding</td>
<td>“It occurs when interaction causes agents to become linked by need, preferences, outlooks, responsibilities, etc…the basis for bonding is only that the participants function together in a way that creates interdependent actions” (p.640).</td>
<td>Uhl-Bien &amp; Marion (2009)</td>
</tr>
<tr>
<td>Conflicting Constraint</td>
<td>Also known as task-related conflict. CAS agents are interdependent and at times such interdependencies are conflictive in that agents differ over how tasks or preferences are to be conducted.</td>
<td>Jehn (1997)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kauffman (1995)</td>
</tr>
<tr>
<td>Elaboration</td>
<td>A process whereby select ideas gather support from individuals and groups and are subject to pressures to elaborate, change, and merge with other ideas.</td>
<td>Lichtenstein &amp; Plowman (2009)</td>
</tr>
<tr>
<td>Idea Emergence</td>
<td>Emergence can be described as “qualitative novelty” in a system, or “the coming in to being of a semi-autonomous ‘level’ of activity…that is generated out of the system’s components (von Bertalanffy, 1956) yet ‘transcends’ them by producing outcomes that are unexpected or striking in some way” (p. 6).</td>
<td>Lichtenstein &amp; Plowman (2009)</td>
</tr>
<tr>
<td>Information Flow</td>
<td>Adaptive leadership fosters “a rich flow of information (in the form of ideas, innovations, changes technologies, etc.) to enhance dynamic complexity processes” (p. 638).</td>
<td>Uhl-Bien &amp; Marion (2009)</td>
</tr>
<tr>
<td>Mechanisms</td>
<td>“a set of interacting parts—an assembly of elements producing an effect not inherent in any of them” (p. 74)</td>
<td>Hernes (1998)</td>
</tr>
</tbody>
</table>
Table 4.2
Definitions of Parent, Child and Grandchild Tree Nodes (Continued)

<table>
<thead>
<tr>
<th>Node</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patterning of Attention</td>
<td>It involves separating and communicating what is more important in a stream of events, actions and outcomes in a system from what is less important.</td>
<td>Osborn, Hunt &amp; Jauch (2002)</td>
</tr>
<tr>
<td>Complexity Dampening</td>
<td>A phenomenon that occurs when systems increase their dynamic response (e.g., they work around constraining organizational or environmental barriers by finding alternate strategies to solve a problem) when confronted with restraining rules, policies or regulations.</td>
<td>Marion (2012)</td>
</tr>
<tr>
<td>Storytelling</td>
<td>Fosters information flow by offering a source of interconnectedness among organizational agents. Provides a way for leaders to connect the past, present and future.</td>
<td>Marion (2012)</td>
</tr>
</tbody>
</table>

Research Question One

Question 1: How do interactive agents from varying backgrounds (i.e., general and special education, administration, and guidance) and grade levels (PreK-12) respond to adaptive challenges under conditions of enabling leadership? As explained in chapter one, the adaptive challenge presented to the participants was to develop a strategic plan for the purpose of reducing the achievement gap of students with disabilities in order to meet the state accountability requirements for making AYP (Adequate Yearly Progress) in the district being studied. The enabling leadership behaviors exercised by the researcher in this action research project included planning for heterogeneity, creating conditions for dynamic interaction, instilling a sense of interdependency, orchestrating conflicting constraints, applying adaptive tension, enhancing information flow, and fostering psychological safety. A discussion of how the
The results show that participants responded to the adaptive challenge by engaging in information flow leading to learning and increased creativity. Under the parent node *adaptive processes*, the researcher was able to code references from the transcripts of the small group and the whole group work sessions into three child nodes: *idea emergence, information flow,* and *learning.* Table 4.3 lists the child nodes under the parent node of adaptive process and offers examples of references that were coded. In some cases, the example is illustrated by a quote from a single participant (or source) while in other cases the example is illustrated through a sample discourse involving multiple participants as indicated by italics.
Table 4.3

Adaptive Processes Tree Nodes with Illustrations

<table>
<thead>
<tr>
<th>Tree Node</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Idea Emergence     | • Source 1: “I would like for our ninth grade teachers to be able to sit down with the eighth grade teachers and to say ‘This is what we see that we’re missing.’ That would help tremendously.”  
                      • Source 2: “I think one thing that would help in the general ed classroom is that we’re tracking and making sure the general ed teachers are actually using the accommodations that are supposed to be in place—.”  
                      • Source 3: “Well I was just thinking our Student Support Team meetings, it would be—I would love for a middle school teacher to come in and just talk to our SST team about what it is you all are seeing that we’re missing. What are the kids coming in delayed in?” |
| Information Flow   | • Participant S4 (elementary): “And I can just about tell you the ones in elementary school that are going to end up in those programs because of their behavior problems in elementary school, their behavior problems—it’s not IQ issues.”  
                      • Participant S2 (high school): “And see again, I don’t know some of this stuff until after the kid gets there, and I start seeing problems, and I’m like ‘Wow!’ And I will talk with Dr. XXX and say, ‘Um, did you have any problems? Because…”  
                      • Participant S4 (elementary): “—cause our teachers don’t bring those up to SST. Those kids are dealt with separately.” |
| Learning           | • Participant S11: “Do you agree with that? Do you think that’s a good plan?”  
                      • Participant S7: “I do based on—if you ask me cold, I’d say ‘I have no idea,’ but hearing her say that—”  
                      • Participant S2: “Her perspective.”  
                      • Participant S7: “I’d say ‘yes.’” |

The child node depicting the greatest number of references was idea emergence (104) and it was the only theme for which the researcher identified references from all participants. A statement or exchange was labeled idea emergence when a qualitatively novel idea was presented by one team member for the others to consider during the small group or whole group work sessions. Furthermore, the emergence of ideas was non-
linear as supported by CLT (Marion, 1999; Lichtenstein, 2000; Plowman et al., 2007; and Uhl-Bien & Marion, 2009). In some cases, the emergence of an idea was preceded by information flow as participants shared stories, learned from each other or discussed perceivable barriers to closing the achievement gap. In other cases, an idea was presented that seemed to be unrelated to the current topic of discussion and was more like an “aha” moment (Uhl-Bien et al., 2007).

Non-linearity was also evident in that some ideas gained momentum by becoming attractors while others did not. In other words, some of the ideas resonated with other members of the group and were capable of influencing their thoughts or behaviors. These results support Marion’s (2012) argument that CAS dynamics are predictable as observable processes (e.g., information flow and idea emergence) but are unpredictable in their results or outcomes (Uhl-Bien & Marion, 2009).

Figure 4.1 depicts the non-linearity of information flow leading to the final whole group strategic plan that was ultimately advanced for consideration by administrators from the six schools in the geographic area. The circles, Attractors, Idea Emergence, and Information Flow, represent the beginning and ending points of the information flow process. The 12 numbered diamonds in the model each depict the non-linear process of information flow whereby information was exchanged between participants in varying combinations of information flow (Info), idea emergence (Idea), attractors (Att), and conflicting constraints.
Figure 4.1

A model of information flow leading to elaboration and the emergence of a final strategic plan. Info=information flow, idea=the emergence of a new idea with qualitative novelty, att=attractors. Circles represent the beginning and ending points of the information flow process. Diamonds depict non-linearity in the information flow process. The arrows pointing to the octagon labeled elaboration show how some of the ideas gathered support from other group members and were subject to change through elaboration or by merging with other ideas causing them to morph into a novel idea that was part of the final whole group strategic plan.

Information flow (Info) represents a process in which participants engage in rich discussion by sharing ideas, possibilities, and storytelling. Idea represents the emergence of a new idea with qualitative novelty. Attractors (Att) are ideas that resonate with other group members and gain support as evidenced by comments identified in the transcripts.
Conflicting constraints represents task-related conflict where the participants differ over how tasks or preferences are to be conducted.

The solid lines between the circles and diamonds show how the information flow process begins in one the circles, each of which is connected to diamonds that describes combination of adaptive processes and mechanisms involved in the information flow process. For example, the solid line between the circle Information Flow and diamond (11) shows how the information flow process began with information flow during participant discourse and led to the emergence of an idea. The arrow leading away from diamond (11) to the circle Idea Emergence shows how the idea generated in this information flow process ended with the emergence of an idea.

Likewise, diamond (1) shows a different combination of Idea, Info, and Att where the information flow process began with idea emergence followed by attractors which led to a different idea followed by information flow which led to a third idea followed by more information flow leading to a final idea with attractors. The arrow moving away from diamond (1) indicates the information flow process in this diamond ended with the circle Attractors. The arrows moving away from diamonds (1), (2), (3), (6), (7), (9), and (12) to the octagon Elaboration show how some of the ideas gathered support from other group members beyond mere attractors and were subject to change through elaboration or by merging with other ideas causing them to morph into something novel. The ideas resulting from the elaboration mechanism (Author, 2009) advanced to form the components of the final strategic plan represented by the rectangle that was accepted and agreed upon by all thirteen participants.
There are four arrows moving away from diamond (2) to the octagon *Elaboration* as the researcher identified four separate discourses where the relationship combination *Info to Idea to Att to Idea to Att* led to the elaboration of an idea. For all other arrows leading away from diamonds to the octagon *Elaboration* the researcher only identified a single discourse where the relationship combination led to elaboration of an idea. The transcribed data revealed that in most cases information flow preceded the emergence of an idea or conflicting constraint that either led to an attractor or another idea. In fewer cases, an idea was presented first and was then followed by an attractor which sometimes led to the emergence of another idea in close proximity. For example, there are nine solid lines leading out from the circle labeled *Information Flow* to the diamonds representing nine multiple combinations of *Information Flow, Idea Emergence, Conflicting Constraint, and Attractors* that end with either *Idea Emergence* or *Attractors*. There were only two combinations where the information flow process began with an idea. They are represented by the solid lines connecting the circle *Idea Emergence* and diamonds (1) and (5). Table 4.4 shows the frequency of each relationship combination identified in the transcripts. Although there were 22 different combinations of *Idea Emergence, Information Flow, Conflicting Constraints, and Attractors* identified as relationships, the researcher only included 12 in the model (the diamonds): the ones with the most frequency, those leading to *Elaboration*, and those involving *Conflicting Constraint*. 
Table 4.4

*Frequency of Adaptive Processes Combinations from Figure 4.1*

<table>
<thead>
<tr>
<th>Relationship Type</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idea to att (5)</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Idea to att to idea (4)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Idea to att to idea to info to idea to info to idea to att (1)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Idea to att to info to idea</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Idea to idea to att</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Idea to idea to info to idea to att</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Idea to info to idea</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Idea to info to idea to attractor</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Idea to info to idea to info to att to idea</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Info to conflicting constraint to idea (10)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Info to conflicting constraint to idea to idea to conflicting constraint to idea to idea (9)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Info to idea (11)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Info to idea to att (8)</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Info to idea to att to idea (7)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Info to idea to att to idea to att (2)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Info to idea to att to idea to att to idea (12)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Info to idea to idea</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Info to idea to idea to att (3)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Info to idea to info to idea</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Info to idea to info to idea to idea (6)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Info to idea to info to idea to info to idea to att</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Info to idea to idea to idea to att</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
The identified themes for *Idea Emergence, Information Flow, Learning, Attractors*, and *Elaboration* from the transcripts of the small group and whole group work sessions indicate that participants responded to the adaptive challenge by engaging in information flow leading to learning and increased creativity. Furthermore, the large number of combinations of adaptive processes and mechanisms evidenced in the information flow process suggests that the outcomes of the complex dynamic interactions were unpredictable. The non-linearity of the reciprocal interactions of agents created outcomes that were impossible to predict. This non-linear interaction is a characteristic of complex adaptive systems (Lichtenstein & Plowman, 2009).

The presence of the adaptive processes *Idea Emergence, Information Flow* and *Learning* were further evidenced by comments from participants during the individual semi-structured interviews. Twenty references, at least one from each of the 13 individual interviews, provided additional support for the theme *Idea Emergence.* Fourteen references from 12 of the 13 structured interviews provided supplemental support for *Information Flow.* Lastly, 18 references from nine of the structured interviews provided support for the presence of *Learning.* Table 4.5 provides examples of illustrations of *Idea Emergence, Information Flow* and *Learning* from the transcripts of the structured interviews.
Table 4.5

Illustrations of Idea Emergence, Information Flow and Learning from Selected Individual Structured Interviews

<table>
<thead>
<tr>
<th>Adaptive Process</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Idea Emergence   | Source 1: “Well, we kind of all agreed when we first—it was like we all had the same thought in our head to begin with—which was really kind of neat, but we all thought that really—we all needed—everybody needed to be in 4-K; all kids needed to be in 4-K, and that would be the first place to start, and then it just kind of came up from there.”

Source 2: “I think the job shadowing was creative, and I don’t even remember who came up with it. I don’t remember. So when we were talking about following somebody for the day to see what their jobs are like to understand the others, it just sort of came up, and we kind of agreed that we liked that idea. I guess that was the beauty of it all because it wasn’t like—I don’t remember, I mean, it was our group’s idea, and that’s the way it should be.”

Source 3: “The best one, I would say, would be the idea of serving more students at the early intervention in the PIPP stage, and that idea came about primarily because we narrowed the problem down to going back to early childhood intervention and that the children are coming to these preschool programs lacking skills already—or very far behind—which puts them further behind at each grade level they go up if they can’t get the adequate help, and with the large numbers and the level of need for each student, the early childhood teacher pointed out that if she could work with smaller groups that she would probably have better results in building those gaps.”

Source 4: “I think the most important thing that we, as a group, decided on was to really have that early intervention and trying to go out possibly into the daycares and as another—we want to try to get more incentive toward early childhood and early intervention in the district, but try to step outside of the district and use the personnel that we have to go out into daycares and church daycares and try to teach them the skills for reading and the sounds in motion, things like that.”

Source 5: “I liked our in-service idea—of having the special ed teachers and regular ed teachers meeting to understand the IEPs better and the process better, and I think that emerged from us all talking about different perspectives and different—maybe not a clear communication between the parties.”
Table 4.5

*Illustrations of Idea Emergence, Information Flow and Learning from Selected Individual Structured Interviews (Continued)*

<table>
<thead>
<tr>
<th>Adaptive Process</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Information Flow | Source 1: “and we shared our opinions one at a time on that particular question that we were looking at. And then as we all shared our particular opinions, then we just took it as a cohesive group, and we came up with an answer from each opinion of each person.”  
Source 2: “…we had a lot of really good talking points back and forth, and it was very open discussion and open to different ideas from everyone.”  
Source 3: “…we gave our ideas and just fed off of that, and everybody else gave their bits and pieces that they thought…”  
Source 4: “I would say that we complimented each other because when one person might be reluctant to share, the others would encourage that…”  
Source 5: “I think, for us, the dynamics—everyone was—they were supportive and willing to hear the ideas from each person. There was willingness for change in ideas and not being stuck that, “I feel this way, and I’m not going to change,” so people were willing to listen and to change their way of thinking.” |
| Learning | Source 1: “…comparing the different elementary level schools with each other and how some schools did some things really similar and how some did it really different and that kind of thing was kind of neat.”  
Source 2: “…and then through that process we were able to gain, I felt, a lot of valuable information that helped us look at the problem from varied perspectives and get a better picture than what we thought it was to begin with.”  
Source 3: “So I think it enlightened us as to—it’s easy for us to say, ‘Why didn’t they do this?’ or ‘Why didn’t—somebody didn’t teach them this along the way,’ but it all goes back to—everyone is working very hard to try to bridge those gaps.”  
Source 4: “but when I heard about all of the different things that the younger grade levels are doing, I really—I felt inadequate because I didn’t realize all those things were going on.” |

In summary, the results indicate that participants responded to the adaptive challenge of closing the achievement gap of students with disabilities by engaging in information flow leading to learning and increased creativity. These results were
supported by comments from participants during the individual semi-structured interviews. The flow of information was non-linear as evidenced by 22 distinct combinations of Idea Emergence, Information Flow, Conflicting Constraints, and Attractors.

Research Question Two

Question 2: What mechanisms emerge within complex interactive groups that foster adaptability and creativity? Complexity mechanisms are patterns of behavior that emerge naturally as a result of the dynamic interaction of adaptive agents (Davis & Marquis, 2005; Elster, 1998; Gross, 2009; Hedström & Swedberg, 1998; Marion, 2012). Mumford and Licuanan (2004) contend that conditions requiring creativity require leadership influence that supports indirect mechanisms and interaction. Six mechanisms that foster adaptability and creativity were identified in this study: They are attractors (62 references), storytelling (29 references), bonding (20 references), patterning of attention (11 references), elaboration (10 references), and conflicting constraints (8 references). Table 4.6 provides examples of illustrations from the coded transcripts. Discourse involving multiple participants is indicated by italics.
Table 4.6

*Summary of Mechanisms Tree Nodes with Illustrations*

<table>
<thead>
<tr>
<th>Tree Node</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attractors</strong></td>
<td>Participant Y10: “One thing we talked about is the regular ed doesn’t understand special ed, and special ed doesn’t understand regular ed. Maybe if you develop some visits back and forth…”</td>
</tr>
<tr>
<td></td>
<td>Participant Y9: “Job shadowing.”</td>
</tr>
<tr>
<td></td>
<td>Participant Y5: “Job shadowing. And even if one of those days was an activity sharing type deal where we—special ed shares some of their intervention, some of those things, and some of the general ed…”</td>
</tr>
<tr>
<td></td>
<td>Participant Y5: “And building. Strategy building and sharing.”</td>
</tr>
<tr>
<td><strong>Bonding</strong></td>
<td>Source 1: “The first thing that we would like to do is build relationships and build connections between the special ed teachers and the regular education teachers, and so we decided that we’d look at some goals and the guidelines because what we saw was often we don’t understand what the other is doing, and so we talked about some goals and guidelines—some teacher collaboration and relationship building, and thinking about what are the best practices for special ed and then how they connect with regular ed.”</td>
</tr>
<tr>
<td><strong>Conflicting Constraint</strong></td>
<td>Participant E13: “We need to involve community support.”</td>
</tr>
<tr>
<td></td>
<td>Participant E12: “I agree with that, because…”</td>
</tr>
<tr>
<td></td>
<td>Participant E3: “It’s extremely frustrating…when we spend time screening students and we do all the paperwork…and these kids never get connected with anyone…”</td>
</tr>
<tr>
<td></td>
<td>Participant E6: “…they commit to it; they’d do it once or twice, and then—”</td>
</tr>
<tr>
<td></td>
<td>Participant E1: “And that’s more damaging to the kids…you’d rather just not even have them.”(In this example, the participants are at odds over how to fulfill the task of increasing human capital to assist in providing interventions. Some support using volunteers while others do not).</td>
</tr>
</tbody>
</table>
Table 4.6

*Summary of Mechanisms Tree Nodes with Illustrations (Continued)*

<table>
<thead>
<tr>
<th>Tree Node</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elaboration</td>
<td>Participant S4: “And I don’t know how you work on collaboration. I don’t know how you do that. There’s no time in the day to do what we do.”</td>
</tr>
<tr>
<td></td>
<td>Participant S11: “Maybe some of our in-service days could be—”</td>
</tr>
<tr>
<td></td>
<td>Participant S7: “That’s what I was wondering. That’s a strategy but what are we proposing?”</td>
</tr>
<tr>
<td></td>
<td>Participant S4: “In-service day time to do some collaboration maybe? I feel a lot of times, our in-service days, they’re good, but a lot of times we need to talk. We need to be—”</td>
</tr>
<tr>
<td></td>
<td>Participant S2: “I think we could do that on that—what’s that thing we do once a month? Early release.”</td>
</tr>
<tr>
<td>Patterning of Attention</td>
<td>Source 1: “The ultimate goal is to close the gap, but what’s the ultimate goal of this—of what we are proposing? Is it that at the end—we’re going to do it for one year? Let’s say we’ll do it one year, starting it in the summer and ending it through the next May. And by the end of May, what do we want the regular ed teacher to say about it? What do we want the special education teacher to say?”</td>
</tr>
<tr>
<td>Storytelling</td>
<td>Source 1: “I’ve seen that with my own children as they’re going through elementary school. The teachers that they bond with, boy, they just soar. And the teachers they feel don’t like them, they could care less.”</td>
</tr>
<tr>
<td></td>
<td>Source 2: “Years and years ago when I was a classroom teacher, somebody did this in-service training, and it was through the eyes of a special ed student—have you all ever had—I’m sure you probably have. That was the biggest eye opener I’d ever had. It was fascinating. They had us…”</td>
</tr>
<tr>
<td></td>
<td>Source 3: “I had to go on a home visit the other day for a 4-K kid, and I almost cried—the environment this child came out of. It was ridiculous, and I would not want my dog living in that house, much less a child.”</td>
</tr>
</tbody>
</table>

Snowden and Boone (2007) define attractors as “phenomena that arise when small stimuli and probes (whether from leaders or others), resonate with people” (p. 75). The researcher coded references as attractors when one or more participants verbally supported ideas that were offered during discourse from other members of either the small work groups or the whole group. Some ideas that emerged during the work session
became attractors while others did not. The child node, *Idea Emergence*, was coded 104 times but there only 62 *Attractors* evolved from *Idea Emergence* which indicates about 60 percent of the ideas presented became attractors. Figure 4.2 shows the percentage of coverage coded for the mechanism *Attractors* for each transcript from the small group and whole group work sessions.

![Bar graph showing the percentage of coverage coded for the mechanism attractors for each transcript from the small group and whole group work sessions by date. Group E 4.26.11=2.43%, Whole Group 3.28.11=10.18%, Group S 3.28.11=10.96%, Group S 4.12.11=12.98%, Group E 3.28.11=13.79%, Whole Group 4.26.11=15.97%, Group S 4.26.11=22.20%, Group Y 4.26.11=22.59%, Group Y 4.12.11=23.27%, Group E 4.12.11=28.52%, and Group Y 3.28.11=35.08%.](image)

**Figure 4.2**

The presence of the mechanism *attractors* was further evidenced by references coded from the structured interviews. Fourteen references from 13 structured interviews (at least one reference from each participant) provided support for *Attractors* as a mechanism leading to the emergence of ideas. Table 4.7 provides examples of illustrations from the transcripts of the structured interviews.

Table 4.7

*Illustrations of the Mechanism Attractors from Selected Individual Structured Interviews*

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Attractors | Source 1: “Well, we kind of all agreed when we first—it was like we all had the same thought in our head to begin with—which was really kind of neat, but we all thought that really—we all needed—everybody needed to be in 4-K; all kids needed to be in 4-K, and that would be the first place to start, and then it just kind of came up from there.”  
Source 2: “…it just sort of came up, and we kind of agreed that we liked that idea.”  
Source 3: “I think one person—I don’t remember who it was—did bring up the outside—like using—going out into the community and teaching them and using our personnel—And that’s where it blossomed, and we really stuck to that idea, and we really believed in it.”  
Source 4: “I think our group—we agreed that, I guess, we needed to begin in the—with the younger kids—that students came into school already behind and that we wanted the early intervention.”  
Source 5: “One that they really jumped on was sort of like the college and the high schools and getting the articulation agreements going…” |

*Storytelling* (29 references) was the second most frequent mechanism identified from the transcripts that fostered adaptability and creativity. Boal and Schlultz (2007) explain that *Storytelling* enhances information flow by offering a source of interconnectedness among organizational agents and it provides a way for leaders to
connect the past, present, and future. Figure 4.3 shows the percentage of coverage coded as *Storytelling* from the transcripts of all small group and whole group work sessions.

![Figure 4.3](image)

*Bar graph showing the percentage of coverage coded for the mechanism storytelling for each transcript from the small group and whole group work sessions by date.* Group E 3.28.11=1.68%, Whole Group 4.26.11=3.2%, Group E 4.12.11=3.4%, Group S 4.26.11=3.55%, Group Y 4.12.11=4.72%, Group S 3.28.11=6.93%, Group Y 3.28=13.55%, Group S 4.12.11=17.32%, Group Y 4.26.11=28.41%.

The presence of the mechanism *Storytelling* was further evidenced by references coded from the structured interviews. Seven references from five of the 13 structured
interviews provided support for *Storytelling* as a mechanism leading to the emergence of ideas. Table 4.8 provides examples of illustrations from the transcripts of the five structured interviews.

**Table 4.8**

*Illustrations of the Mechanism Storytelling from Five Individual Structured Interviews*

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Storytelling    | Source 1: “I really think we all used our own experiences and our own struggles in our daily jobs to work out our plan, which I thought was a good one.”  
Source 2: “We all were coming at it from different angles being from the elementary, the intermediate, the middle, and the high—I think that was a good mix of us together because everybody had a different story to tell, ‘At my school, this is the way it is,’ ‘Well, at our school, this is the way it is,’ so I think that definitely helped to solve a problem that’s across the board.”  
Source 3: “I just had an IEP meeting with a great-grandmother that was 45, and nobody in the family understood that there was an issue there. They were kind of proud of it. But when I asked, ‘How many hours a day would you say—or a week that you read to your child?’ The mama said, ‘Read? I don’t read. They can’t read. They can’t read.’ So there’s just that no understanding...”  
Source 4: “Because she was talking about how the kids were coming in so low in the middle school and the resource kids, and what could we do to help that...”  
Source 5: “In my group there was a good bit of—what I call, ‘testimonials,’ or I guess anecdotes, and I guess it’s because the people—the teachers, they were passionate about what we were talking about, and so there was a lot of discussion that started out with, ‘Here’s what happened the other day,’ or ‘let me tell you about this student.’” |

*Bonding* (20 references) was the third most frequently identified mechanism in the transcripts. Uhl-Bien and Marion (2009) explain that bonding occurs when “interaction causes agents to become linked by need, preferences, outlooks, responsibilities, etc.” (p. 640). The researcher coded for *Bonding* in the small group and
whole group transcripts when there was evidence of interdependency or where one agent’s actions were capable of influencing another agent in the complex adaptive system. For example, bonding between middle and high school (agents need not be only individuals) was revealed in discussions during one of the small group work sessions about how the high school is dependent upon the middle school to have students as close to grade level as possible in reading before they enter high school. Likewise, the middle school is dependent upon the elementary schools for the same thing. Figure 4.4 shows the percentage of coverage coded as Bonding from the transcripts of all small group and whole group work sessions.

Figure 4.4

Bar graph showing the percentage of coverage coded for the mechanism bonding for each transcript from the small group and whole group work sessions by date. Group E 4.12.11=1.56%, Group Y 4.12.11=2.5%, Group Y 3.28.11=2.63%, Group S 4.12.11=3.52%, Group E 3.28.11=4.09%, Group Y 4.26%=7.3%, Whole Group 4.26.11=11.85%, Group S 3.28.11=16.58%.
The presence of the mechanism Bonding was further evidenced by references coded from the structured interviews. Eleven references from nine of the 13 structured interviews provided support for Bonding as a mechanism leading to the emergence of ideas. Table 4.9 presents examples from the structured interview transcripts.
Table 4.9

Illustrations of the Mechanism Bonding from Individual Structured Interviews

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Bonding   | Source 1: “Several times, we just kept coming back to problems that we were seeing in the middle school that were continuing on in the high school that seemed to be—there was no real cure for it. We could do things to try to help, but it was never completely fixed, per se—it’s more like a Band-aid on there. We kept going back to, ‘How are we getting to this point?’ and everything pointed back to, ‘You have to be able to work with what you’re given.’

Source 2: “I think one thing we discussed is when you get in upper grades that a lot of times teachers say, “Well, I wasn’t trained to teach those type skills,” but when those kids come to your classroom without those skills, they’re not going to be able to master what you need to teach them unless you go back and try to teach them the skills prior to that, so it’s not a win-win situation at all.”

Source 3: “So it’s just that that delay that’s there from lack of parenting skills. So many of ours are being raised by grandparents now who are elderly. Who are overwhelmed. I don’t know. It was an interesting concept that—cause I would probably never had said we needed to start with middle school and high schoolers teaching them parenting because you don’t want to encourage early parenting—you don’t want to encourage that, but we’ve also got to start somewhere because we can’t wait until they’re three, and that’s what’s happening now, we’re almost—not waiting too late, but early intervention is starting at three, and that’s what we kept saying, “Well, what do we need to do? We need to get into these high schools and maybe do some classes,”

Source 4: “ And we feel like we need to put more emphasis on early readers and even before they even start school—the pre-K kids and just identifying them and having some sort of program that can really get those students that are in our demographic area that aren’t getting read to at home and aren’t getting those rich experiences from their parents, that somehow we can address that, and we feel like if we do that—we discussed a lot about our students not being ready when they get to the middle school or not being ready when they get to the high school. What can the elementary school do to help our students get ready for the middle school? What can the middle school do to help our students get ready for the high school? Well, in our environment, we can work on those things, but what can we do to help get kids ready for elementary school. That’s a big challenge.”

Source 5: “I liked our in-service idea—of having the special ed teachers and regular ed teachers meeting to understand the IEPs better and the process better, and I think that emerged from us all talking about different perspectives and different—maybe not a clear communication between the parties.”
Patterning of attention (11 references) was the fourth most frequent mechanism identified from the small group and whole group transcripts that fostered adaptability and creativity. Patterning of attention (Osborn et al., 2002) occurs when leaders separate important information from a long stream of discourse and present it to the other agents as what is vital. The researcher coded the small group and whole group transcripts for Patterning of attention when one of the participants called to the other participants’ attention a piece of information that they believed the others should be paying attention to. Figure 4.5 shows the percentage of coverage coded as Patterning of attention from the transcripts of all small group and whole group work sessions.

![Bar graph showing the percentage of coverage coded for the mechanism pattering of attention for each transcript from the small group and whole group work sessions by date. Group Y 3.28.11=2.22%, Whole Group 4.26.11=4.02%, Group Y 4.12.11=5.00%, Group S 4.26.11=10.5%](image)

**Figure 4.5**

*Bar graph showing the percentage of coverage coded for the mechanism pattering of attention for each transcript from the small group and whole group work sessions by date. Group Y 3.28.11=2.22%, Whole Group 4.26.11=4.02%, Group Y 4.12.11=5.00%, Group S 4.26.11=10.5%*
Patterning of attention was further evidenced by references coded from the structured interviews. Ten references from seven of the 13 structured interviews provided support for Patterning of attention as a mechanism leading to the emergence of ideas. The researcher coded for Patterning of attention during the individual structured interviews when participants made comments about how they or other group members drew attention to what was important during the small group and whole group work sessions or when someone pulled the other group members back in when they were getting off topic. Table 4.10 provides examples of illustrations from the transcripts of the seven structured interviews.
Table 4.10

Illustrations of the Mechanism Patterning of Attention from Individual Structured Interviews

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patterning of Attention</td>
<td>Source 1: “I think I helped them—to see the perspective of what we have to go against as far as like the regulations and that kind of thing and how it was different than doing what might seem the most—the easiest or the most clear way to do it.”</td>
</tr>
<tr>
<td></td>
<td>Source 2: “[Participant] is actually the one that said, “You know, we need to think outside the box because what we’ve been doing traditionally really isn’t helping, and we know that that’s where the need is,” and basically…got us to thinking about revamping the whole set up for the preschool program and offering two half days instead of the one full day and reaching twice the number of kids and having more one-on-one individual help because you’d be working with smaller groups; so I think that was the best idea that came out of our group.”</td>
</tr>
<tr>
<td></td>
<td>Source 3: “but I looked for whatever opportunity I could to sort of bring the group back to, “Ok, but what are we going to do today?” (Unintelligible) cause I thought that was our task, and we had limited time in which to do it.”</td>
</tr>
<tr>
<td></td>
<td>Source 4: “I guess what struck me the most was—(participant) was talking about—that if a child couldn’t read—if they were not on grade level by the end of the third grade that they would drop out, and I thought that was so interesting coming from her in elementary because we have said at the high school level for years that we can trace back their beginning of the end—our drop outs—to third grade—that third grade is so pivotal for all of our students, and although that wasn’t a creative idea, it was what I brought away from that, I think probably the most—that we need to have more resources in our elementary schools to help those children be successful.”</td>
</tr>
<tr>
<td></td>
<td>Source 5: “But then once we got started and presented, it was more of a—we had someone that was willing to speak, but then you always wanted to interject something because they may have left something out that you felt was really important.”</td>
</tr>
</tbody>
</table>

Elaboration (10 references) was the fifth most frequent mechanism identified from the transcripts. Elaboration tends to emerge in complex systems when ideas attract supporters (individuals or groups) under the conditions of competitive pressures and pressures to elaborate, change, and merge with other ideas (Arthur, 2009; Marion, 2012). The researcher coded for Elaboration when emergent ideas became attractors that then...
merged with other ideas to form a different idea that was supported by other group members. The final strategic plan for closing the achievement gap of students with disabilities that was supported by all participants emerged from the ideas for which elaboration was evident (see Figure 4.1). Figure 4.6 shows the percentage of coverage coded as *Elaboration* from the transcripts of all small group and whole group work sessions.

![Figure 4.6](image)

*Bar graph showing the percentage of coverage coded for the mechanism elaboration for each transcript from the small group and whole group work sessions by date.* Group S 4.26.11=2.41%, Whole Group 4.26.11=4.62%, Group Y 4.12.11=4.8%, Group S 4.12.11=5.55%, Group Y 4.26.11=8.08%, Group Y 3.28.11=16.73%, Group E 4.12.11=38.93%.

The presence of the mechanism *Elaboration* was further evidenced by references coded from the structured interviews. Five references from five of the 13 structured interviews provided support for *Elaboration* as a mechanism leading to the emergence of
ideas. The researcher coded for *Elaboration* when participants commented on how original ideas changed or blossomed over time in response to input from other group members. Table 4.11 provides examples of illustrations from the transcripts of the structured interviews.
Table 4.11

*Illustrations of the Mechanism Elaboration from Individual Structured Interviews*

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elaboration</td>
<td>Source 1: “I think the job shadowing was creative, and I don’t even remember who came up with it. I don’t remember. So when we were talking about following somebody for the day to see what their jobs are like to understand the others, it just sort of came up, and we kind of agreed that we liked that idea. I guess that was the beauty of it all because it wasn’t like—I don’t remember, I mean, it was our group’s idea, and that’s the way it should be. “This was her idea, and this was hers,” it wasn’t that way. I don’t remember it that way. I don’t know.”</td>
</tr>
<tr>
<td></td>
<td>Source 2: “—changes came in after listening to ideas from the other groups and thinking about the ideas that they have helped our group think about. Some things we may have left out or how to build on the idea of the early intervention and how it could work”.</td>
</tr>
<tr>
<td></td>
<td>Source 3: “—and it was mostly her idea, and then we just gave some input—like I said, she came up with the idea—pulling the kids in and giving some extra one-on-one help, but then that would require bussing issues and all that kind of stuff, so we were just trying to come up with that—to build on that strategy to serve more students.”</td>
</tr>
<tr>
<td></td>
<td>Source 4: “One of the ideas that we talked about was the communicating with special ed and general ed teachers for inclusion purposes, and I think that one just came about as we were listing different solutions on how to help kids—how to close that gap—it just, everyone—that was one sort of thing that everyone said, and everyone talked about in our group—or mentioned, and so we kind of just ran with that one and said, “Ok, let’s build on that because it seems like everyone mentioned it in one form or another, so let’s build on that.” So that’s kind of where everything stemmed from, and then it just went from there.”</td>
</tr>
<tr>
<td></td>
<td>Source 5: “And that’s where it blossomed, and we really stuck to that idea, and we really believed in it because to us it made the most sense to—cause we don’t know what’s going to happen with budget, and we were trying to think about what can we control cause those things are really out of our hands, so as a team, what can we control? We can go out in to the community and see if they’re interested, so that’s really what stuck to us and would make more sense, so that’s why we came up with a plan, it stuck, and we just came up with a whole plan around that.”</td>
</tr>
</tbody>
</table>

*Conflicting constraints* (eight references) was least frequent mechanism identified from the transcripts that fostered adaptability and creativity. Conflicting constraints are task-related conflicts that emerge when agents disagree about how tasks or preferences
are to be conducted (Kaufmann, 1995). Under conditions of conflicting constraints agents are pressured to look for adaptive solutions to their differences. The researcher coded for *Conflicting constraints* during the small group and whole group work sessions when participants demonstrated differences of opinion about current procedures, practices, or ideas for improving outcomes for students with disabilities. Figure 4.7 shows the percentage of coverage coded as *Conflicting constraints* from the transcripts of all small group and whole group work sessions.

![Conflicting constraints - Coding by Source](image)

**Figure 4.7**

*Bar graph showing the percentage of coverage coded for the mechanism conflicting constraints for each transcript from the small group and whole group work sessions by date.* Whole Group 4.26.11=5.98%, Group E 3.28.11=8.93%, Group E 4.26.11=17.32%, Group Y 4.26.11=20.41%, Whole Group 3.28.11=21.01%.

The presence of the mechanism *Conflicting Constraints* was further evidenced by references coded from the structured interviews. Nine references from six of the 13 structured interviews provided support for *Conflicting constraints* as a mechanism.
leading to the emergence of ideas. The researcher coded for *Conflicting constraint* during the individual structured interviews when participants made comments about how their group members disagreed with each other on what to do to solve the achievement gap for students with disabilities or when participants commented on disagreements at the school level. Table 4.12 provides examples of illustrations from the transcripts of the five structured interviews.
Table 4.12

*Illustrations of the Mechanism Conflicting Constraints from Individual Structured Interviews*

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflicting Constraint</td>
<td>Source 1: “so we gave our ideas and just fed off of that, and everybody else gave their bits and pieces that they thought. [Source] would say, “I don’t think that will work for this reason,” or that kind of thing, so—” Source 2: “For example, at the high school level—when we initially started the collaboration and the talking, the high school teacher says, ‘You’re sending us people on a diploma track that can’t do diploma track work,’ and my comment is, ‘We realize that; however, we’re kind of dictated—’ they don’t understand what all we’ve tried here at this level. They think that you need to put them out in all classes before they come here, well that’s just not feasible when you try them out in one class, and they’re sinking rapidly—even with the inclusive support and things like that because they just can’t function in a group larger than maybe 10 or 12 kids, and you put them in a class of 25 or 30, and even when you’re in there, it’s overwhelming, and we do try to do that—but they don’t understand that, they see it as you’re just sending us these people for diploma, and they’re not ready for it. And I don’t think they really understood how we do try to mainstream people out before we send them on a diploma track.” Source 3: “and we were just talking about community resources and things and how we could get people in, and that’s great, and I just sort of backed off and I said the only problem is—that I have faced here—is people will commit and then they don’t show up, and it’s a letdown for the kids. We hear that people want to mentor, and we want volunteers, and I have been very reluctant—you know, we sit down with people all the time, and we talk, and then it just—it never goes anywhere.” Source 4: “… but then when we all got to talking, we did have a lot in common as what our ideas were, and so the fact that we could all voice our own opinion and share and argue and disagree, but yet agree to disagree, speak up—it was a neat approach to solving a problem based on our own input instead of it just being as a group go figure out the solution.” Source 5: “I feel like it came when we were discussing that students were behind when they got to the middle school. And I brought up, ‘Well, I understand that, but you have to understand’ and trying to get middle school and high to understand. Yeah, I understand that they’re behind when they get to you, but you have to understand, especially lately, I used to do inclusion second through fifth grade cause my kids were strong and high enough that I could go into that classroom and use those supportive services in that classroom, and it was rich, and it was wonderful—they being exposed to those grade-level standards and in there with their peers, and it was very wonderful. I’ve had to back off some from that in the past few years because the students that are being placed with me are so low.”</td>
</tr>
</tbody>
</table>
In summary, six mechanisms were identified that fostered adaptability and creativity: attractors, storytelling, bonding, elaboration, conflicting constraints, and patterning of attention. The presence of the mechanisms was further evidenced by references coded from the structured interviews.

**Research Question Three**

*Question 3: How do artifacts (e.g., bureaucratic controls, accountability regulations, institutional pressures), in the presence of complex group dynamics, influence adaptability and creativity?* The researcher identified five artifacts that had a negative influence on adaptability and creativity as evidenced by the coding of the transcripts from the small group and whole group work sessions. These artifacts were described by the researcher and participants as barriers to creativity and they include the following: lack of information or knowledge (20 references), lack of parent support or home life (15 references), bureaucratic controls (13 references), time (9 references), and finance (7 references). Table 4.1 provides a summary of the number of sources and references for each barrier coded for from the transcripts of the small group and whole group work sessions. Table 4.13 offers a summary of *barriers to creativity* grandchild nodes and provides examples of illustrations from the transcripts of the small group and whole group work sessions. Discourse involving multiple participants is indicated by italics.
### Table 4.13

**Summary of Barriers to Creativity Grandchild Nodes with Illustrations**

<table>
<thead>
<tr>
<th>Grandchild Node</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucratic Controls</td>
<td>Source 1: “It’s because I think we have too many standards that we have to cover, and teachers feel forced to cover every standard, and so it’s kind of a jack-of-all-trades, master of none thing where they might can recognize a box and whisker plot, but they couldn’t tell you how to use it because you never can get to that level of mastery.” Source 2: “…what’s happening at our school—our regular ed teachers don’t want to do the paperwork. And they will say it to you, ‘I’m not doing SST (Student Support Team) because I’m not doing the paperwork.’”</td>
</tr>
<tr>
<td>Lack of Parent Support or Home Life</td>
<td>Participant S11: “Some of these people that are coming through SST (Student Support Team), there’s no—the parents come in and say, ‘Yeah, we want them going diploma, we want them to earn a diploma.’ but the parents do nothing at home to ensure that—“ Participant S2: “—I don’t think they’re able to. There are so many that just—they’re not able to.”</td>
</tr>
<tr>
<td>Finance</td>
<td>Source 1: “Well, she said we don’t have money for more support teachers, so, I mean, how are we going to get more support teachers if we don’t have funding for that?” Source 2: “Summer programs for four-year-olds which is money which we don’t have, so that’s probably not feasible.”</td>
</tr>
<tr>
<td>Lack of Information or Knowledge</td>
<td>Source 1: “And I think doing the thing like—power parent thing—I think it’s a bad assumption sometimes that every parent is going to know how—what to do to log in or that he even has internet access. Or if they do—we had a conference with someone today. He has internet access, but he was very apprehensive about signing up because it’s the unknown. But did we have any training classes for parents?” Source 2: “I don’t know. I don’t know much about it. I just got a thing that we sent home with the kids about “if you’re interested, turn this paper back in.”</td>
</tr>
<tr>
<td>Time</td>
<td>Source 1: “We need more time for teachers to collaborate—that was the big thing that came up in our meeting is like for all the fourth grade teachers to have time to get together—all the fifth grade teachers, and then the sixth grade teachers to talk with the fifth grade, eighth grade to talk with the ninth grade—“ Source 2: “And I know there’s not enough time I your day. You can’t teach sex ed and morality, and you can’t teach it all—“</td>
</tr>
</tbody>
</table>
The artifact most commonly identified as a barrier to adaptability and creativity in the transcripts of the small and whole group sessions was *Lack of information or knowledge* (20 references). The researcher coded the transcripts for the barrier *Lack of information or knowledge* when the participants posed questions to each other while brainstorming solutions for the achievement gap of students with disabilities but none of the members of the group were able to provide answers. *Lack of information or knowledge* was also coded when there was evidence of general and special educators not understanding each other’s roles at the school level and when there were comments about lack of communication between schools. Figure 4.8 shows the percentage of coverage coded as the barrier *Lack of information or knowledge* from the transcripts of all small group and whole group work sessions.
Figure 4.8

Bar graph showing the percentage of coverage coded for the barrier lack of knowledge for each transcript from the small group and whole group work sessions by date. Group S 4.12.11=.74%, Group Y 4.26.11=.96%, Group E 3.28.11=1.12%, Group S 3.28.11=3.02%, Whole Group 4.26.11=3.25%, Group Y 4.12.11=4.28%, Group S 4.26.11=7.82%, Group E 4.12.11=9.61%, Group Y 3.28.11=10.62%.

The presence of the barrier *Lack of information or knowledge* was further evidenced by references coded from the structured interviews. Eleven references from seven of the 13 structured interviews provided support for *Lack of information or knowledge* as a barrier to adaptability and creativity. The researcher coded for *Lack of information or knowledge* during the individual structured interviews when participants made comments about the need for training and the existence of a lack of information across the various levels of the organization in general. Table 4.14 provides examples of illustrations from the transcripts of the seven structured interviews.
**Table 4.14**

*Illustrations of the Barrier Lack of Information or Knowledge from Individual Structured Interviews*

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Information or Knowledge</td>
<td>Source 1: “—some of the barriers were trying to figure out how to get the volunteers trained enough to be able to do what we felt they would be efficient and competent in training students on fundamental reading skills and that kind of thing and being able to figure out how we would get the teachers to help with it in the district…”</td>
</tr>
<tr>
<td></td>
<td>Source 2: “—it was evident that not all levels of the organization had the same information, and as a result of that, some of the decisions that are currently in place or that are procedures, I would say, may not foster the best results because of that lack of information, and it was just apparent that input was needed from everyone to be able to get to the source of the problem and come up with viable solutions to fix the problem.”</td>
</tr>
<tr>
<td></td>
<td>Source 3: “I would say one thing is—one of the barriers is not knowing what the other person did going in and then knowing that you’re limited because of a lot of the things that we discussed would take—some of the things—would take additional funding, which funding is an issue. More time to work together and maybe work out some of those problems that—how we could change things without having to have more money.”</td>
</tr>
<tr>
<td></td>
<td>Source 4: “And then we, at the middle level, didn’t—I definitely didn’t understand everything that the PIP (Preschool Intervention Program) program did, but looking at the level before us, we’re like, ‘Well, why don’t they use this program or that program to try to help build reading gaps,’ and things like that, and I guess—now, we didn’t have, per se, just an elementary-level teacher, but we did gain insight from the early childhood about how when they move into first grade or second grade some strategies that they try to do. And I guess when you live in your own little niche, so to speak, and you know how you do things here—because it’s a whole different set up from middle to elementary as it is from middle to high. It’s just hard to understand what they’re doing at that level to bridge the gap, and then they—vice versa—elementary thinks maybe we’re too hard and don’t understand why we don’t give—read every single word of everything to them.”</td>
</tr>
<tr>
<td></td>
<td>Source 5: Well, I saw a greater need for collaboration among the entire area—that there are misconceptions, I guess, at every level about, “Who’s doing what?” There’s just a greater need for collaboration to help the process run a little smoother.”</td>
</tr>
</tbody>
</table>
The artifact identified as the second most frequent barrier to adaptability and creativity in the transcripts of the small and whole group sessions was *Lack of parent support or home life* (15 references). The researcher coded the transcripts for the barrier *Lack of parent support or home life* when participants discussed how they believed the home environments of kindergarten students contributed to a lack of readiness for school and when they discussed how some parents do not demonstrate high expectations for learning and graduating with a high school diploma. *Lack of parent support or home life* was also coded when a participant engaged in storytelling and told how a parent did not want to provide permission to test despite the teacher’s concern that the student needed additional support through special education. Figure 4.9 shows the percentage of coverage coded as the barrier *Lack of parent support or home life* from the transcripts of all small group and whole group work sessions.
Figure 4.9

*Bar graph showing the percentage of coverage coded for the barrier lack of parent support or home life for each transcript from the small group and whole group work sessions by date.*


The presence of the barrier *Lack of parent support or home life* was further evidenced by references coded from the structured interviews. Three references from three of the 13 structured interviews provided support for *Lack of parent support or home life* as a barrier to adaptability and creativity. The researcher coded for *Lack of parent support or home life* during the individual structured interviews when participants made comments about how they believe a lack of parenting or grand-parenting skills contributes to the kindergarten at-risk population. Table 4.15 provides examples of illustrations from the transcripts of the structured interviews.
Table 4.15

Illustrations of the Barrier Lack of Parent Support or Home Life from Individual Structured Interviews

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Parent Support or Home Life</td>
<td>Source 1: &quot;And we’re expecting everybody—by the time they hit kindergarten—to be ready to proceed at that level, and they’re not, and we have to go back and look at why they’re not, and a lot of it goes back to parenting—lack of parenting skills, but we can’t control that other than provide information.”</td>
</tr>
<tr>
<td></td>
<td>Source 2: “So many of ours are being raised by grandparents now who are elderly. Who are overwhelmed. I don’t know. It was an interesting concept that—cause I would probably never had said we needed to start with middle school and high schoolers teaching them parenting because you don’t want to encourage early parenting—you don’t want to encourage that, but we’ve also got to start somewhere because we can’t wait until they’re three, and that’s what’s happening now.”</td>
</tr>
<tr>
<td></td>
<td>Source 3: “Cause what I heard—this is a huge obstacle for that particular area. You’re talking about trying to cause a culture change in the [geographical] area for a lot of people. One of their testimonies was a teacher talking about—saying that a parent responded to her question, “No, I don’t read to her, she can’t read yet. No, we don’t sing songs in the car, she watches a DVD player.” So, I heard that more than once, and I—having lived there and grown up there, I believe that to be true, that you’re talking about changing a culture. That requires some significant action, not just a little smattering here and there.”</td>
</tr>
</tbody>
</table>

Six sources from the small group and whole group work sessions identified the grandchild node Bureaucratic controls (13 references) as a barrier to creativity. Stacey, Griffin, and Shaw (2000) and Streatfield (2001) also contend that bureaucracy is a barrier to mainstream leadership theories that support models of leadership grounded in complexity. The researcher coded the small group and whole group transcripts for Bureaucratic controls when participants identified organizational rules or boundaries and accountability policy as barriers to creativity. Figure 4.10 shows the percentage of
coverage coded as *Bureaucratic controls* from the transcripts of all small group and whole group work sessions.

![Bar graph showing the percentage of coverage coded for the barrier bureaucratic controls for each transcript from the small group and whole group work sessions by date. Group S 3.28.11=2.24%, Group S 4.12.11=2.28%, Whole Group 4.26.11=2.87%, Group E 3.28.11=6.16%, Group Y 3.28.11=9.96%, Group S 4.26.11=9.98%.

Figure 4.10

*Bar graph showing the percentage of coverage coded for the barrier bureaucratic controls for each transcript from the small group and whole group work sessions by date. Group S 3.28.11=2.24%, Group S 4.12.11=2.28%, Whole Group 4.26.11=2.87%, Group E 3.28.11=6.16%, Group Y 3.28.11=9.96%, Group S 4.26.11=9.98%.*

The presence of the barrier *Bureaucratic controls* was further evidenced by references coded from the structured interviews. Three references from three of the 13 structured interviews provided support for *Bureaucratic controls* as a barrier to adaptability and creativity. The researcher coded for *Bureaucratic controls* during the individual structured interviews when participants made comments about the implementation of their ideas being bounded by organizational limits or by rules and regulations. Table 4.16 provides examples of illustrations from the transcripts of the seven structured interviews.
Table 4.16

Illustrations of the Barrier Bureaucratic Controls from Individual Structured Interviews

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucratic Controls</td>
<td>Source 1: “The other barrier would be, of course, the decisions have—some of the ideas had to be approved or confirmed by the board or by the superintendent or some things like that. It’s not just have a great idea and be able to implement it; you still have to go through some stages to get that.”</td>
</tr>
<tr>
<td></td>
<td>Source 2: “but if we’re talking about making a significant change, is what you’re talking about really going to do that? Otherwise, we’re just sort of getting more of the same, and I think that’s one of the big obstacles—even more than money—that education faces is the rigidity of our structure—that we don’t seem to want to be innovative. ‘Innovative’ doesn’t mean ‘let’s buy the latest computers.’ To me it’s ‘let’s do something really different’ if we want to have a significant change.”</td>
</tr>
<tr>
<td></td>
<td>Source 3: “to see the perspective of what we have to go against as far as like the regulations and that kind of thing and how it was different than doing what might seem the most—the easiest or the most clear way to do it, but looking at the regs—and I had the opportunity to look at it from different perspectives because I work in so many age groups, so that helped.”</td>
</tr>
</tbody>
</table>

The artifact identified as the fourth most frequent barrier to adaptability and creativity in the transcripts of the small and whole group sessions was Time (9 references). The researcher coded transcripts for the barrier Time when participants discussed how they believed there was not enough time to collaborate, teach, do paperwork, plan for leveling, call parents, and send notes home. Figure 4.11 shows the percentage of coverage coded as the barrier Time from the transcripts of all small group and whole group work sessions.
The presence of the barrier *Time* was further evidenced by references coded from the structured interviews. Twelve references from 10 of the 13 structured interviews provided support for *Time* as a barrier to adaptability and creativity. The researcher coded for *Time* during the individual structured interviews when participants made comments about not having enough time at the school level to develop relationships with other professionals, to collaborate and plan within or across schools, and to provide additional academic support without impacting core academics. The researcher also coded for *Time* as a barrier when participants reported they did not have enough time to finish their strategic plan when working in small groups during the action research study. Table 4.17 provides examples of illustrations from the transcripts of the seven structured interviews.
Table 4.17

Illustrations of the Barrier Time from Individual Structured Interviews

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Source 1: “I guess my opinion is it’s all about relationships; that’s the key. The closer the relationship, the more professional the relationship, the more progress you’re going to make, but to build a relationship is time. It’s working through things and getting to know people and knowing who their kids are. That’s what the relationship piece is, and you’ve got to do that initially or you’re not going to make the growth later, and so—I mean, that’s the way I feel like it is; that’s what’s important…”</td>
</tr>
<tr>
<td></td>
<td>Source 2: “and of course, time. That was the other big constraint. Either providing time for staff and the whole planning of it or the whole program—because many times and elementary person doesn’t understand a middle school; middle school doesn’t understand a high school, so if we’re talking about providing services to students, how do we carve out the time that they’re not missing and being pulled out of core academics…”</td>
</tr>
<tr>
<td></td>
<td>Source 3: “Other barriers were probably not enough time to really—cause once we got into it, we got excited, and we got to talking, and then it was time to end it, and that was probably a barrier for us because we were all talkers. We didn’t get off target, but we would get so far into it that we had to back ourselves up and say, ‘Ok, we’re not getting to where’—and we still didn’t finish.”</td>
</tr>
<tr>
<td></td>
<td>Source 4: “I would think the time constraint—like I said, whenever you called “time,” we never were ready, and there really wasn’t a way to work around that other than when we presented to the group, that kind of gave us an opportunity to throw out a thought that we may not have been able to say and write down, but we were able to say, “This is something else we could do,””</td>
</tr>
<tr>
<td></td>
<td>Source 5: “I think the biggest barrier was the time constraint. Just not having quite enough time to work out all the kinks and all the details.”</td>
</tr>
</tbody>
</table>

The last artifact identified as a barrier to adaptability and creativity in the transcripts was Finance (7 references). The researcher coded transcripts for the barrier Finance when participants discussed how they believed there was not enough money to fund their emerging ideas (e.g., more support teachers, summer programs, and better communication with parents) and to continue to fund essential programs that are currently in place (e.g., reading recovery and 4 year-old kindergarten). Figure 4.12
shows the percentage of coverage coded as the barrier *Finance* from the transcripts of all small group and whole group work sessions.

![Bar graph showing the percentage of coverage coded for the barrier finance for each transcript from the small group and whole group work sessions by date. Group S 4.26.11=0.53%, Group E 3.28.11=0.9%, Group Y 3.28.11=2.84%, Group S 4.12.11=5.37.](image)

The presence of the barrier *Finance* was further evidenced by references coded from the structured interviews. Eleven references from 11 of the 13 structured interviews provided support for *Finance* as a barrier to adaptability and creativity. The researcher coded for *Finance* during the individual structured interviews when participants made comments about not having enough finances to fund additional support personnel and professional development. The researcher also coded for *Finance* as a barrier when participants made comments about the district not having enough money to fund the ideas that emerged from this action research study. Table 4.18 provides examples of illustrations from the transcripts of the seven structured interviews.
Table 4.18

*Illustrations of the Barrier Finance from Individual Structured Interviews*

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Finance       | Source 1: “I would say trying to figure out how to get the teachers to help the district—of getting the financial part of getting the volunteers and getting them trained enough to be able to help and how you’d get the school district to help with that would be the main barrier that we had.” Source 2: “I think some of the barriers is—always when you’re coming up with an initiative is funding (unintelligible), especially with professional development: who’s got any money to pay for it? How are we going to pay for it? So that was a barrier.” Source 3: “The biggest obstacles that we faced as we were working through a plan was just being able to find the resources that we would need, and the obstacle for us would be trying to find people willing to spend their time going out into the community and teaching it because they’re really going to have to take hold of the plan and believe in it themselves in order to go out there and be willing to go out to the community because a lot of people won’t do it unless they’re required or it’s part of their description.” Source 4: “Of course, money being the other because the only way to increase personnel is to have more money which we—I said, and I think they agreed, in this environment right now, that’s not really that practical.” Source 5: “I think the frustration comes from knowing that you can come up with a solution. You can come up with an idea, but is the funding going to be there? Is it going to be able to be carried out…” In summary, participants perceived the artifacts of Bureaucratic controls, Lack of information or knowledge, and Lack of parent support or home life, in addition to the institutional pressures of limited Time and Finances, as barriers having a negative influence on adaptability and creativity in the presence of complex group dynamics. Accountability regulations were also perceived as a barrier contributing to the institutional pressure of limited Time as participants made comments about not having enough time to teach the state defined curriculum standards in depth to students identified as having a disability.
Additional Analyses

In addition to answering the main research questions, the researcher examined the ways agents worked around barriers to adaptability and creativity, the evidence supporting the contextual condition of psychological safety, and participants’ general comments about the study.

The barriers to adaptability and creativity identified by the participants include: Bureaucratic controls, Lack of parent support or home life, Lack of information or knowledge, Finance, and Time. The data reveal that participants were able to work around some barriers as they strived to develop a strategic plan for closing the achievement gap of students with disabilities. Marion (2012) describes a complexity mechanism that is based on a principal in physics called dampening. This complexity dampening mechanism is similar to how Baker and Gollub (1990) describe a dampened pendulum, or a pendulum passing through a short section of water (the dampener). Under this condition, a pendulum will, under appropriate conditions, assume a chaotic trajectory. Likewise, complexity dampening can occur when creative systems are influenced by the boundaries of organizational rules, policies or regulations. Marion (2012) contends that under these conditions complex adaptive systems have the potential to increase their dynamic response and become more creative as they work around organizational constraints.

The researcher identified two examples of Complexity dampening in the transcripts of the small group and whole group work sessions that showed how participants worked around the barrier Bureaucratic controls. Table 4.19 provides a
summary of these examples of Complexity dampening where participants engaged in discourse for the purpose of working around barriers to their emerging and creative ideas for closing the achievement gap of their students with disabilities. Discourse involving multiple participants is indicated by italics.

The first example illustrates a situation where participants generate an idea for providing parenting classes to pregnant high school students or young mothers still enrolled in high school that would focus on the importance of early literacy in the home. However, as they work around the barrier of limited financial resources by recommending that the program be housed in an existing location (i.e., the adult education center) they are confronted with a policy barrier that any students in adult education must drop out of high school before enrolling in the center. The participants effectively worked around this barrier by discussing the condition that the pregnant teens and young mothers would not be enrolled in adult education program housed in the building. They would simply attend a separate program under the same roof.
Table 4.19

Summary of Complexity Dampening Tree Nodes with Illustrations

<table>
<thead>
<tr>
<th>Tree Node</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Complexity Dampening    | Participant S2: “But I was talking about students—actual high school students that become pregnant. You know, 16-years old. Utilize some of those programs they have (referring to the Adult Education building). I know that they even offer daycare. They even have like a little room where somebody works with the little children while the moms are over there taking classes which is a win-win situation.

Participant S7: “The only problem I see with that is—I do know—by law, once you enter adult ed, you are no longer a high school student and can never go back to high school.”

Participant S2: “And I think what I’m saying is, the programs are actually housed at the adult ed building, but I don’t know that they’re actually adult ed classes. Does that make sense? And so if they’re—”

Participant Y10: “And when it came down to it—it came from our very first discussion—and we were saying the trouble we have is when the child is coming out of third grade and ending up at XXX (intermediate school), and they’re not reading on grade level, the chances of them graduating from high school is slim, and so then we had this big discussion about, “Ok, so”—and that’s what XXX (high school teacher) was saying. We can track it back down to third grade reading level—I guess what we struggle with is how to get them over that hump, and we were talking about how sometimes I feel like we help them too much. We give them too many crutches, but then we want to do that to help them along, but then they hit middle and high, and they’ve had so many helps all along and they hit a brick wall.

Participant Y8: “Because we can’t offer modifications if they’re earning a unit. We can in the certificate program, but they’ve missed too much by that point…We can do accommodations, but we can’t modify the curriculum because they’re earning that unit.”

The second example illustrates a conflicting constraint whereby participants from different school levels discuss their perceptions about accommodations and modifications at the elementary level versus the middle and high school level. Although elementary level teachers want to help students along by providing accommodations and modifications in the lower grades, a high school representative reminds other participants that in order to earn Carnegie units for graduation with state high school diploma students...
with disabilities must complete on grade level course work with no modifications. The participants work around this barrier or regulation by including in the final whole group strategic plan an opportunity for improving communication between the different school levels that would allow elementary, middle and high school educators to discuss each other’s rationale when making decisions for individual students with disabilities. Table 4.20 provides additional examples of how participants worked around the barriers of culture, finance, lack of knowledge, and time. Discourse involving multiple participants is indicated by italics.
### Table 4.20

<table>
<thead>
<tr>
<th>Tree Node</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Lack of Parent Support or Home Life | Participant E3: “Or could we help to educate some of the volunteers at the church?  
Participant E1: “To do the teaching—“  
Participant E3: “To do the teaching. Cause some of those people, they’re great volunteers and they’re holding these programs, but it doesn’t—that it would become more educationally based rather than just a daycare facility.” |
| Finance                          | Source 1: “Well, could we not use—the teacher cadet programs? We were talking about volunteers—high school volunteers and could we utilize more of the teacher cadet people as an elective—maybe some elective credits or something?  
Source 2: “I would be willing to do a summer program in my classroom with some of my students, but they’re not going to pay me. It would take three or four adults…They’re not going to pay me plus a whole crowd of other adults. They might would pay me if I could get high schoolers to come help me for free.” |
| Lack of Information or Knowledge | Participant E1: “And even for those that already know it, a reminder. I mean, professional development—“  
Participant E3: “XXX can do that…and it doesn’t cost us any money because she’s already—we did reading in the content area, and I’m thinking at xxx (school).” |
| Time                             | Participant Y9: “And I’m thinking those may not take as many resources either. If we use, say, one of our professional development days for collaboration between special ed and regular ed.”  
Participant Y5: “Almost exactly—kind of what we’re doing right now with this kind of collaboration.” |

A description of how participants worked around barriers is also portrayed in the individual structured interviews. There were 18 references from 10 of the 13 structured interviews that provide a picture of how agents engaged in discourse for the purpose of overcoming obstacles preventing adaptability and creativity. The researcher coded for *Working around barriers* during the individual semi-structured interviews when
participants explained how their group worked together to generate ideas for addressing the problems of lack of information or knowledge, lack of parent support or home life, bureaucratic controls, time or finance. Table 4.21 provides examples of illustrations from the transcripts of the individual structured interviews.
Table 4.21

Illustrations of Participants Working Around Barriers from the Individual Structured Interviews

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance and Lack of Knowledge</td>
<td>Source 1: “Some of the barriers were trying to figure out was how to get the volunteers trained enough to be able to do what we felt they would be efficient and competent in training students on fundamental reading skills and that kind of thing and being able to figure out how we would get the teachers to help with it in the district, and so—and then, (participant) already had the idea of working in the credits for the college...”</td>
</tr>
<tr>
<td>Finance</td>
<td>Source 2: “The way we could get the finances is we talked about, well, we could talk to special services and see what sort money they had. Within schools, we could have some money, but then you’d have to have buy in from all those principals in the [geographic] area, if they’re willing to contribute. You just don’t know. I think it would come down to what kind of job you could get to get everybody on board, and that could—and it takes time; it takes time for people to agree. It takes time for people to feel like they’ve been a collaborative part of the problem and the solution than if you just kind of—it’s the same old thing, if you do the top-down, ‘We’re going to do it this way, and this is the way we’re going to do it,’ people are not willing to buy in nearly as much.”</td>
</tr>
<tr>
<td>Time</td>
<td>Source 3: “We did once. It would have been between; I guess week two and week three—the spring break week. I think we had finished in week two, and we had some things hanging out there, and one of our group members was not there, so that time we did because we needed to formulate some things to come back and present for the third week, I believe, that we hadn’t had time at the end of the second week, so yes, we did communicate via email that way.”</td>
</tr>
<tr>
<td>Lack of parent support or home life</td>
<td>Source 4: “We all had a different opinion as to what would be the best solution to fix the problem…but then as we started communicating and looking at the problem, we kept coming back to...early intervention. One of us said, ‘Well, we can’t bring them home from the hospital, but if we could, that’d be the best solution’ because right now some of the issues we’re seeing with the special needs population is just their home environment. So we said, ‘How do we fix that? What do we do with those issues? How can early intervention step in and’—I think one of the most creative things we came up with was that we need to work harder in our middle and high school level classes on parenting skills because you have these teenagers having babies who don’t have a clue that reading to a child is important. I think we’re doing a great job with some areas of early intervention, but we’re just not reaching early enough. So that was one of the things we had talked about. How can we, as educators, reach those potential parents of preschoolers with special needs?”</td>
</tr>
</tbody>
</table>
The second additional analysis was conducted to verify the contextual condition of *Psychological safety*. The researcher examined participants’ comments from the individual semi-structured interviews and coded for *Psychological safety* when participants made comments about being able to share ideas freely, feeling like their opinions were heard and valued, feeling respected, and feeling comfortable to present a dissenting viewpoint. An examination of the NVivo 8 child nodes from the transcripts of the interviews revealed 14 references made by 10 participants supporting the feeling of psychological safety as they worked in their small groups and the whole group. Table 4.22 provides examples of illustrations of *Psychological safety* as evidenced from the transcripts of the individual semi-structured interviews.
Table 4.22

Illustrations of Psychological Safety from the Individual Structured Interviews

<table>
<thead>
<tr>
<th>Child Node</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Psychological Safety| Source 1: “Because usually, you have one person that’s in charge, and the rest are just followers, and I didn’t feel that way. I felt that we all had valuable input because we were all respected in our group, I guess. We all had our own knowledge and expertise, and it was all respected. I’ve never had that happen in a group before—usually you have one person take charge, always, and everybody else is just an Indian and does what the chief tells them to do, and that was not happening in that group. We didn’t argue—disagree bad, but there were several times where it was like, “That’s not the way I feel about that,” or “I think you’re wrong.” It was ok to say it. It was ok to be wrong. It was ok for them not to agree with us,”  
Source 2: “I really liked how we had a representative from each level, and everybody was heard. I know my opinions were heard; they were appreciated. It wasn’t just denied or I guess you would say everybody would use your opinions to grow as a group and come up with one particular plan for our group.”  
Source 3: “—they were supportive and willing to hear the ideas from each person. There was willingness for change in ideas and not being stuck that, “I feel this way, and I’m not going to change,” so people were willing to listen and to change their way of thinking.”  
Source 4: “ when we all got to talking, we did have a lot in common as what our ideas were, and so the fact that we could all voice our own opinion and share and argue and disagree, but yet agree to disagree, speak up—it was a neat approach to solving a problem based on our own input instead of it just being as a group go figure out the solution—where, I don’t know that we would have done it the way we did it had you not explained it and had us understand that we were able to give our own input and it be valuable,  
Source 5: “But with your research, it happened fast, and I think it was because you had told us, “We’re all going to be a leader here. We all have a voice. We all have our own opinions. Every opinion’s valued,” so we weren’t having to learn each other. We just were respected and moved right on into our position, and it worked.”  |

A third additional analysis examined participants’ comments in general. While analyzing the individual semi-structured interviews, the researcher created child nodes under the parent node *Structured interview comments* in NVivo 8 for the following themes: *Enjoyed participating, Group had equal contributors, Group worked well, Need*
entanglement, Outcome worthwhile, and Support ground-up decision making. Table 4.23 provides a summary of the sources and references from NVivo 8 for the child nodes created under the parent node Structured interview comments.

Table 4.23

Summary of Child Nodes for Structured Interview Comments Created Using NVivo 8

<table>
<thead>
<tr>
<th>Parent Node</th>
<th>Child Node</th>
<th>Number of Sources</th>
<th>Number of References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured Interview Comments</td>
<td>Enjoyed participating</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Equal contributors</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Group worked well</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Need entanglement</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Outcome worthwhile</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Support ground-up decision</td>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>

The researcher coded for Need entanglement when participants made comments about how administrative leadership was needed in order for their ideas to be implemented, in other words, for creativity to become innovation. These comments support what Marion and Uhl-Bien (2007) termed the administrative-adaptive interface: Enabling leaders strive to prevent administrative leaders from thwarting the potential benefits of CAS dynamics by championing the emergence of ideas that are in line with the organization’s mission. Furthermore, enabling leaders influence organizational politics (e.g., policy development, resource allocation) in a way that supports the work of
the adaptive function. Table 4.24 provides examples of illustrations of participants’ comments from the individual semi-structured interviews.
Table 4.24

**Summary of Child Nodes for Structured Interview Comments with Illustrations**

<table>
<thead>
<tr>
<th>Tree Node</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Enjoyed Participating    | Source 1: “I have to tell you, I enjoyed this study probably more than anything I have done in my professional life, and I—the one reason that I enjoyed it is because I was with people from all of the different areas—from k through 12, and I thought that was just so neat and not all just special and not all just teachers and not all just administrators, but it was that collaboration between—It really was fun. I really enjoyed it.  
Source 2: “I thought it was wonderful. To be honest, at the beginning, I thought, “Three 90-minute sessions, I’m not going to make it.” But the time went by so quickly, and I got so much out of it.” |
| Equal Contributors       | Source 1: “So I knew that they were good contributors to the conversation; everybody worked equally well together,  
Source 2: “I think it was—for my team—very equal basis. I really liked how we had a representative from each level, and everybody was heard.”                                                                                                                                                                             |
| Group Worked Well        | Source 1: “—but overall, I would say that we complimented each other because when one person might be reluctant to share, the others would encourage that, and then through that process we were able to gain, I felt, a lot of valuable information that helped us look at the problem from varied perspectives and get a better picture than what we thought it was to begin with.”  
Source 2: “I thought that we all worked very well together”                                                                                                                                                                                                                                                                         |
| Need Entanglement        | Source 1: “The other barrier would be, of course, the decisions have—some of the ideas had to be approved or confirmed by the board or by the superintendent or some things like that. It’s not just have a great idea and be able to implement it; you still have to go through some stages.”  
Source 2: “I think maybe one thing that we probably were frustrated with is that is the district really going to take what we say and look at it and say, “Yeah, we need to do this,” or is this just going to be something that’s going to be put under the table and say, “That was a good idea, whatever.”                                                                                                                                                        |
| Outcome Worthwhile       | Source 1: “I’m excited. I was excited about the outcome of the whole project because we can’t do anything with early intervention until we get regular ed and special ed working closer together anyway. So it just all, to me it just all blended into a plan that can work and then grow into something that’s going to make a difference.  
Source 2: “I think as far as what our group experienced and what I saw in the study—in the whole group, it just really made for more ideas, more solutions, more came out of it than what would happen if it was just one or two people meeting and then going down to the next level and the next level.”                                                                 |
Summary of Child Nodes for Structured Interview Comments with Illustrations (Continued)

<table>
<thead>
<tr>
<th>Tree Node</th>
<th>Illustration</th>
</tr>
</thead>
</table>
| Support Ground-up Decision Making | Source 1: “The problem comes—is—bring people to meet together, talk about it, get buy ins; it’s not nearly as quick solutions, but it’s worth it in the long run if you take the buildup time, the collaborative time, the team building time. All those pieces must come together first so that every—and if we become impatient and just say—if you try to do the top-down management, your long-run results are not going to be the same, I don’t think.”  
Source 2: “it was evident that not all levels of the organization had the same information, and as a result of that, some of the decisions that are currently in place or that are procedures, I would say, may not foster the best results because of that lack of information, and it was just apparent that input was needed from everyone to be able to get to the source of the problem and come up with viable solutions to fix the problem.” |

Summary

In this chapter, the answers to the research questions were explored by presenting the themes and definitions identified in the transcripts of the small group and whole group work sessions in addition to the participants’ responses to the individual structured interview questions. A pivotal role of the researcher during this action research study was to enable the contextual conditions (i.e., heterogeneity, dynamic interaction, interdependency, conflicting constraints, adaptive tension, information flow, and psychological safety) that fostered the complexity mechanisms evidenced. The results showed that participants responded to the adaptive challenge of developing a strategic plan for closing the achievement gap of students with disabilities by engaging in information flow leading to enhanced learning and increased creativity. The novel ideas that were elaborated subsequent to attracting other group members’ interest and support
were the ideas that ultimately became part of the final strategic plan advanced by all participants.

The outcomes of this study support the framework for complexity leadership theory which “focuses on identifying and exploring the strategies and behaviors that foster organizational and subunit creativity, learning, and adaptability when appropriate CAS dynamics are enabled within contexts of hierarchical coordination (i.e., bureaucracy)” (p. 299, Uhl-Bien et al., 2007). The complexity mechanisms evidenced in the transcripts from the small group and whole group work sessions and from the individual structured interviews that supported increased adaptability and creativity were *Attractors, Bonding, Conflicting constraints, Elaboration, Patterning of attention, and Storytelling*. Artifacts identified from the transcripts serving as barriers to adaptability and creativity include *Lack of knowledge, Lack of parent support or home life, Bureaucratic controls, Time, and Finance*. Participants successfully worked around these barriers to develop a final strategic plan supported by all team members of the whole group.

The next chapter will present a summary of the study depicted as a model encompassing the components evidenced while examining all three research questions. A discussion of the model will be offered in addition to a discussion of the study in general followed by implications for practice in education settings and recommendations for future research.
CHAPTER FIVE
SUMMARY, DISCUSSION, AND CONCLUSIONS

Data collection and analysis were reported in the preceding chapter. Chapter 5 presents a summary of the study, discussion of the findings including an overall model of adaptive leadership functions, implications for practice, recommendations for further research and conclusions. The latter sections are intended to expand upon the concepts of adaptive and enabling leadership in an attempt to advance a deeper understanding of the potential influence of complexity leadership theory on leadership practices in an educational setting, particularly in the realm of special education. Suggestions for further research aimed at gaining knowledge about the benefits of recognizing and exercising adaptive leadership processes and the potential impact of this knowledge on organizational creativity and innovation are also offered. Finally, concluding remarks draw attention to what the researcher attempted to gain during this action research study.

Summary of the Study

The main problem that motivated this action research study is that the focus district has not been able to meet state defined performance targets for students with disabilities as established under the accountability requirements of No Child Left Behind (2001). The purpose of this study was to examine how agents of a complex adaptive system (i.e., the target school district) respond when faced with an adaptive challenge of closing the achievement gap of students with disabilities under contextual conditions capable of fostering complexity mechanisms (i.e., heterogeneity, adaptive pressure,
information flow, interaction, interdependency, psychological safety and resources). Another purpose was to identify the mechanisms that emerged during participant interaction that fostered adaptability and creativity and to examine the influence of artifacts (e.g., bureaucratic controls and institutional pressures) in the presence of complex group dynamics. Complexity Leadership Theory (CLT), which examines emergent leadership dynamics within the context of bureaucratic structures (Uhl-Bien et al., 2007), is the theoretical framework underpinning this study. CLT recognizes three functions of leadership—administrative, adaptive, and enabling—and describes them as entangled (Uhl-Bien & Marion, 2009). This study examined the entanglement of adaptive and enabling leadership in particular and how enabling leaders can foster conditions conducive to enhanced learning, adaptability and creativity in organizations.

Observation and individual semi-structured interviews were the primary measurement techniques used to answer the research questions. Data were collected during three 90-minute training and work sessions.

Discussion of the Findings

This section discusses the findings for each of the three research questions. The discussion of findings for research question two incorporates a comprehensive process model of adaptive leadership derived from the collection of data throughout the study. A descriptive narrative of this model is also presented.
Research Question One

How do interactive agents from varying backgrounds (i.e., general and special education, administration, and guidance) and grade levels (PreK-12) respond to adaptive challenges under conditions of enabling leadership?

The findings resulting from research question one indicate that participants responded to the adaptive challenge of developing a strategic plan for the purpose of closing the achievement gap of students with disabilities by generating dynamic information flows leading to learning and the emergence of novel ideas. The themes Information flow, Learning, and Idea emergence were supported by the transcripts from the small group and whole group work sessions and by the transcripts from the individual semi-structured interviews.

These findings provide support for Uhl-Bien and Marion’s (2009) meso-model of complexity leadership theory (Figure 1.1) which recognizes the complex adaptive system (CAS) as the unit of analysis for complexity leadership theory (Uhl-Bien et al., 2007). There were four CASs in this study: the three small work groups and the combined whole group. The CASs in this study permeated the bureaucratic structure of the school district as participants represented multiple positions at the school level (i.e., general and special education teachers, guidance counselor, school psychologist, administrators) and included a district office representative. The researcher’s role was to enable the adaptive function of the CASs as depicted in figure 1.1, which ultimately lead to the emergence of learning, information flow and the emergence of ideas. The findings supported the model in Figure 1.1 and the claims of Uhl-Bien et al. (2007) that “CAS are unique and desirable
in that their heterogeneous, interactive, and interdependent structures allow them to quickly explore and consolidate solutions to environmental pressures” (p. 304).

An examination of interactions within the CASs revealed that dynamic complexity processes were evident. Cilliers (1998) explains that the elements in a complex system must interact and that the interactions cannot be fixed. They must be able to shift and merge. This description is characteristic of the dynamic interaction of the CASs in this study. Figure 4.1 was created based on the data analysis to show the nonlinear process of information flow leading to the final strategic plan for closing the achievement gap for students with disabilities. The nonlinearity represented in this figure supports Greenwood and Hinings (1996) contention that to understand change in an organization, leaders must allow for nonlinearity capable of generating emergence and unexpected outcomes.

The nonlinearity of idea emergence in this study is also aligned with the outcomes of empirical case studies presented in chapter two. Chiles et al. (2004) used a longitudinal regression analysis during a grounded case study to conduct an empirical test of complexity theory at a collective level. Their study of the transformation and emergence of Branson, Missouri’s musical theaters showed how “an organizational collective accrues through the aggregated (and punctuated) emergence of path-dependent orders, each building on the next in a nonlinear accumulation and interaction of countless events each setting the stage for greater diversity” (p. 514). My action research study similarly revealed evidence of nonlinear accumulations of ideas. All but three diamonds
in Figure 4.1 (i.e., 5, 10 and 11) show how ideas changed and emerged as participants interacted dynamically during their small group and whole group work sessions.

Plowman et al. (2007) performed a case study of change in an inner city church; their data supported their proposition that the “interaction of amplifying actions accelerates a small change into radical change, given a high level of organizational tension” (p. 538). Furthermore, they posited that the complexity theory explanation for this phenomenon is that “nonlinear dynamic systems respond to multiple forces, multiple actors, and instabilities” (p. 538). The emerging ideas from my research were similarly accelerated by nonlinear dynamic systems (i.e., CASs). I add that these dynamics were fueled by multiple forces such as conflicting constraints, bonding, attractors, and social dampening. The nonlinear dynamic system in this study was impacted by multiple actors with heterogeneous worldviews working under the contextual condition of adaptive tension imposed by the mandate to create a strategic plan for improving outcomes for students with disabilities.

The data collected to answer research question one support the premise of complexity leadership theory: “Under conditions of knowledge production, managers should enable, rather than suppress or align, informal network dynamics” (Uhl-Bien et al., 2007, p. 302). It is this informal network dynamic that feeds information flow which is capable of producing creative ideas.
Research Question Two

What mechanisms emerge within complex interactive groups that foster adaptability and creativity?

A second purpose of this study was to identify regularly occurring complexity mechanisms or processes that influence the behavior of CASs. Six mechanisms were identified that fostered adaptability and creativity: attractors, storytelling, bonding, elaboration, conflicting constraints, and patterning of attention.

The mechanism coded most frequently was attractors (62 references). Attractors were identified that supported Snowden and Boone’s (2007) description that “As attractors gain momentum, they provide structure and coherence” (p. 6). Figure 4.1 shows how the process of information flow leads to elaboration and the emergence of ideas. Attractors were present in eight of the 12 diamonds in figure 4.1. The arrows moving from five of these eight diamonds to the octagon titled elaboration show how the ideas that gained attractors were more likely to elaborate and become part of the final strategic plan. Of the 10 information flow processes leading to elaboration, eight of them evidenced presence of attractors. This finding is significant for educational leaders as there is potential to have a profound effect on outcomes if they work to catalyze existing attractors that align with the mission of schools or the district. This supports Uhl-Bien and Marion’s (2009) statement that “In the right conditions, adaptive leaders can inject information into the system, propose stimulating new ideas, and springboard off of diversity and divergence to enhance the magnetic appeal of attractors” (p. 641).
Evidence of the mechanism storytelling (29 references) is also an important consideration for leaders. This study shows that storytelling can serve as an effective channel for injecting information into a system. Storytelling provides a way for principals to talk about current challenges in their schools with a sense of the past and a vision for the future. Furthermore, this study shows how storytelling fosters bonding (20 references) which is the third most frequent mechanism leading to creativity in this research. This finding has implications for principals as they are able to create climates of bonding in their schools through professional development and task related directives. School leaders can provide training to their staff about the benefits of adaptability and the creative potential of CAS dynamics then orchestrate situations that foster bonding and interdependency. For example, teachers could work together to develop an interdisciplinary unit of instruction on rivers incorporating state curriculum standards for English, science, and social studies. The English teacher would address vocabulary and research standards, the science teacher might teach about life systems on the river, and the social studies teacher would address local history and how a river was used for food and transportation. This interdependency could result in each teacher putting forth enhanced effort to do their part as they wouldn’t want to let their team members down or risk having an inferior contribution.

The mechanism, patterning of attention, served the role of bringing group members back to task when they strayed off topic during discourse or when a group member drew attention to what was important during a stream of information flow. Of the 11 references coded, only two came from a participant who did not serve in a
traditional leadership position (i.e., special education teacher). For example, a principal, a director assessment serving at the district office level, and a special education department head engaged in patterning of attention. In addition, I provided one reference (the only reference in this study) during the last whole group work session when I drew attention to the fact that the final strategic plan needed to be written using existing district resources. This outcome has implications for leaders as it may be necessary to enact intentional patterning of attention to foster an awareness of what is important in the midst of CAS dynamics.

The elaboration mechanism was observed when an emergent idea gained attractors then merged with other ideas to form a different idea that was supported by other group members. The final strategic plan for closing the achievement gap of students with disabilities emerged from ideas in which elaboration was evident (see Figure 4.1). This finding has implications for education leaders as they can provide resources to support the elaboration and implementation of compelling ideas that they recognize are in line with a school or district’s mission or strategic plan.

Finally, although conflicting constraints was evidenced (eight references), I expected to code for a greater percentage of coverage on the transcripts. For example, there were nine small group and two whole group opportunities for conflicting constraints to emerge. Figure 4.5 shows that conflicting constraints were present in only five of the 11 group sessions. This is aligned with figure 4.1 which depicts only two diamonds showing conflicting constraints during the information flow process. Furthermore, of the 10 information flow processes leading to elaboration, only one involved conflicting
constraints. This is represented in figure 4.1 by the arrows moving away from diamonds (1), (2), (3), (6), (7), (9), and (12) to the octagon elaboration. This finding suggests that the mechanism conflicting constraints is not a prerequisite for the emergence of new ideas; however, task-related conflict is likely to emerge at some level under conditions of heterogeneity, adaptive pressure, information flow, interaction, interdependency, and psychological safety. Therefore, rather than preventing task-related conflict, educational leaders should recognize its presence and the potential for idea emergence and creativity.

A reduced level of adaptive pressure experienced by participants could have muted the emergence of conflicting constraints. For example, the media makes it clear that if AYP were a ship we would all be sinking. An online article published in the Charleston Post and Courier (Courrégé, 2011) announced that only one school district in the state of South Carolina met their annual AYP goals for the school year 2010-2011. It is my opinion that if the problem of making AYP were limited to handful of districts the adaptive pressure for these districts to change would be heightened.

Research Question Three

How do artifacts (e.g., bureaucratic controls, accountability regulations, institutional pressures), in the presence of complex group dynamics, influence adaptability and creativity?

Five artifacts that influenced adaptability and creativity were identified from the small group and whole group work sessions and the individual semi-structured interviews. These artifacts were lack of information or knowledge, lack of parent support
or home life, bureaucratic controls, time, and finance. Some artifacts had a stifling effect while others fostered adaptability and creativity as participants effectively worked around barriers as demonstrated by Table 4.21. For example, lack of information or knowledge stifled a creative plan for providing early intervention for preschoolers at risk when the agents of one CAS did not have enough information about district or community resources to move forward with their discussion. Another group came to a standstill when they didn’t know how many educators to account for when planning professional development training to improve communication between special and general educators. Planning came to a standstill again for another CAS when discussing a teacher cadet program. None of the participants in that group were knowledgeable about the high school schedule or how their plan would fit in with the district schedule which is influenced by the career center. Enabling leaders at the school level can improve complex group dynamics by monitoring the need for more information and knowledge and injecting such into the system when it is appropriate to do so (Marion, 2012).

Lack of parent support or home life was another artifact that had a stifling influence on CAS dynamics. Participants had a difficult time working around cultural barriers and some stated they felt like they were simply unable to influence what happens in students’ homes. For example, some participants talked about situations in which students had no food and shelter, parents didn’t know how to teach their children basic language and preferred to let them watch television rather than read, and that some parents’ education levels were not much higher than their children’s. Furthermore, some participants sensed parental apathy toward education. Agents shared how some parents
talked about their desire for their children to earn a diploma yet they were not able or sometimes willing to help them at home or they didn’t see a need for their children to achieve beyond their own education level of dropping out. When administrative leaders recognize the presence of insurmountable or stifling artifacts during CAS dynamics, they need to discern whether or not to increase adaptive pressure by patterning attention toward working around those barriers. Turning up the heat may result in new learning or idea emergence as agents search for adaptive solutions. However, enabling leaders must also be able to recognize the edge of chaos and when it is time to pull back the reins (Marion, 2012).

In some instances, bureaucratic control suppressed complex group dynamics as participants did not attempt to identify solutions to problems for which they perceived they had no control. For example, participants did not try to work around what they perceived to be high level curriculum standards or the number of standards that needed to be covered. Nor did they work to advance solutions to the district math curriculum despite comments about how inconsistent it seemed. In other cases, participants did try work around bureaucratic controls. For example, one CAS presented the option of offering half-day four year old kindergarten versus full-day as it would allow the district to serve twice the number of at risk preschool children. Another idea was to change from four periods a day to six periods at the high school level as it would reduce the number of personnel needed by one-sixth. The cost savings would then be directed to funding early intervention programs. However, the CAS was confronted by another bureaucratic control when they discussed that this would only allow students to earn 20 Carnegie units
when the state of South Carolina requires 24 for graduation with a high school diploma. This finding indicates that bureaucratic controls in the presence of complex group dynamics can influence adaptability and creativity by either stifling the emergence of new ideas or by forcing CAS agents to work around barriers in a way that result in enhanced idea emergence.

Lack of time was an obvious institutional pressure that thwarted adaptability and creativity. Ten out of 13 participants claimed they did not have enough time to work in their groups to fully develop their strategic plans. Transcripts further revealed a lack of time at the school level for collaboration between teachers and schools, planning, instruction, training, transition meetings, and calling and writing notes to parents. Furthermore, participants commented that this artifact negatively influenced adaptability as there was not enough time to work with families in the community to teach them how to foster language development in the home. This finding is important to educational leaders as they consider how much time to allocate for interaction and information flow when enabling complex group dynamics.

Finally, lack of finance was identified as an institutional pressure that increased adaptability and creativity as CASs effectively worked around this barrier in several cases. For example, identifying and training volunteers in the community, implementing a teacher cadet program, in-house professional development, establishing business partners, modification of service delivery to students with severe or profound disabilities, summer programs for at risk preschoolers, and using pre-existing teacher work days and
summer institute for staff development targeting collaboration were some of the ideas that emerged during complex group dynamics.

Interestingly, the results of this study support what Marion (2012) describes as complexity dampening. This non-intuitive phenomenon occurs when creative systems are influenced by the boundaries imposed by organizational rules, policies or regulations. Its name is derived from a principle in physics: A pendulum passing briefly through water on each cycle of its trajectory can become more rather than less complex in its movements. Similarly, the outcome of this study revealed how CASs became more complex as they confronted and worked around organizational constraints.

Chapter four provides two examples of complexity dampening in which the transcripts revealed how participant solutions increased in complexity when faced with bureaucratic barrier. In the first example, participants worked around financial barriers to generate an idea for providing parenting classes to pregnant high school students or young mothers that would focus on the importance of early literacy in the home. In the second example, participants worked around regulation barriers relating to the provision of accommodations and modifications to derive a plan for improving communication between different school levels that would foster better transitioning of students with disabilities from grade to grade. This observation supports Marion’s (2012) proposition that complexity dampening fosters adaptive processes and complexity outcomes.

Although social dampening was evidenced in this study, the researcher expected to find more than two examples. One possible explanation may have to do with the level of adaptive pressure that was enabled by the researcher. Although the lesson plan for the
first training and work session (Appendix C) included time to present and discuss the school district’s status with regard to adequate yearly progress (AYP) and the subgroup of students with disabilities, the time allocated for this discussion was minimal (i.e., three minutes). In actuality, not more than 15 minutes was devoted to this topic, which may have muted the level of adaptive tension orchestrated by the researcher.

In summary, the results of this study provide support for the framework of complexity leadership theory, specifically with regard to the functions of adaptive and enabling leadership. The outcomes also support Figure 5.1 which is a model of adaptive function proposed by Uhl-Bien and Marion (2009). Their theoretical model shows how agentic forces of adaptive leadership interact with emergent forces of the complexity context in a way that yields emergence. The enabling conditions noted in their model include dynamic interaction, interdependence, heterogeneity, and adaptive tension while the complexity dynamics recognized include nonlinearity, bonding and attractors. Similarly, the results from this study also recognized adaptive leadership in the form of CAS dynamics and how they interacted with the emerging forces of enabling conditions and complexity dynamics; however, the researcher exercised an expanded number enabling leadership behaviors which yielded the observation of a greater number of complexity mechanisms as evidenced by the coded themes in NVivo 8.
Figure 5.1


Figure 5.2 was constructed based on data collected during this study. It presents an expanded process model of adaptive leadership compared to the model in Figure 5.1 (Uhl-Bien & Marion, 2009). The box titled enabling leadership depicts a broken line encompassing the contextual conditions enabled by the researcher that fostered CAS dynamics (i.e., heterogeneity, adaptive pressure, information flow, interaction, interdependency, psychological safety, and resources). The bidirectional arrows between the enabling leadership and adaptive leadership functions show how both work together to foster the network dynamics capable of catalyzing the emergence of new ideas. Uhl-bien et al. (2007) explain that network dynamics refer to “the contexts and mechanisms...
that enable adaptive leadership” (p.307) and that both work hand in hand to foster creativity. The box titled adaptive leadership (cf. Heifetz & Laurie, 2001; Johannessen & Aasen, 2007) represents the informal leadership process that occurred during the intentional interactions of the participants as they worked to generate and advance novel solutions to the adaptive needs of the school district to improve outcomes for students with disabilities.

![Figure 5.2](image)

**Process Model of Adaptive Leadership**

The three circles represent the three small workgroups that met throughout the course of the study while the arrows between them represent the whole group work session where all participants met to present their ideas and learn from each other. The complexity mechanisms evidenced during the small group and whole group work
sessions included conflicting constraint, attractors, bonding, patterning of attention and storytelling. The broken line surrounding CAS dynamics and complexity mechanisms shows how participants interacted to work around self-identified barriers (i.e., lack of knowledge or information, lack of parent support or home life, bureaucratic controls, time, and finance). The arrows going back and forth between working around barriers and idea emergence and elaboration represent how some ideas gained attractors that sparked new conversation and the emergence of new ideas with qualitative novelty. This interacting chain of cause and effect among CAS agents led to a process where ideas interacted and were reformulated in an attempt to find a common ground capable of satisfying the interdependent needs of all participants. Finally, model 5.2 shows how the ideas subject to elaboration were the ones ultimately advanced in the final strategic plan for closing the achievement of students with disabilities.

The final process model of adaptive leadership (figure 5.2) was crafted based on evidence from data collection and shows how enabling and adaptive leadership functions work together to foster enhanced adaptability, learning and creativity in organizations.

**Implications for Practice**

Although this research examined an adaptive challenge in the area of special education, the implications for practice extend to leaders at any level and discipline in a school system. Complexity leadership theory proposes that leaders develop practices and procedures that support a collectivist approach to problem solving versus a mindset where individuals bring their problems to management. Uhl-Bien et al. (2007) contend
“A major function of leaders has historically been to solve problems, to intervene when dilemmas arise or when individuals differ on task-related activities. Such action, however, can stifle interdependency and limit adaptive mechanisms” (p. 310). Furthermore, this practice restricts the emergence of novel ideas and creativity to only a few leaders at the top of the bureaucratic echelon of educational organizations. The findings of this study have far-reaching implications for practice for all educators as adaptive leadership can occur at any level in an organization.

For education administrators, this study offers insight for leadership with regard to common duties such as hiring practices, coordination of work environments, and professional development. For example, interviewers are always looking for the best and the brightest to join their staff. CLT urges administrators to also consider that creativity is less likely to emerge from one person versus in the context of a CAS where ideas emerge in the spaces between smart individuals. Fostering creativity is less about finding the brightest applicants and more about orchestrating the contextual conditions that foster network dynamics and the sharing of ideas. The results of this study revealed that when provided with an adaptive challenge, a location to work, and time to interact, the participants engaged in meaningful discourse that resulted in a novel strategic plan for improving outcomes for students with disabilities in their district. Furthermore, although traditional leadership models support having members of an organization on the same page (Avolio, Gardner, Walumbwa, Luthans & May, 2004), comments from participants of this study support the argument for heterogeneity in CASs. Therefore, administrators are advised to consider hiring practices that foster diverse opinions, ideas, skills,
backgrounds, and perspectives in a school or district. They are also advised to orchestrate an environment that supports interaction across disciplines and grade levels.

The implications for professional development are invaluable. This study incorporated training to help participants understand the powerful capability of CASs in organizations faced with adaptive challenges. Participants learned about the framework for CLT and the potential of their role in generating creativity as adaptive leaders. This study showed that when school personnel understood the theory behind adaptive leadership and ground-up problem solving, they responded by taking ownership and developing viable solutions to an adaptive problem. For example, all but one of the 13 participants committed to serving on a year-long committee for the purpose of planning implementation of the final strategic plan. Grade or department level meetings in a school are important; however, administrators are advised to create a context for complexity dynamics by examining school or district level problems through multiple lenses. This study supports creating heterogeneous CASs comprised of educators across grade levels, departments, and disciplines to engage in adaptive leadership and problem-solving.

This study will also be useful for administrators as they consider their leadership style in general. They may want to ask themselves if they have policies and procedures in place that support school staff bringing the majority of their task related conflicts to them versus leading through circumspection and fostering interdependency. Less involvement in task-related conflicts will not only create more time, but will also enhance the likelihood of learning, adaptability and creativity on the part of those closest the problem. Principals are in an optimal position for exercising enabling leadership. They
are able to catalyze CAS dynamics by fostering interaction, information flow, heterogeneity, interdependency, adaptive pressure, psychological safety, and resources. Principals are also able to manage the innovation-to-organization interface (Dougherty & Hardy, 1996) by taking ideas to the district office when support at a higher level is needed for implementation. The outcome of this research supports complexity leadership theory and recognizes the benefits of exercising adaptive and enabling leadership.

This study also has implications for general and special education teachers. For example, teachers can serve as enabling leaders by orchestrating CASs in their classrooms and presenting real world problems to their students under contextual conditions that foster complexity mechanisms. They might observe enhanced creativity in their students and a need to seek support from the principal to implement emerging ideas. Furthermore, teachers who model adaptive and enabling leadership have the potential to impact future leaders sitting in their classrooms.

**Recommendations for Further Research**

The purpose of this study was to identify emergent, interactive dynamics that resulted in adaptive outcomes and solutions to an adaptive special education problem of closing the achievement gap of students with disabilities in one geographical area of a district. Data was collected to answer three research questions relating to this purpose. The results of this study provide support for the framework of complexity leadership theory, specifically with regard to the functions of adaptive and enabling leadership and the potential for the emergence of creativity when these functions are in place. Although
the findings have notable implications for practice for leaders and educators in general, the findings have several limitations. A major limitation is that the study ended at the development of the final strategic plan and did not examine implementation. Another limitation is the design of the study. Data collection and analyses were strictly qualitative in nature. A third limitation identified by participants was time. Based on these inadequacies, suggestions for further research are offered. Furthermore, this research examined adaptive and enabling leadership behavior in one geographical area of a district that involved six schools. A final recommendation for further research would be to conduct a similar study at the school level.

Enabling leaders serve two primary functions: (1) to foster enabling conditions that catalyze effective CAS dynamics capable of leading to adaptability, learning, and creativity, and (2) to manage the entanglement of adaptive and administrative forms of leadership. Although the results of this study verify the researcher effectively served the first function, the outcomes are limited as the second function was not seen to fruition through an examination of the implementation of the final strategic plan. A valuable extension of this study would be to watch the administrative-adaptive interface while the researcher served as an enabling leader to foster communication between the participants on the committee charged with planning and executing implementation of the plan and the district level management team providing administrative and financial support. Similarly, more research is needed to understand whether advanced planning by district level administration thwarts innovation by stifling the implementation of unanticipated creativity initiatives of adaptive leaders at all levels of the organization.
Another limitation is in the design of the study. Of paramount importance to the applicability of this research is to ascertain whether the emergent strategic plan actually closed the achievement gap for students with disabilities. Expanding the design to include quantitative measures would allow for an examination of relationships that could provide support for the influence of the implementation of the final plan on academic outcomes for students with disabilities. For example, an analysis of variance (ANOVA) would be useful to compare groups of students with disabilities in the geographical area for which the strategic plan is being implemented to groups of students with disabilities outside the area who will not be influenced by the implementation of the plan. As mentioned in chapter four, all but one of the 13 participants involved in this research have committed to participating on a strategic planning team for the purpose of implementing the final plan derived during this study. The researcher championed to recruit support for expansion of this action research study by proposing to lead and coordinate the efforts of the members of the strategic planning team during implementation as a component of her annual goal based evaluation. The proposal was approved by her assistant superintendent. It is the researcher’s intention to do a follow-up mixed method study of implementation and to submit the results for publication in a scholarly peer-reviewed journal.

The limitation of time was identified by participants as evidenced by comments from the individual interviews. A recommendation for further research would be to re-conduct this study using the same design but to expand the timeline for completion. From beginning to end, this study was conducted over a 29-day time span. It would be
advantageous to administrators exercising the functions of complexity leadership to know the optimal amount of time needed to allocate to planning that will allow for effective CAS dynamics to occur as a whole over several weeks or perhaps months. It would also be beneficial to have an understanding of how many work sessions are needed and the spacing of the sessions over time. The participants for this study only met three times over four weeks. A correlation study examining the level of complexity of an adaptive problem and the amount of time needed for effective CAS dynamics to occur would be useful.

Likewise, it would be beneficial to know an optimal amount of time to plan for per work session. For example, this study planned for three 90-minute work sessions of which a portion of the time was devoted to training. Therefore, CASs only had between 20 and 30 minutes to work in their groups during which time the data was collected. Some participants commented that they were “into it” when it was time to end the session and that they would have liked to have more time to work. A recommendation for further research would be to determine if it is more effective to provide all the training in advance of the work sessions versus spreading it out and including it as part of the meeting sessions. Allowing more time for interactive dynamics during each work session may lead to enhanced idea emergence.

A final recommendation for future research would be to examine enabling and adaptive leadership behaviors at the school level. Schools are continually faced with adaptive challenges that would provide an opportunity for studying the emergence of creativity subsequent to catalyzing CAS dynamics. For example, during this study
culture was identified as a barrier to closing the achievement gap of student with disabilities based on the transcripts from the small group and whole group work sessions. Participants discussed their perceptions of lack of parent support, knowledge, and involvement as having a negative influence on outcomes for students with disabilities. An examination of adaptive and enabling leadership behaviors of CASs while they address this adaptive challenge at the school level would be helpful to other administrators facing the same problem. Particularly if the study ended in the successful implementation of ideas that emerged subsequent to fostering CAS dynamics as evidenced by quantitative as well as qualitative measures.

Conclusions

The findings of this study expanded the work of previous researchers in the area of complexity leadership theory by examining CASs dynamics in real time in an education setting. Prior studies examined emergence by looking backwards to investigate the details after the fact (e.g., the emergence of Branson, Missouri, and Mission Church). This study was novel as it sought to provide support for complexity leadership theory by orchestrating the contextual conditions that foster complexity mechanisms in order to trace the interactive dynamics as they unfolded. The results provided empirical support for the framework of complexity leadership and the advantages of exercising adaptive and enabling leadership functions in education settings.

Closing the achievement gap of students with disabilities in an effort to make adequate yearly progress is only one of several persistent problems faced by educators.
School districts are knowledge producing organizations confronted with increasingly numerous complex adaptive challenges. This research is timely in today’s economic climate when leaders are being asked to do more with less. Entity-based leadership practices limit the emergence of creative solutions to persistent problems to only a few administrators at the top of the bureaucratic ladder. The best chance of unleashing collective creativity is to tap into collective intelligence by enabling CAS dynamics at all levels within a school or district. Participants in this study supported ground-up problem solving and recognized the need for those closest to the problem to have a voice. It is time for administrators practicing heroic leadership to become true heroes by sharing the leadership role with education faculty and staff at all levels in their organization.
Appendix A

Letter from Superintendent

SCHOOL DISTRICT OF OCONEE COUNTY
414 South Pine Street, Walhalla, South Carolina 29691
Phone: 864.886.4400 • Facsimile: 864.886.4408
www.oconee.k12.sc.us

January 14, 2011

Marge Bright
335 Bruner Drive
Seneca, SC 29678

Dear Marge,

Thanks for taking the time to share with me your area of interest as part of your doctoral studies at Clemson University. I truly appreciate your scholarship and intellectual curiosity in the area of leadership.

It is my understanding that you wish to conduct case study research that involves our school district. Specifically, your research requires the examination of complex interactive agents and responses to adaptive challenges in the presence of enabling leadership behaviors.

I feel that this research may be beneficial to our district, and, therefore, I do grant permission for you to conduct such a research project within our school district. I also expect you to comply with research ethical standards and proceedings as prescribed by Clemson University’s Institutional Review Board.

As a further condition for district participation, I ask that you share a summary of your findings with the district upon the successful completion of your dissertation defense.

Best wishes as you engage in this research project.

Sincerely,

[Signature]

Michael Lucas, Ed.D.
Superintendent

cc: Dr. Gregg Bibb, SDOC Director of Research and Assessment
Dianne England, Assistant Superintendent for Instructional Services
Appendix B

IRB Notice of Approval

Dear Dr. Marion,

The chair of the Clemson University Institutional Review Board (IRB) validated the protocol identified above using exempt review procedures and a determination was made on March 11, 2011, that the proposed activities involving human participants qualify as Exempt from continuing review under Category B2, based on the Federal Regulations (45 CFR 46). This exemption is valid for all schools/districts with research site letters on file with the IRB. You may begin this study.

Please remember that the IRB will have to review all changes to this research protocol before initiation. You are obligated to report any unanticipated problems involving risks to subjects, complications, and/or any adverse events to the ORC immediately. All team members are required to review the Responsibilities of Principal Investigators and the Responsibilities of Research Team Members available at http://www.clemson.edu/research/compliance/irb/regulations.html.

We also ask that you notify the ORC when your study is complete or if terminated. Please let us know if you have any questions and use the IRB number and title in all communications regarding this study. Good luck with your study.

All the best,

Nalinee

Nalinee D. Patin
IRB Coordinator
Clemson University
Office of Research Compliance
Institutional Review Board (IRB)
Voice: (864) 656-0636
Fax: (864) 656-4475
E-mail: npatin@clemson.edu
Web site: http://www.clemson.edu/research/compliance/irb/
IRB E-mail: irb@clemson.edu
Appendix C

Lesson Plan Day One

Day 1 (90 minutes)
I. (7 minutes) Opening

   A. Explain the general purpose of all 3 training sessions
      1. To learn about CLT and three broad types of leadership
      2. To engage in adaptive leadership activities for the purpose of producing adaptive outcomes (i.e., closing the achievement gap for our students with disabilities).
      3. Participants introduce themselves: What one word would your colleagues use to describe you
      4. Set dates for next workshops

II. (5 minutes) Provide a brief history of leadership models used in Industrial Era

   A. Closed Systems
      1. Frederick Taylor-Scientific Management Movement
      2. Trait Theory
      3. Human Relations Theorists

   B. Prescriptive Open Systems Theory
      1. Open Systems Perspectives (organizational structure and behavior are significantly influenced by their environments)
      2. Contingency Theory
      3. Structuralists

III. (15 minutes) Framework for Complexity Leadership Theory

   A. CASs
   B. Administrative Leadership
   C. Adaptive Leadership
   D. Enabling Leadership
   E. Entanglement
IV. (3 minutes) Discussion of SDOC’s AYP status with regard to students with disabilities

INSTRUCTIONS FOR SMALL GROUP BREAKOUT AND BREAK (5-10 minutes)

V. (30 minutes) Work group activity: (Participants are divided into 3 small groups to discuss the following guiding questions) Why is the achievement gap of students with disabilities a complex problem? What are some of the variables involved? What are your initial ideas for improving this gap? How can the elementary schools help WOMS? How can WOMS help WOHS? What resources or information do you need in order to generate ideas for addressing this adaptive challenge? (Write answers on large sticky wall poster)

VI. (15 minutes) The groups return to present their responses to the guiding questions.

VII. (5-10 minutes) Whole group discussion.

VIII. Reading Assignment:

Appendix D

Lesson Plan Day Two

Day 2 (90 minutes)
IX. (5 minutes) Opening

1. Recap the last work session
   (1) Complexity Leadership Theory
   (2) Administrative Leadership
   (3) Adaptive Leadership
   (4) Enabling Leadership

2. Description of today’s agenda
   (1) Complexity Simulation
   (2) Work group activity
   (3) Share your plan with other members of the Complex Adaptive System (CAS)

X. (20 minutes) Complexity Process Simulation

   A. Swarm
   B. Interpendency simulation
   C. Elaboration/Explanation of Outcomes
      (1) Dynamic Interaction Process
      (2) Interdependency
      (3) Creativity

XI. (5 minutes) Break and transition

XII. (35 minutes) Work group activity: Pick one or two of the ideas developed at the last session and develop a plan for implementation. You can combine ideas into one strategic plan. The plan must include participants from all levels of the organization (Elementary through HS). Define: Who? What? When? How? Note the resources needed to implement the plan and how they will be acquired. (Answers are written on large sticky wall notes)

XIII. (15 minutes) Groups present

XIV. (10 minutes) Whole group discussion
XV. Reading assignment: Leadership in a Permanent Crisis
Appendix E

Lesson Plan Day Three

Day 3 (90 minutes)

XVI. (5 minutes) Opening

1. Recap the last work session
   (1) Goal of Adaptive Leadership: Emergence of creativity and innovation in response to task-related conflict (remember swarm exercise)
   (2) Worked in small groups to develop specific proposal for implementation: who, what, when, how, resources needed and how they are to be acquired

2. Description of today’s agenda
   (1) Small group work
   (2) Present to whole group (about 10 minutes for each group)
   (3) Whole group planning

XVII. (20 minutes) Small Groups Work

1. Refine proposal presentations (define who will implement, who the target audience is, what the plan is, when it will be carried out, how it will be carried out, resources needed and how they are to be acquired)

2. Consider the responses from other groups

XVIII. (20-30 minutes) Small Groups Present to Whole Group

XIX. (40 Minutes) Whole Group Refines the Proposal

XX. Each participant will be contacted to arrange a time for the individual follow-up structured interview
Appendix F

Instructions for Small Group Breakouts (30 minutes)

Group 1 Remains in Media Center

Group 2 Conference Room (Left)

Group 3 Conference Room (Right)

Designate a Captain and Scribe for your group

1. Captain starts camcorders and voice recorders
2. Captain opens discussion of the following questions: Why is the achievement gap of students with disabilities a complex problem? What are some of the variables involved? What are your initial ideas for improving this gap? How can the elementary schools help the middle school? How can the middle school help the high school? What resources or information do you need in order to generate ideas for addressing this adaptive challenge?
3. Scribe writes initial ideas for improving gap and needed resources/info on large sticky wall poster
4. Captain turns off camcorder and voice recorders after 30 minutes
5. Everyone returns to the Media Center to present to group
Appendix G

Information Concerning Participation in a Research Study

Clemson University

Title: An Examination of Adaptive and Enabling Leadership Processes Using Action Research

Description of the Research and Your Participation

You are invited to participate in a research study conducted by Dr. Russ Marion and Marge Bright. The purpose of this research is to examine the interaction of agents (e.g., teachers, administrators, school psychologists, guidance counselors, and speech-language pathologists) working in a public school district when provided with Complexity Leadership Theory (CLT) training, an adaptive challenge (reducing the achievement gap of students with disabilities), and exposure to the three forms of leadership recognized by CLT: administrative, enabling, and adaptive. A second purpose is to learn how the presence of enabling leadership behaviors (i.e., fostering heterogeneity, interaction, interdependency, conflicting constraints, information flow, and a culture of expectation) will result in increased creativity, learning, and innovation on the behalf of participants as they work in small groups to develop a plan for reducing the achievement gap for our students with disabilities. A third purpose is to identify the mechanisms that emerge during participant interaction that either foster or suppress adaptability and creativity. Finally, data collected during the study will be examined to determine how bureaucratic controls, accountability regulations and institutional pressures in the presence of complex dynamics influence innovation and creativity.

Your participation will involve attending three scheduled training/work sessions and one structured interview session. Each training/work session will require 90 minutes of your time divided as follows: 25 minutes—learning/discussion, 5-10 minutes—instructions for small work group activity and transition time, 30-35 minutes—small work group activity (discussing/answering guided questions involving the achievement gap of students with disabilities), 15 minutes—small groups will present for 5 minutes each to whole group, and 10 minutes—whole group discussion. Your participation will also involve attending a 45-minute structured interview session at the conclusion of the three scheduled training/work sessions. The questions are not particularly sensitive. Dr. Marion and I are the only ones who will see your responses and all information will be kept confidential. You do not have to answer any question that may make you uncomfortable. Should you feel uncomfortable you can exit the interview at anytime. Each 30- to 35-minute small group activity and 25-minute whole group activity will be audio and video recorded in addition to the 45-minute structured interview session.
The amount of time required for your participation will total 5 hours and 15 minutes of
direct contact time in addition to the length of time needed to complete two reading
assignments (26 pages total).

**Risks and Discomforts**

There are no known risks associated with this research.

**Potential Benefits**

This research may help you understand Complexity Leadership Theory processes and the
potential for this leadership model to result in increased creativity and innovation in
schools faced with adaptive challenges. This research may also help us to understand the
benefits of enabling and adaptive leadership processes in organizations.

**Incentives**

You will receive a $50 gift certificate to a restaurant for participation in all three work
sessions and the structured interview. Circle one of the following: Red Lobster
Longhorn  Starbucks  Texas Roadhouse  Olive Garden  Outback  On the Border
Applebees

You will also receive 7 hours of recertification credit through Course Where.

**Protection of Confidentiality**

We will do everything we can to protect your privacy. The video and audio recordings
will be transcribed to identify group dynamics and the emergence of creativity and
innovation. The video and audio recordings will be stored digitally on a password
protected computer and will be backed up on a second password protected computer. A
transcriptionist will be used who will sign a statement of confidentiality. Pseudonyms
versus names will be used to identify participant contributions. Dr. Marion and Marge
Bright are the only persons who will have access to the recordings. Upon publication of
a dissertation and journal article the video and audio recordings will be erased. Your
identity will not be revealed in any publication that might result from this study.

**Voluntary Participation**

Your participation in this research study is voluntary. You may choose not to participate
and you may withdraw your consent to participate at any time. You will not be penalized
in any way should you decide not to participate or to withdraw from this study.
Contact Information

If you have any questions or concerns about this study or if any problems arise, please contact Dr. Russ Marion at Clemson University at 864-656-5105. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Office of Research Compliance (ORC) at 864-656-6460 or irb@clemson.edu. If you are outside of the Upstate South Carolina area, please use the ORC’s toll-free number, 866-297-3071.

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant’s signature: ___________________________ Date: ___________________

A copy of this consent form will be given to you.
Appendix H

Final Thoughts from the Groups

Final Thoughts from the Groups
Meeting Day 1
March 28, 2011

Group 1
Improving the Gap
1. Improve communication between special education and regular education teachers
2. Build relationships between regular and special education teachers
3. Inclusion—need clear guidelines and picture/vision for outcomes
4. More training/education for regular education teachers on IEPs, etc
5. More training for special education teachers on regular education standards
6. How do we challenge special education students to higher levels of achievement?
7. Focus on power standards—too many standards not covered for deep learning
8. Educating families
9. Reading on grade level by end of third grade

Needed Resources
1. Time for transition meetings between grades/schools
2. Time/training resources
3. Funds for mailing communication/mailing report cards—high school
4. Training classes for Parent Connect
5. Family conferences to deliver report cards—time and resources
6. Portfolio nights
7. Time for planning, IEPs, etc

Group 2
Improving the Gap
1. More support teachers
2. Leveling—use MAP scores
3. Community Support
4. Parent resources/supports
5. More consistent math curriculum
6. More time for teachers to collaborate
7. Consistency throughout schools (grade level to grade level)
8. More early intervention programs
9. Basic math and reading for High School
10. Teach study skills and organization skills
11. Help teachers implement technology in the classroom
12. Use all staff to support classroom teacher
Needed Resources
1. Community support
2. Parent resources/support
3. Time for teachers to collaborate
4. More early intervention programs
5. Money

Group 3
Improving the Gap
1. Open communication between elementary and middle school before the 5th grade
2. Lack of communication between regular and special education
3. Need earlier identification and placement (by third grade)
4. More collaboration between all levels (elementary, middle, high)
5. Elementary to MS to HS: incorrect placement

Needed Resources
1. Money
2. Time
3. Smaller caseloads
4. Doing what is best for students versus parents’ desires
5. Transition classes between kindergarten and 1st, 5th and 6th, 8th and 9th
Appendix I

Final Plan from each CAS

April 12, 2011 Group Responses—The Plan

**Group 1**

Who: Special education and regular education teachers, administration, district office level special services

What: Connecting special education and regular education

1. Goals/guidelines
2. Teacher collaboration
3. Build relationships/communication
4. Design training of best practices for special and regular education teachers

When: In-service days/summer institute (W-O Area Day), PM professional trainings

How: Year one

1. Build relationships at W-O area summer days (1-2 days)
   a. Break-out sessions and develop core committee
   b. Membership of core committee: Across grade-levels (1 per grade level)

2. Develop strategies throughout the year using input from summer surveys
   a. IEP—understanding the importance of modifications/accommodations, 504s vs. IEPs
   b. Strategy/activity sharing
   c. Job shadowing
   d. Inclusion guidelines
   e. SC standards—core curriculum

3. Follow-up on yearly basis

4. Resources
   a. Professional development (schools and special services)
   b. Summer institute professional development funds
   c. Speakers/experts within the district

**Group 2**

What: Early Intervention Programs

Who: Target group is 4-year-olds—up through High School. Pull teachers/use volunteers from churches.

How: Train them to do basic early intervention

When: Academic School Year—possibly have teachers volunteer to train.

High School: Course for future educators (Articulation Agreement with college so they can earn college credit).
Special Ed Teachers keep track of students to determine percent that are special ed to percent successful.
Reading Strategies Foundation Class at each level (Grades 1-12)
Professional development in reading in the content area using existing SDOC personnel (e.g., Lauren Harrison is already on staff).
Tools: Sounds in Motion, Zoo Phonics, DT Trainer, SIM Reading in the Content Area, Project Read.

**Group 3**
More early intervention programs 3-year through 3rd grade
The Plan:

a. Preschool Intervention Program-place most severe students on itinerant services or more centrally locate the trainable/profound self-contained class
b. K-4: move from 1 all day group to 2-1/2 day groups
c. SST: structured instruction time for all students going through SST taught by special education teacher or trained instructional aide
d. Accountability: teachers/students/parents

Middle School: ?
High School: 6 period day versus 8 periods. Apply the money saved to early intervention programs
Summer programs for 4-year-olds
   a. High school students volunteer?
   b. Community volunteers?

Adult Ed Programs for young moms
Community-wide programs through churches/businesses to target parenting skills.
Appendix J

Final Group Strategic Plan

A Strategic Plan for Connecting General and Special Educators for the Purpose of Improving Outcomes for West-Oak Area Students with Disabilities

Participants: General education teachers, special education teachers, administration, district office special education personnel.

What

Objectives:
1. Establish goals and guidelines for inclusion services
2. Increase teacher collaboration
3. Build relationships and improve communication between special and general education teachers
4. Design and provide training of best practices to special and general educators

When

Inservice days
Summer Institute (West-Oak Area Day)
PM professional trainings
Elluminate

How

Year One
1. Build relationships at West-Oak Area Summer Institute (1-2 days). Hold break-out sessions and develop a core committee comprised of elementary through high school general and special educators, school psychologists, administration, and special services district office representation.
2. Develop strategies for connecting general and special educators throughout the year using input from summer surveys. Topics may include IEP importance/compliance, modifications/accommodations for general educators, 504 versus IEP for general educators, strategy/activity sharing, job shadowing, inclusion guidelines, and SC standards/core curriculum for special educators.
3. Plan follow-up activities for the next year (on a yearly basis)
4. Resources: Professional development funds (provided by schools and special services), Summer Institute professional funds, speakers/experts within the district
5. Measurement of Goals: Participation logs, self-reflection statements, pre- and post- survey results, collaboration survey, test scores for special education students, pre- and post- student surveys gathering information about teacher/student bonding and services (e.g., “My classroom teacher cares about...
me” “My special education teacher cares about me” “My classroom teacher teaches in a way that helps me learn”).
Appendix K

Semi-Structured Individual Interview Questions

Protocol
Thank you for participating in this research and helping me learn more about complex group dynamics.

I am going to ask your permission to record this interview so I can have it transcribed. The transcription will become a source of data for analysis. I will code the transcripts to identify themes that emerge. I will pull quotes, but will use pseudonyms and will not include anything that identifies anyone or any proprietary district information in any way. I will share my results with the district but only in aggregate form with no identifying information for any comments.

The questions I am asking today are not particularly sensitive, but I do want you to know that Dr. Marion and I are the only ones who will see your responses and all information will be kept confidential. You do not have to answer any question that may make you uncomfortable. I have the original consent form you signed before beginning participation in this research. It explains the interview should last about 45 minutes and should you feel uncomfortable you can exit the interview at any time.

Do you have any questions before we proceed? [TURN ON RECORDER]

1. As you recall, we discussed the problems of top-down, bureaucratic leadership and the need for a new form of leadership described as adaptive or “connectionist” where leadership emerges from all levels in an organization. Describe how your understanding of the problem, a need for a new form of leadership, changed over time.
2. Describe how you perceived your role while participating as a member of your workgroup.
3. Tell me about the dynamics in your group and the specific ways you interacted to solve problems?
   To probe, ask questions such as, “Tell me more about the roles the other members served.” “If your group interacted outside of the scheduled group meetings, describe the dynamics of this interaction.”
4. Identify at least one creative idea your group came up with and how that idea emerged?
5. What are some of the barriers your group experienced while answering the guiding questions? Tell me about some of the frustrations or constraints you and your group experienced. How did the group go about working around these barriers? What was the process? Who did what?
   [Listen for frustrations/constraints with processes, with other teams, with other individuals, with the external environment; prompt as needed.]
   Listen and probe—without leading—for such things as:
• How mechanisms function (e.g., how do dampening activities such as bureaucracy interact with other factors to generate enhanced complexity)
• Workarounds or other unintended responses to dampening resistors
• Factors that are part of the causal mechanisms that generate dampening processes
• Other mechanisms that may revolve around the dampening process, or even processes that may be independent of dampening
• Interactions between suppressors and stifling processes
• Catalysts of the dampening dynamic
• Level of interaction, interdependency, adaptive rules, pressures, enabling leadership, etc. associated with the dampening process

To probe, ask questions such as, “Tell me more about…”; “How did that affect your response to…”; “What other things influenced the way your group dealt with this issue?”; “Were these events related in any way?”; “What effect did that event (or person) have on this process you are discussing?”; “Were there other things happening at the same time this [process being described] occurred that might relate to what you are describing?” “Tell me more about the context within which this occurred.”

6. Do you have any general comments about your experience participating in the study?
Appendix L

Statement of Confidentiality

Transcription Services:

Doctoral Candidate, Marge Bright, of Clemson University (henceforth Student) employs the transcription services of Sally Ann Mertens (hereafter Transcriptionist)

Covenant

1. DESCRIPTION AND CONDITION. The Student contracts services of Transcriptionist for the purpose of transcribing audio-taped and video-taped interview data collected as part of a research study titled “An Examination of Adaptive and Habitual Leadership Processes using Action Research.”

2. TERM. Transcriptionist is contracted to initially transcribe 24 group interactions interviews, each of which is approximately 20 to 35 minutes in length. Following satisfactory completion of these transcriptions, this contract may be extended.

3. CONFIDENTIALITY. Transcriptionist agrees to transcribe the interview data provided by the Student. Transcriptionist further agrees to keep audio tapes and typed interview data in a secure location. Furthermore, Transcriptionist agrees to not disclose any information that can identify any individuals or organizations who either participated or were mentioned during the process of the study.

3. COMPENSATION. Student shall pay Transcriptionist at a rate of $30 per hour. Transcriptionist shall provide invoices of service to the Student.

I fully understand these confidentiality requirements and agree to consult with a member of the research team listed below on any matter that will arise in transcribing the data.

Signature: ________________ Date: 11/10/11

Print name: SALLY ANN MERTENS
Appendix M

Project Diary

3/12/11
As I am writing the lesson plans for each phase of data collection, I am mindful of my supervisory role over the special education teacher participants and want to ensure them that their comments will not be judged as they work with other team members to think creatively about how we can close the achievement gap for our students with disabilities. It is expected that participants will need to identify and work around existing barriers. I don’t want them to shy away from identifying current procedures and practices that are not effective. As the enabling leader I must emphasize psychological safety in each training session.

3/28/11
The first phase of data collection went well. All but one participant was present and the groups appeared to bond quickly and easily. During the training, I reiterated that all team members were expected to share their ideas and opinions freely without fear of being judged by other team members or myself and that everyone’s opinion matters. I will take all of the poster post-it notes from each group and will collate a summary of each CASs responses into one document and send it to participants to facilitate information flow. Some of the prominent topics mentioned by multiple groups were early intervention, more time for communication between teachers, and a need for more support for families.

4/3/11
After the first data collection, I read the transcripts and realized that as the enabling leader I need to put more adaptive and creative pressure on the groups. They came up with several ideas on March 28 but some of them were vague and it was unclear how they would be put into practice without additional resources. Furthermore, minimal conflicting constraints were evident as it was more like a brainstorming session to just get ideas on the table. I need to change the guiding questions for the second lesson plan to force groups to identify ways they are going to acquire resources. This will add adaptive pressure to the groups as they will have to work around financial barriers. Also, since conflicting constraints emerge under the condition of interdependency, as the enabling leader I need to emphasize how middle school is dependent on the elementary and high school is dependent upon the elementary and middle schools. As this is the case, I need to add the requirement that the final plan must involve educators from all grade levels working together. I expect this will lead to more conflicting constraints. Finally, I need them to define "how" and "when" their plan will be implemented.

4/5/11
Lack of parental involvement was mentioned by multiple participants from two of the three workgroups. To foster information flow as the enabling leader, I forwarded an email to the participants regarding a webcast opportunity to learn how to improve parental involvement.
4/8/11
Enabling leaders foster information flow by injecting knowledge into the interactive dynamic and by providing the system with sources of diverse information. In order to increase information flow for the second data collection, I will forward an article from our Superintendent regarding a study showing strong academic gains by kids who attend pre-kindergarten. The transcripts from the first data collection revealed that several participants mentioned the value of early intervention. This article supported their line of thinking.

4/9/11
While setting up my tree nodes I decided to organize folders by participant groups and by time. I will title participants by grade level and position.

4/12/11
The second phase of data collection went as well as the first. A different team member was unable to attend the second session. Again, before data collection began, I reiterated the importance of sharing ideas and opinions freely and that the small groups and whole group were psychologically safe environments. Seeing as how the teams (CASs) were working hard and continued discourse was evident when it was time to stop and present to the other groups, I decided to not hinder information flow and went around to each group to tell them they could keep working and that they could present their strategic plan at the next meeting date. I collected the poster post-it notes from each group at the end of the work session so I could consider the group responses when preparing for the third phase of data collection.

4/16/11
I used the poster post-it notes from the second phase of data collection to create a document summarizing each CAS’s proposed strategic plan for improving the achievement gap of students with disabilities. I will send it to all participants as I want each group to see the others’ work before the third phase of data collection since we ran out of time for groups to present during phase II. Again, this will facilitate information flow.

4/17/11
While reading over the transcripts from the second phase of data collection, I noticed there was still limited conflicting constraint and that not all groups were clear on the details of their strategic plans. I will send an email reminding participants that for the third meeting session they will have about 15 minutes to refine their proposal presentations to define who will implement the plan, who the target population will be, what the plan is, when it will be carried out, how it will be carried out, the resources needed for implementation, and how they will be acquired.

4/26/11
The third phase of data collection is complete! The groups refined their proposals and presented their final strategic plans to the whole group. After the individual presentations, the whole group worked on a single proposal agreed to by all participants that focused on improving communication between general and special educators in the geographical area being studied. I will start contacting participants individually to schedule their structured interviews.

5/17/11
I started conducting structured interviews today. Wouldn’t you know, I experienced technical difficulty with the very first one and was relieved that I brought two digital voice recorders as I couldn’t get the first one to start recording.

5/29/11
I read all group transcripts twice and will now begin entering references into NVivo. During the first reading I jotted down ideas for open coding and identified trends (e.g., lack of parent support in one school). I have 4 structured interviews left to record.

6/12/11
I realized after I started coding that I indentified new nodes in the middle of coding so I will need to go back to the beginning of my transcripts to look for references that would be included in this new node to make sure I am consistent.

7/5/11
I entered all group work and structured interviews into NVivo. Now I will go back and listen to the audio while reading the transcripts and recode to see if I am consistent with myself. I will keep up with the changes I make going back through the data the second time.

7/16/11
I am in a quandry. I am unable to differentiate idea emergence and information flow because "forming new ideas" is a component of information flow. I must ask myself...is every account of idea emergence in a CAS also a process of information flow? I would have to say "yes". Likewise, is every instance of information flow going to yield a new idea? According to the definition from the Meso model article (Uhl-Bien & Marion, 2009) I would have to again say "yes". It states "adaptive leadership helps produce a rich flow of information (in the form of ideas, innovations, changes, technologies, etc) to enhance dynamic complexity processes". So, do I code for both or just one since they are essentially the same? I will need to talk with Dr. Marion about this tomorrow (Sunday). I have concluded that all "Relationship" nodes will have "Information flow" coded across them in entirety. I will need to go back to the beginning of my sources (again) and make sure I am doing this consistently throughout all sources.

Aha! I will continue to code for "Information flow" independent of "Idea emergence" and "Attractors" when it precedes an idea and the topic remains consistent.
I will only code "Information flow" when it is part of a "Relationship".

7/24/11
I realized I will not be able to code participants by grade level and position because any district personnel who read my dissertation might be able to decipher "who said what" when I include part of the transcripts in tables. I will go back and assign an alphanumeric code to each participant.

7/31/11
I am listening to the group recording from April 26th. I need to remember to note somewhere that when one of the group participants was unable to attend it had an impact on creativity as other participants did not have the source of knowledge needed from that level (participant Y8 most definitely) to fully develop strategies.

I added a tertiary tree node for "Working around conflicting constraints" with the conflict being accommodations/modifications. There is a question about whether the elementary is accommodating/modifying too much so that when they get to MS/HS they can't make it on their own.

I have decided not to double code for "Working around barriers" (e.g., code for the barriers and working around those barriers). It should be obvious there is a barrier when they are working around it. I will need to go back and uncode when I have done this when coding previous sources (did this 7/31/11).

I didn't recognize planning for early intervention as working around a cultural barrier until coding the April 26th group presentations. I need to go back through the transcripts and look for more.

8/6/11
I will analyze the final group presentations for "Elaboration" (a process of gathering support from individuals and groups, of building networked linkages with other groups, and of developing an infrastructure of support).

I decided not to code my comments. I need to go back and make sure I did not code myself anywhere in the document.

8/7/11
I talked to Dr. Marion. I need to uncode for the mention of "Conflicting constraints" in individual interviews because conflicting constraints requires more than one person.

8/28/11
When I coded for "Attractor" I always included the idea that attracted the other CAS members in the group.
I coded "Information Flow" across all "Relationships".
After the first data collection I read the transcripts and realized I needed to put more pressure on the groups to work around barriers. I changed the guiding questions and forced groups to identify ways they were going to acquire resources. Lack of knowledge barrier was more evident when group members were missing (e.g., High School teacher from group 1 on April 12th).
REFERENCES


Blanchett, W. J. (2010). Telling it like it is: The role of race, class, & culture in the perpetuation of learning disability as a privileged category for the white middle class. *Disability Studies Quarterly, 30*(2), 6.


Education for All Handicapped Children Act of 1975, Pub. L. No. 94-142, § 1401 et seq.


189


