THE RELATIONSHIP BETWEEN EARLY CHILDHOOD TEACHER CANDIDATES’ PERCEPTIONS OF SCHOOL CLIMATE AND THEIR CREATION OF DEVELOPMENTALLY APPROPRIATE LESSON PLANS: A MIXED METHODS STUDY

A Dissertation

Presented to

The Graduate Faculty of The University of Akron

In Partial Fulfillment

of the Requirement for the Degree

Doctor of Education

Faith Wesolik

December, 2006
THE RELATIONSHIP BETWEEN EARLY CHILDHOOD TEACHER CANDIDATES’ PERCEPTIONS OF SCHOOL CLIMATE AND THEIR CREATION OF DEVELOPMENTALLY APPROPRIATE LESSON PLANS: A MIXED METHODS STUDY

Faith Wesolik

Dissertation

Approved: ___________________________ Accepted: ___________________________

Advisor: Dr. Carole Newman

Department Chair: Dr. Bridgie A. Ford

Co-Advisor: Dr. Isadore Newman

Dean of the College: Dr. Patricia A. Nelson

Committee Member: Dr. Francis Broadway

Dean of the Graduate School: Dr. George R. Newkome

Committee Member: Dr. Susan Olson

Date

Committee Member: Dr. Ruth Oswald
ABSTRACT

This exploratory mixed methods study investigated the relationship between teacher candidates’ perceptions of school climate and their creation of developmentally appropriate lesson plans. Data was gathered using two quantitative instruments: the School Climate Survey and a lesson plan assessment rubric; and two qualitative instruments; lesson plan reflections and interviews of selected teacher candidates. Both quantitative and qualitative data were used to inform the analyses, and data sources were triangulated to compare and cross-check the consistency of information. Inferential statistics using Multiple Regression Analysis were utilized to test the research questions and hypotheses. All 12 were found to be statistically nonsignificant when measuring the relationship between school climate and the creation of developmentally appropriate lesson plans. An analysis of the rubric used to assess the teacher candidates’ lesson plans, resulted in a three factor solution that approximated the theoretical constructs of the relevant developmentally appropriate practice (DAP) investigated in the study. The qualitative research results were obtained from the teacher candidates’ lesson plan reflections and 12 open-ended interview questions used to gain the teacher candidates’ personal perceptions of DAP in their field placement schools. Through a reduction process, themes evolved and were analyzed. The results indicated that teacher candidates were aware of the
importance of developmentally appropriate practice, even though many of their lesson plans written for their field placement schools did not reflect developmentally appropriate lesson plan content and teaching strategies. Moreover, the teacher candidates openly expressed an awareness of practices that they would not consider to be developmentally appropriate in their field placement schools.

The research findings of this study imply that there is a need to bridge the disconnect between theory and practice. This could be accomplished by university Departments of Early Childhood Education establishing well-defined goals and clear guidelines of their expectations for developmentally appropriate practices for those who mentor teacher candidates. The outcomes of positive and effective training programs would produce teacher candidates who are capable, confident, and better prepared to rely on their training in the implementation of developmentally appropriate teaching strategies in the school environments in which they teach.
ACKNOWLEDGEMENTS

I would like to thank my advisor, Dr. Carole Newman, and co-advisor, Dr. Isadore Newman, for their persistent encouragement and help as I went through the process of writing my dissertation. They always generously provided an open door and their precious time to aid me in this endeavor. I also want to thank my committee members—Dr. Susan Olson, Dr. Ruth Oswald, and Dr. Francis Broadway—for their guidance and help.

I especially want to thank my children, Christopher and Aimee, for believing in me; my wonderful sister, Joy, for her constant support, and encouragement; and all my colleagues and friends who understood when I could not join them. May God in His wisdom bless each of you.
DEDICATION

To my husband, Rev. Larry Wesolik. I thank you for your prayers, support, and encouragement always provided for me with faith, hope, and love. I also wish to remember my loving parents who were the first to model a respect and love for education.

God has indeed blessed me through each of you.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>xiv</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>vi</td>
</tr>
</tbody>
</table>

## CHAPTER

### I. INTRODUCTION

- Background .......................................................... 1
- School Climate .................................................. 4
- Purpose of the Study ......................................... 6
- Statement of the Problem .................................. 9
- General Research Questions ............................... 10
- Assumptions Underlying the Study ..................... 10
- Delimitations ..................................................... 11
- Operational Definitions .................................... 12
- Summary ............................................................. 13

### II. LITERATURE REVIEW

- Introduction ......................................................... 15
- Historical Perspective .......................................... 16
  - The Position of National Educational Organizations 21
Developmentally Appropriate Practice .................................................. 22

Constructivism .................................................................................. 30

Types of Constructivism Related to Education ................................. 32

The Major Theorists of Developmentally Appropriate Practice ......... 34

Dewey ............................................................................................... 35

Piaget ................................................................................................. 36

Vygotsky ............................................................................................. 38

Montessori .......................................................................................... 41

Bruner ............................................................................................... 42

Erikson ............................................................................................... 44

Developmentally Appropriate Environments ...................................... 44

Creating a Caring Community of Learners ....................................... 46

NCTM/NAEYC Joint Position Statement ........................................... 50

NCTM’s Principles and Standards for School Mathematics ............ 53

School Climate .................................................................................. 57

Definitions for School Climate? ......................................................... 58

Why School Climate is Important ..................................................... 60

Summary ........................................................................................... 63

III. PROCEDURES ............................................................................. 65

Research Design ................................................................................ 65

Quantitative Research ....................................................................... 69

Data Collection .................................................................................. 71

Quantitative Data ............................................................................. 71
General and Specific Hypotheses ........................................ 98
Summary of Quantitative Research .................................... 106
Teacher Candidates Interviews ........................................... 107
Qualitative Research ....................................................... 107
The Mathematics Content ................................................ 108
Administrators’ Role in the Implementation of Mathematics
Curriculum Content ......................................................... 110
Cooperating Teacher’s Role in the Implementation of
Mathematics Curriculum Content .................................... 110
Child-Centeredness .......................................................... 109
Assessment Procedures ..................................................... 109
Summary ............................................................................. 112
V. SUMMARY, CONCLUSIONS, AND IMPLICATIONS .............. 114
Statement of the Problem .................................................. 115
Statement of Purpose ........................................................ 116
Statement of Procedures ................................................... 116
Quantitative Research ....................................................... 117
Qualitative Research ........................................................ 119
Results .................................................................................. 121
Quantitative Results .......................................................... 121
Qualitative Research Results ............................................. 123
Mathematics Content ......................................................... 126
Child-Centered Programs .................................................. 127
Assessment ........................................................................... 128
Conclusions ........................................................................................................ 128
Implications ........................................................................................................ 133
Recommendations and Suggestions for this Research................................. 138
Summary ............................................................................................................. 139
REFERENCES ..................................................................................................... 141
APPENDICES ...................................................................................................... 154
APPENDIX A.  HUMAN SUBJECTS APPROVAL ........................................... 155
APPENDIX B.  CONSENT LETTERS ................................................................. 157
APPENDIX C.  LESSON PLAN RUBRIC ............................................................. 161
APPENDIX D.  LESSON PLAN FORMAT ........................................................... 166
APPENDIX E.  QUANTITATIVE POST HOC TABLES ................................... 168
APPENDIX F.  INTERVIEW QUESTIONS .......................................................... 170
APPENDIX G.  TRANSCRIPTIONS ..................................................................... 172
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Descriptive Statistics: Perception of School Climate</td>
<td>94</td>
</tr>
<tr>
<td>2.</td>
<td>Descriptive Statistics: Teacher Candidates Lesson Plan Scoring Their Use of Developmental Appropriate Practice</td>
<td>95</td>
</tr>
<tr>
<td>3.</td>
<td>Factor Loading of the Lesson Plan Rubric</td>
<td>96</td>
</tr>
<tr>
<td>4.</td>
<td>Reliability Correlations: Researcher’s and Supervisor’s Consistency of Scoring Lesson Plans</td>
<td>97</td>
</tr>
<tr>
<td>5.</td>
<td>General Research Hypothesis 1: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Practice in Lesson Plans Scored by This Investigator</td>
<td>98</td>
</tr>
<tr>
<td>6.</td>
<td>Specific Research Hypothesis 1A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Practice in Lesson Plans Scored by the Teacher Supervisor</td>
<td>99</td>
</tr>
<tr>
<td>7.</td>
<td>Specific Hypothesis 1B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Practice in Lesson Plans Scored by This Investigator and the Supervisor</td>
<td>99</td>
</tr>
<tr>
<td>8.</td>
<td>General Research Hypothesis 2: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Content Scored by This Investigator</td>
<td>100</td>
</tr>
<tr>
<td>9.</td>
<td>Specific Hypothesis 2A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Content as Scored by the Teacher Supervisor</td>
<td>101</td>
</tr>
<tr>
<td>10.</td>
<td>Specific Hypothesis 2B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Content Scored by This Investigator and the Supervisor</td>
<td>101</td>
</tr>
</tbody>
</table>
11. General Research Hypothesis 3: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Child Centered Methodologies Scored by this Investigator

12. Specific Hypothesis 3A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Child Centered Methodologies Scored by the Supervisor

13. Specific Hypothesis 3B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Child Centered Methodology Scored by This Investigator and the Supervisor

14. General Research Hypothesis 4: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Assessment Scored by This Investigator

15. Specific Hypothesis 4A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Assessment Scored by the Supervisor

16. Specific Hypothesis 4B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Assessment Scored by This Investigator and the Supervisor

17. Summary Table
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Developmentally Appropriate Versus Developmentally Inappropriate Practice</td>
<td>28</td>
</tr>
<tr>
<td>2. The Interactive Qualitative-Quantitative Continuum of Research (Newman &amp; Benz, 1998)</td>
<td>68</td>
</tr>
<tr>
<td>3. Teacher Candidates’ Mathematics Lesson Plans Assessment Rubric</td>
<td>86</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

Background

Since its general inception in 1987, developmentally appropriate practice (DAP), as defined by the National Association of Education for Young Children (NAEYC), has been the framework for “Best Practices” in the education of children ranging in age from birth through age 8. The DAP framework was designed with guidelines to be used by teachers, administrators, parents, policy makers and others involved with programs serving young children, and to provide guidance to program personnel seeking accreditation by NAEYC’s National Academy of Early Childhood Programs. The accreditation criteria called for “developmentally appropriate” teaching methodology, activities, materials, and expectations (Bredekamp, 1987). A second and more widely applicable purpose for the use of the guidelines was stated in response to a growing trend toward the didactic academic instruction of young children (Shepard & Smith, 1988). The prevailing practices for the education of young children at that time, was placing heavy emphasis on rote memory, repetitive skills, whole group instruction of the academic skills, along with inappropriate testing, placement, and retention practices (Bredekamp, 1987). As a result of the heavy emphasis on didactic instruction, young children’s educational needs were being sacrificed. The educational practices of that time in history raised serious concerns among child development
experts and educators (Bredekamp, 1987; Bredekamp & Copple, 1997; Bredekamp & Shepard, 1989).

As a result of these concerns, NAEYC assumed a leadership role in adopting guidelines for developmentally appropriate practice (Bredekamp & Copple, 1997). The position of the newly formed guidelines stated that programs should be designed for young children based on what was known about young children’s growth and development. The guidelines were developed with a commitment to the rights of young children to have respectful and supportive learning environments and an education to prepare them for participation in a free and democratic society (Bredekamp & Copple, 1997).

Since the time of the original publication, the knowledge base informing early childhood practice has greatly increased, building on the rich contributions of the theorists, scholars, and practitioners of the past, by adding a plethora of new research evolving from the field of neuroscience on brain development, multiple intelligences, and cognitive styles which support the earlier research of the developmental theorists (Caine & Caine, 1991; Dana Alliance for Brain Initiatives, 1996; Gardener, 1983; Sousa, 2001; Sternberg, 2001). Also the computerized technology of today, has provided the capability of providing researchers computerized and detailed views of the specific parts of the brain which display children’s thinking “in motion” which also supports the previous learning theories of learning (Healy, 1994). This new knowledge may have an influence upon public policy for early childhood educational issues which support the implementation of best practices in teaching young children (Kotulak, 1997).
In today’s world, early childhood educators believe that we are in the midst of a growing national crisis (Darling-Hammond, 1994). Families are increasingly unable to raise children who are "ready" for school and schools are said to be unready for children. A belief that our faltering educational system is putting our nation at risk economically has gained popular appeal, resulting in the promotion of national and/or state standards and assessments as a means for improving curriculum and student performance in school. Early childhood educators, however, have raised serious concerns about these top-down specifications of curriculum which are linked to tests (Darling-Hammond, 1994).

Teachers often feel caught between belief systems; those that emphasize repetitive skills and rote memorization, in order to raise standardized test scores, and those that emphasize a child-centered constructivist approach that values individual learning styles and respects the developmental age of individual children (Darling-Hammond, 1994).

Developmentally appropriate practices and culturally relevant teaching, should be well grounded in human development and brain-based research, and be the pervasive force in our educational system. Yet the tension between the philosophical views of education as nurturing a child's intelligence and curiosity, versus education as a means to transmit the knowledge, skills, and the social and moral rules of our culture, often creates an environment that makes the implementation of DAP problematic (Kohlberg & Meyer, 1972). Guidance, based on developmental theory and brain-based research for early childhood educators, is succinctly stated in NAEYC’s Position Statement on Developmentally Appropriate Practice: Early Childhood Programs
should be tailored to meet the needs of children, rather than expecting children to adjust to the demands of specific programs as outlined by social and environmental forces (Bredekamp & Rosengrant, 1992).

Because there is growing evidence that the early years significantly affect children’s learning and attitudes about learning, two prominent educational associations were prompted to develop a joint position statement. The National Association for the Education of Young Children and the National Council of Teachers of Mathematics (NCTM) issued their joint position statement in 2000. The position statement affirms that high-quality, challenging, and accessible mathematics education for young children is a vital foundation for future learning of mathematics. In every early childhood setting, children should experience effective, research-based mathematic curriculum content and teaching practices. Such high-quality classroom practice requires policies, organizational supports, adequate resources, and school climates that enable teachers to do this challenging and important work (NCTM/NAEYC, 2000). Because of the collaboration between NCTM and NAEYC, other National Educational Associations have been embraced the purported benefits of DAP.

School Climate

The National Association of Secondary School Principals, (2001) has reported that current research, social and cultural factors influence decisions that are made on how to teach children in their classrooms. Knowledge about the importance of school climate has been established through research (Agnew, 1981; Anderson, 1982; Brookover, 1977; Howe, 1985; Keefe, Kelley, & Miller, 1985; Lezotte, Hathaway &
Mlier, 1980; Montoya, 1990; Parades, 1991; Stickard et al., 1986; Strong & Jones, 1991). It has been found that school climate has an effect on instructional programs that promote student achievement and success, and is also, perceived to have an influence on teachers’ implementation of DAP (Bredekamp, 1987; Bredekamp & Copple, 1997). Brookover (1977) and Rutter (1981) maintain that school climate may be one of the most important ingredients of a successful instructional program (NASSP, 2002). The definition of school climate was used in this research study. The term “school climate” was used by The National Association of Secondary School Principals (NASSP) in the development of their School Climate Survey. It is stated in the document that school climate is “a relatively enduring pattern of shared perceptions about the characteristics of an organization and its members” (Keefe, Kelley, & Miller, 1985). Without a climate that creates a harmonious and well-functioning school, a high degree of academic achievement is difficult, if not downright impossible to obtain (Hoyle, English, & Steffy, 1985). These shared perceptions of climate represent what most people believe. These shared perceptions tend to be persistent and stable over time. Just as meteorological climate is largely unaffected by daily shifts in temperature, the climate of the school is a relatively stable phenomenon. The measurement of the climate provides a balanced view of a school’s effectiveness (National Association of Secondary School Principals, 2001). A winning school climate provides the very foundation for a sound educational program. Perceptions of the various constituents about the climate for learning and working in the schools are gauged through the use of school climate surveys. The results from survey data help to inform schools about the impact that the school climate has on learning in their
educational programs (NASSP, 2001). When the school climate is right, teachers and students are inspired to do their best to stimulate positive teaching/learning experiences (Sweeney, 1988).

Purpose of the Study

Teacher candidates often indicate that there are inconsistencies between the theory they learn in their education courses and the actual educational practices they encounter in their field placement schools. In other words, they have noted that there is a gap between the theory they have learned about developmentally appropriate practice in their mathematics teaching methods courses, and its implementation in K-3 classrooms in their field placement schools.

The perceived benefits of developmentally appropriate practice (DAP) has been studied over the last 20 years (Bredekamp, 1987; Bredekamp & Copple, 1997). Educators today are required to adhere to the mandates of the 1994 legislation Goals 2000: Educate America Act which originally established a framework for improving education. The first goal of the National Education Goals was related to school readiness: “By the year 2000, all children in America will start school ready to learn.” With the passage of Goals 2000, U.S. lawmakers acknowledged that many young children enter school unprepared to learn optimally and that school readiness should be a priority for the nation (Goals 2000: Educate America). As a result of this legislation, schools began to place the burden of readiness on children. Educators were faced with the dilemma of choosing between the implementation of academic methodologies that stress didactic instructional methodologies, or the implementation of developmentally appropriate practice (Bredekamp & Rosengrant, 1992). Another practice to assure that
children are ready for school is that of delaying children's entry into school or grade retention, thus requiring children to repeat an entire grade (Bredekamp & Copple, 1997). As noted, each of the two above mentioned practices have been the most widely used strategies for dealing with the readiness issue. In today’s school settings educators are faced with yet another mandate, that of No Child Left Behind Act (NCLB) (P.L. 107–110, H.R. 1), signed into law in 2002. NCLB is broader in scope and more ambitious than any previous federal school reform legislation. One of the major changes in NCLB is an emphasis on accountability based on student test results (Gonzalez, Hamilton, & Stecher, 2003). Thus, in many schools, current educational practices for young children are again, placing heavy emphasis on rote memory, repetitive skills, and whole group instruction, along with the practices of standardized testing, placement, and retention. As a result of these educational mandates, many early childhood professionals fear that young children’s educational needs are being sacrificed (Bredekamp, 1987; Bredekamp & Copple, 1997).

Another important facet of education that demands attention is that of school climate. School climate is perceived as a factor in determining classroom environments and how effectively developmentally appropriate practices are implemented (Sweeney, 1988; Bredekamp & Copple, 1997).

The purpose of this study was to better inform the public, educators, school administrators, and teacher educators on mentoring teacher candidates on how to bridge the gap between theory and practice during their kindergarten to third grade field experiences in the creation and implementation of developmentally appropriate mathematic lesson plans. It is imperative for all teacher educators, who inform future
teachers on Best Practices, to systematically engage in research that evaluates teacher attitudes, instructional approaches, and school climates to substantiate the anecdotal reports of “frustrated” teacher candidates’ perceptions of the influence of school climate in creating DAP mathematic lesson plans during the course of their field experiences. With valid and reliable information gleaned from the NASSP School Climate Survey, along with the evaluation of mathematic lesson plans, and interviews of select teacher candidates, teacher-educators will become more cognizant of the problem of the gap between theory and practice, and thus develop solutions to enable them to more effectively aid teacher candidates in their teaching performance and the implementation of lesson plans based on developmentally appropriate practice.

Early childhood educators believe that it is imperative that decisions about appropriate school and classroom environments, mathematic lesson content, and assessment practices be derived from the guidelines found in the framework as outlined by NAEYC for developmentally appropriate practice, which can provide guidance to early educators for teaching strategies which are based on the specific knowledge and theories on how children learn and develop (Bredekamp & Rosengrant, 1992).

The practices currently used in many schools to assure that young children are ready for school are academic policies that stress didactic instructional methodologies and grade retention (Bredekamp & Copple, 1997). Thus, early child educators believe that these practices place the burden of school readiness on children through diadic teaching methodologies as opposed to using DAP which places an emphasis on educational programs that adjust their academic expectations to the individual learning needs of children (Bredekamp & Rosengrant, 1992). It is perceived these practices are
being used in order to meet the federal school reform legislation. Developmentally appropriate practices and culturally relevant teaching should be the pervasive force in our educating young children (Bredekamp & Rosengrant, 1992). DAP is well-grounded on theories based on how children learn, and on relevant knowledge about child grow and develop, both of which are imperative to the successful learning processes of young children (Bredekamp & Copple, 1997; Bredekamp & Rosengrant, 1992; Katz, 1991).

Statement of the Problem

This exploratory study investigated the relationship between teacher candidates’ perceptions of school climate and their creation of developmentally appropriate practices in classroom teaching of kindergarten to third grade early childhood mathematics. The study used a mixed methods approach for data collection. The qualitative data was gathered through the use of two instruments. The first instrument was two lesson plan reflections from each of the 29 candidates which were used in the selection of four teacher candidates to be interviewed; the two candidates who exhibited the highest degree of DAP in their lesson plan reflections, and the two who exhibited the least degree of DAP in their lesson plan reflections. And, the second used instrument was an interview developed by the researcher which was designed to assess select teacher candidates’ perceptions about the relationship of school climate and the choice of mathematic lesson plan content, and their perceptions on how DAP was implemented in their field placement schools. The first quantitative instrument used was *The NASSP School Climate Teacher Satisfaction Survey* for collection of data from both the teacher candidates and their cooperating teachers on their perceptions of
the school climate. The second quantitative instrument was a lesson plan rubric, also developed by the researcher, and used to evaluate the teacher candidates lesson plans for DAP.

General Research Questions

**Question 1.** Does School climate account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans?

**Question 2.** Is there a significant relationship between school climate and the selection of developmentally appropriate content in the creation of mathematic lesson plans?

**Question 3.** Is there a significant relationship between school climate and the selection of developmentally appropriate child-centered mathematic lesson plans?

**Question 4.** Is there a significant relationship between school climate and the selection of developmentally appropriate mathematic assessment in the lesson plans?

**Question 5.** Is a relationship between school climate and the creation or developmentally appropriate lesson plans based upon teacher candidate interviews?

Assumptions Underlying the Study

1. The teacher candidates answering the survey are doing so honestly, independently, and are not being influenced by others.

2. The teacher candidates answering the survey are representative of other teacher candidates who are experiencing their pre-service field experiences.

3. An assumption that the estimate of reliability and validity of the instruments, The NASSP School Climate Survey, the lesson plan rubric, and the interview
questions, used in the study have been established and are appropriate for the population.

4. An assumption that classroom environment is a by-product of school climate

5. An assumption was made that the school climate in which teacher candidates are placed to do their pre-service teaching has an effect on the educational practices they are implementing in their field experiences.

6. An assumption that the lesson plans of the teacher candidates reflect the teaching philosophy of the school in which they are doing their pre-service teaching.

Delimitations

This study investigated the relationship of teacher candidates’ perceptions of school climate and their creation of developmentally appropriate plans for teaching mathematics in the primary grades.

1. The data for this investigation came entirely from 27 teacher candidates assigned to 13 elementary schools located in Northeastern Ohio who were asked, selected, and willing to participate.

2. The instruments selected to measure school climate were: (1) The NASSP’s Comprehensive Assessment of School Environments Teacher Satisfaction Survey. The Teacher Satisfaction Survey was designed to collect data on teachers’ perceptions on seven out of nine subscales which were considered to be most relevant to the study. (2) A lesson plan rubric developed by the researcher; (3) two lesson plan reflections from each of the 29 teacher candidates; and (4) 12 open-ended interview questions to collect teacher candidates’ personal perceptions of the school climate in their field placement schools
Operational Definitions

Constructivism. An epistemology, a metatheory, or a theory of knowledge, which is centered on the active participation of young children as active constructors of their own knowledge (Jacobson, 1996; Katz, 1996; von Glasersfeld, 1984).

Developmentally Appropriate Practice. A framework, a philosophy, or an approach to working with young children that requires that the adult pay attention to at least two important pieces of information–what we know about how children develop and learn and what we learn about the individual needs and interests of each child in the group. Developmentally appropriate classrooms are age appropriate, individually appropriate, and culturally and socially appropriate for all children (Bredekamp & Rosengrant, 1992).

Developmental theory. A body of knowledge and principles devised to explain information pertaining to the holistic development of children in terms of cognitive, physical, social, emotional, moral, and brain development.

Didactic instruction. A term used to describe those parts of early childhood mathematic lesson content that is intended to help children master the basic skills involved in numeracy through direct teacher instruction. It is a perspective that views the young child as dependent on adults' instruction to gain academic knowledge and skills. (Jacobson, 1996; Katz, 1996). This perspective is in direct contrast with the child-initiated approach of constructivism.

Lesson plan. A detailed plan for executing the mathematic content/activity to be taught using the required format of the teacher candidates’ university. The following are included in each lesson plan: (a) the required standard, (b) the grade level
indicator, (c) the goal/objective for the lesson, (d) assessment (pre and post) (e) methods and strategies used for teaching the lesson, (f) Grouping the students (large or small groups), (g) needed instructional materials and equipment, (h) instructional delivery, (i) description of planned activities, (j) summary of the lesson and how it will connect with future lessons, (k) How practice and assessment will take place, and (l) teacher reflection and self-evaluation.

School climate. A relatively enduring pattern of shared perceptions about the characteristics of an organization and its members. A positive school climate would indicate positive relationships and quality of interaction between administration and staff, staff and staff, students and staff, students and students, and administration and students, as measured by the NASSP School Climate Survey (National Association of Secondary School Principals, 2001).

Teacher Candidates. Twenty-nine preservice teachers participating in learning the teaching methodologies for primary mathematics education in their field placement schools which were located in 13 Northeastern Ohio school districts.

Summary

Chapter I introduced a study that investigated the relationship between teacher candidates’ perceptions of school climate and their creation of developmentally appropriate lesson plans for mathematics to instruct K-3 students in 13 Northeastern, Ohio elementary schools in which they were assigned to do their fieldwork. The review of literature suggests that positive early childhood classroom environments and school climate are necessary for the implementation of developmentally appropriate
practices as outlined by NAEYC in their position statement (Bredekamp & Copple, 1997).

Chapter I provided a general description of a mixed methods study designed to help teacher educators as they guide and mentor teacher candidates on how to bridge the gap between theory and practice in their field experiences. Teacher candidates’ and their cooperating teachers’ perceptions of school climate in field placement schools were sought concerning the factors defining school climate using the NASSP School Climate Survey, a mathematic lesson plan rubric was created to assess each teacher candidate’s lesson plans for developmentally appropriate content, and a personal interview was designed to assess the teacher candidate’s perceptions of the school climate and the mathematic content of their mathematic lesson plans in their assigned field placement school.

Chapter I also included: (a) the purpose of the study, (b) a statement of the problem, (c) five general research questions which addressed the relationship between the teacher candidates’ perception of school climate and their creation of developmentally appropriate mathematic lesson plans for instruction of K-3 students, (d) six assumptions underlying the study, (e) two delimitations, and concluded with (f) the pertinent operational definitions for the study.
CHAPTER II

LITERATURE REVIEW

Introduction

The research is a mixed methods exploratory study on the relationship between early childhood teacher candidates’ perceptions of school climate and their creation of developmentally appropriate mathematic lesson plans. The chapter discusses the historical perspective of the evolution of developmentally appropriate practice, what it is, and why it is important. Chapter II also discusses school climate, a major variable in this study. School climate is defined, along with an introduction and description of NASSP’s School Climate Survey. Also included in this chapter, are the position statements of the educational societies that support NAEYC’s position statement on DAP, including NCTM/NAEYC’s Joint Position Statement (2000) on DAP.

Constructivism, the major epistemology that laid the foundation for developmentally appropriate practice, is defined and discussed in depth with an emphasis on the three major types of constructivism related to education. This chapter also included, the philosophical stances of the major theorists who contributed to the development of the principles of DAP.
Historical Perspective

Early Childhood Education (ECED) is the term frequently used to refer to the education of young children from birth through age 8. Although early childhood education has existed since the creation of kindergarten in the 1800s, the last two decades have seen a tremendous amount of attention devoted to the subject of education for young children (Bredekamp, Knuth, Kunesh, & Shulman, 1992).

In December 2001, the U.S. Congress approved a reauthorization of the Elementary and Secondary Education Act (ESEA) and renamed it the *No Child Left Behind Act* (P.L. 107–110, H.R. 1). ESEA was first enacted in 1964, by President Lyndon Johnson to supplement state and local efforts to provide all children with high-quality education (Gonzalez, Hamilton, & Stecher, 2003). The ESEA Act has been reauthorized and renamed several times; *Teachers and GOALS 2000: Leading the Journey Toward High Standards for All Students* was the first national goal to focus on a platform directly related to the early childhood years: “By the year 2000, all children in America will start school ready to learn” (Gonzalez, Hamilton, & Stecher, 2003).

In its newest incarnation as the *No Child Left Behind Act* (NCLB), it has a broader scope and is more ambitious than any previous federal school reform legislation. One of the major changes in NCLB is an emphasis on accountability based on student test results (Gonzalez, Hamilton, & Stecher, 2003). Understandably, state policymakers, district administrators, school principals, and others who are responsible for implementing NCLB are looking for guidance to help them comply with the legislation and make their schools as effective as possible (Gonzalez, Hamilton, & Stecher, 2003).
Goals 2000 has mandated that all children in America will start school ready to learn by the year 2000,” child development experts and early childhood teachers believe that from the time of birth, all children are ready to learn (Bedekamp, 1987). It is believed that what we do or don’t do as individuals, educators, and collectively as a society can either facilitate or impede a child’s success in learning. This portrayed in the current educational practices that test children for kindergarten entry and placement, have raised the entrance age for kindergarten by adding an extra “transitional” year between kindergarten and first grade, and the retention of children in preschool, kindergarten, or first grade are perceived as attempts to obtain an older, more capable cohort of children at each grade level (Bredekamp & Copple, 1997; Bredekamp & Rosengrant, 1992. These educational strategies suggest that current academic expectations may not match the developmental level of the children for whom the grade is intended (Bredekamp et al., 1992). In effect, these strategies blame the children who are the victims, rather than confronting the real problem of inappropriate academic content (Bredekamp et al., 1992).

In today’s society, we are faced with a dilemma that many educators believe is putting our young children’s educational system in the midst of a growing national crisis. Families are increasingly unable to raise children who are “ready” for school and, schools are said to be “unready” for the children (Bredekamp et al., 1992). In order for schools to be “ready” for children, they need to embrace and respect children’s emergent understandings of mathematics, reading, and the other academic content areas rather than focus on their readiness. Schools must be ready to aid parents and teachers in effectively supporting children in the process of their emergent and
ongoing cognitive development (Morrow, 2001). In order for schools to do this effectively, educators must be aware that the process of learning is dynamic and highly individual for each child.

According to Soderman, Gregory, and O’Neill (1999) three major factors must be considered in helping children build their emerging cognitive skills in any formal learning context. The first factor must take into consideration all of the various antecedents a child brings to the classroom, including chronological age differences, gender differences, cognitive organization, and sociocultural differences. The second factor consists of all the transactions related to the skill building that goes on both inside and outside the classroom during children’s preprimary and elementary years. These factors are influenced by how the philosophical understandings of their teachers are played out practically in classroom environments. Also important is the continued parental involvement related to cognitive development in both the home and school context. Outcomes are the third factor that must be considered. In other words, how well is a child’s continuous progress being monitored and shared effectively with others who can use the information to address the child’s developmental needs. The extent to which inputs and desired outputs are matched carefully will play a critical role in the child’s success in school (Soderman et al., 1999).

The “emergent perspective” provides a clear and powerful example of how the constructivist theory of learning works. It draws from a synthesis of current research in cognitive psychology, anthropology, and philosophical theory that defines learning as the result of many “self-motivated interactions,” a process of resolving inner cognitive conflicts that often become apparent through concrete experiences, collaborative
discourse, and self-reflection (Bredekamp, 1987; Vukelich, Christie, & Enz, 2002). In other words, schools must be ready to provide curriculum and academic content that meets each child’s individual learning needs (Bredekamp, 1987; Vukelich, Christie, & Enz, 2002).

A belief that our faltering educational system is putting our nation at risk economically, has gained popular appeal. This belief has resulted in the promotion of NCLB’s national and state standards as a means for improving academic content and student performance in an effort to raise standardized test scores (Darling-Hammond, 1994). A number of educators and researchers however, have raised serious concerns about the “top-down specifications of academic content linked to tests” (Darling-Hammond, et al., 1994). Teachers often feel caught between using didactic teaching methodologies that emphasize repetitive skills and rote memorization or using developmentally appropriate practices that emphasize constructivist methodologies that are child-centered and respect students’ individual backgrounds and learning styles (Darling-Hammond, 1994).

The educational dilemma of today closely parallels that of the late 1970s and early 1980s when NAEYC originally entered the educational reform debate by issuing influential position statements defining developmentally appropriate practices for young children. From a historical perspective developmentally appropriate practice, known by practitioners as, “Best Practices” in early childhood education, evolved in the late 1970s and 1980s as a result of the many criticisms of education (Bredekamp, 1987). The critics called for reforms that were focused on the academic content of instruction for the primary grades. Critics of early education felt that there were
widespread practices that ignored what was known about how young children learn and
develop (Bredekamp & Copple, 1997; Soderman et al., 1999). The major concerns that
the critics expressed surrounded the issues of the didactic teaching methodologies of
the time, which were considered to be injurious to children because they were not age
or developmentally appropriate (Soderman et al., 1999). As a result of research and
study, the National Association for Young Children (NAEYC) published a position
statement in 1987, to provide guidance for program personnel seeking accreditation by
NAEYC’s National Academy of Early Childhood Programs (Bredekamp, 1987). The
accreditation criteria called for “developmentally appropriate” teaching methodologies,
activities, materials, and expectations (Bredekamp, 1987). According to Shepard and
Smith (1988), a second more widely applicable purpose for the guidelines on DAP was
stated in response to the growing trend toward more didactic, formal, and academic
instruction of young children. At that time, education of young children was placing
heavy emphasis on rote memorization and whole group instruction of the academic
skills. As a result of the heavy emphasis on formal instruction and rote memory, along
with the practices of testing, placement, and retention practices, early childhood
educators perceived that young children’s educational needs were being sacrificed. As
a result of many meetings and discussions that took place among early childhood
educators and experts in child development, the idea of developmentally appropriate
practice (DAP) evolved (Bredekamp, 1987).

Currently, NAEYC and early childhood educators perceive that there is again a
trend toward formal, academic instruction in the education of young children
(Bredekamp & Copple, 1997). This a movement that stresses a traditional scope and
sequence approach to curriculum content, with emphasis on drill and practice of isolated academic skills. As part of the “return to the basics movement,” parents, and school districts are demanding hard evidence that children are “learning” through the use of standardized tests. Early childhood specialist Elkind (1987) has maintained that this intense early pressure will take a toll on young children who, by second grade will feel like failures. Elkind’s concern was that the early years are critical to children’s early sense of competence, and result in feelings of frustration, failure, and rejection that mark a child’s entrance into the schooling environment where competition abounds. Schools that demand too much to soon are setting kids off on a road to failure and rejection that mark a child’s entrance into the schooling environment where competition abounds (Elkind, 1987). Schools that demand too much to soon are setting kids off on a road to failure (Elkind, 1987). Many early childhood educators believe that this pressured approach to education may produce students who will lack skills in higher-order thinking and problem-solving abilities that will be needed in the 21st century (Bredekamp & Copple, 1997).

The Position of National Educational Organizations

Presently, a number of the major national educational organizations, which include The National Council of Teachers of Mathematics, and The National Council for the Accreditation of Teacher Education have been influenced by and are in agreement with NAEYC’s position on the current issues facing the field of early childhood education (Seedfelt & Barbour, 1998). They are in agreement with NAEYC’s call for schooling environments to place greater emphasis on the following criteria:
1. Active hands-on learning environments

2. Conceptual learning that leads to understanding along with acquisition of basic skills

3. Meaningful, relevant learning experiences

4. Interactive teaching and cooperative learning

5. A broad range of relevant curriculum content, integrated across traditional subject area divisions (Bredekamp, 1987; Bredekamp & Copple, 1997). Literature indicates that these national educational organizations unanimously criticize rote memorization, drill, and practice of isolated academic skills, teacher lecture, whole-group instruction, and repetitive seatwork (Bredekamp, 1987; Kamii, 1990; NAEYC, 1994; NCTM, 1989). They have also raised concerns about the negative effects of the traditional methods of evaluation, particularly standardized paper and pencil, and multiple choice achievement tests. There is an increasing recognition that curriculum reform must be accompanied by testing reform (Kamii, 1990). National organizations are now calling for more performance-based assessments that align with current views of curriculum content and more accurately reflect on individual children’s learning (Bredekamp, 1987; Bredekamp & Copple, 1997; Kamii, 1990; NAEYC, 1994; NCTM, 1989).

Developmentally Appropriate Practice

In the years since its inception, developmentally appropriate education (DAP) has been defined and redefined by the National Association of Education for Young Children (NAEYC) (Bredekamp, 1987; Bredekamp & Copple, 1997; Bredekamp & Rosengrant, 1992, 1995; NAEYC, 1994). DAP currently has three dimensions: first, is
age and developmental appropriateness which reflects what we know about how children develop and learn; second, is individual appropriateness for each child which takes into account each child’s own development in the areas of physical, cognitive, social, emotional, and language development along with previous experiences, and interests; and the thirdly, the social and linguistic appropriateness for each child. Teachers must consider all three dimensions when making educational choices (Bredkamp, 1987; Bredekamp & Copple, 1997; Bredekamp & Rosengrant, 1995). Early childhood teacher Burchfield, maintains that developmentally appropriate practice is not a recipe, but a philosophy for teaching young children. Burchfield points out that DAP is not a curriculum or an exact prescription, but it does offer guidelines (Bredekamp & Rosengrant, 1995).

Kamii, (1990) believed that the early childhood profession is responsible for establishing and promoting standards of high-quality professional practice in early childhood programs. These standards must reflect current knowledge about what constitutes high quality, developmentally appropriate early childhood education in the context that it serves. The standards must address the education of the “whole child” through the complete integration of each child’s intellectual (cognitive), emotional, social, and physical capabilities (Bredekamp & Copple, 1997). Learning in one of these domains must involve all the others. Thus, the task of determining DAP depends on early childhood educators’ knowledge and understanding of how young children learn (Williams & DeGaetano, 1985).

NAEYC’s position statement, defines DAP as a set of child-centered practices that are based on the following criteria:
1. Developmentally appropriate curriculum content should provide for all areas of a child's development: physical, social, emotional, linguistic, aesthetic, and cognitive.

2. Curriculum content should include a broad range of content across academic disciplines that are socially relevant, intellectually engaging, and personally meaningful to children.

3. Curriculum content should build upon what children already know and are able to do through the activation of their prior knowledge to consolidate their learning and to foster their acquisition of new concepts and skills.

4. Curriculum content must be planned to frequently be integrated across traditional subject-matter divisions to help children make meaningful connections and provide opportunities for rich conceptual development.

5. Curriculum content should promote the development of knowledge and understanding, processes and skills, as well as the dispositions to use and apply skills.

6. Curriculum Content must have intellectual integrity that reflects the key concepts and tools of inquiry of the recognized disciplines in ways that are accessible and achievable for young children ages 3 through 8.

7. Children should directly participate in the study of the disciplines by solving mathematics problems, conducting scientific experiments, writing, performing, collecting and analyzing data, collecting oral history, and performing other roles of experts in the disciplines.

8. Developmentally appropriate curriculum content should provide opportunities to support children’s home culture and language while also developing
all children’s abilities to participate in the shared culture of the program and the community.

9. The goals of developmentally appropriate curriculum content should be realistic and attainable for most children in the designated age range for which they are designed.

10. The use of technology should be physically and philosophically integrated in the classroom academics and teaching (Bredekamp, 1987; Bredekamp & Copple, 1997).

When discussing “Best Practice” in early education, educators must also consider other facets of appropriate education for all children. American public schools are serving a more heterogeneous population than ever before (Olson, 2000). Thirty-five percent of children in the U.S. are members of minority groups. Twenty percent of the country’s children live in poverty, and the same proportion of children live in households headed by an immigrant parent (Olson, 2000). Despite the increasing diversity in our schools, the challenge of meeting the needs of diverse groups of students in public schools is not new. Differences hold great opportunities for learning, and offer a free, abundant, and renewable resource (Salisbury & McGregor, 2002). However, it is clear that issues associated with diversity are challenges that must be met in an appropriate fashion (Salisbury & McGregor, 2002).

Currently, students with disabilities and those considered “at risk” represent over 10% of the school population, and represent another facet of the increasing diversity in today’s classrooms (U.S. Department of Education, 1999). The 1997 reauthorization of the Individuals with Disabilities Education Act (IDEA, P.L. 105-17,
1997), as well as the 1994 reauthorization of the Elementary and Secondary Education Act (The Improving America’s Schools Act: ESEA, P.L. 103-382, 1994) emphasize the integration of supplementary services and instructional supports within general education classrooms to ensure that students have access to challenging and stimulating learning environments.

As issues surrounding diversity and inclusion gain greater prominence in education, we will get beyond the necessity of referring to “inclusive” classrooms as if they were different from “ordinary” classrooms. In the near future, all classrooms should be inclusive, and we will no longer need to use the term (Heumann, 1999).

Inclusion is a philosophy of supporting children in their learning that undergirds the entire system of education, not simply a place or method of delivering instruction (Roach, 1994). Inclusion is part of the culture of a school district and defines how students, teachers, administrators, and others view the potential of children. Inclusion is truly grounded in the phrase, “all children can learn” (Roach, 1994).

Huemann (1999) stated:

Education is “excellent education” when it is excellent for all. Children come from all racial, ethnic, and national origins and all economic backgrounds. And some children have disabilities. If our education system is to be excellent, it must be based on the premise that every student can learn, and it must encourage every student to have high expectations. If we are to prosper in the future, we cannot afford to waste the potential of any of our young people. (p. 5)

Flynn (1999) maintained that:

Inclusive classrooms are grounded in the lives of our students. An inclusive classroom is one where, first and foremost, there is a simple but profound respect for all students. There will be respect for their innate curiosity and their capacity to learn regardless of the level at which that occurs. Every aspect of the curriculum will be rooted in the needs and experiences of the
students. The class will be about the students’ lives, as well as the subject, regardless of the subject matter being dealt with. The students — all of the students — will have facilitated and non-facilitated experiences that probe and enlighten how their lives are connected to the broader society or limited by that society. They will have experiences, some intended and some not, where they will discover how they are connected to each other or limited by the other and what appropriate responses might be to such situations.

Inclusive classrooms focus on the development of critical skills. (p. 83)

The tension between the views of education as nurturing a child’s individual learning style and curiosity, versus education as a means to transmit the knowledge, skills, and social mores of our culture, often create an environment that makes the implementation of DAP problematic (Kohlberg & Meyer, 1972).

Figure 1 contrasts developmentally appropriate practices (DAP) and developmentally inappropriate practices (DIP) using three of the six guidelines and their subcomponents from NAEYC’s revised edition of developmentally appropriate practice for 6 through 8 year olds (Bredekamp & Copple, 1997). Three of the six guidelines were chosen because they are most relevant to the study. The three guidelines chosen are: (a) creating a caring community of learners; (b) teaching to enhance development; and (c) constructing appropriate curriculum content. The three guidelines and their subcomponents are depicted in the chart.
<table>
<thead>
<tr>
<th><strong>DAP</strong> Creating a caring community of learners (psycho-social development)</th>
<th><strong>DIP</strong> Creating a caring community of learners (psycho-social development)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promoting a positive climate for learning that ensures that where all children and adults feel accepted and respected.</td>
<td>No effort is made to build a sense of the group as a community, and children are separated from friends in order to manage classroom. Some Children who lack social skills receive no assistance and are isolated and rejected by peers.</td>
</tr>
<tr>
<td>Children learn personal responsibility about developing constructive relationships through collaboration, cooperation, and communication with other people.</td>
<td>Teacher emphasizes the need for children to do their work independently and does not provide opportunities for students to work together on cooperative projects or activities.</td>
</tr>
<tr>
<td>Teacher knows and responds to each child individually, and has high expectations and standards for each individual child’s learning.</td>
<td>Teacher has low expectations of children’s learning abilities, and use the same lesson and method for all children without regard to how individual children learn best.</td>
</tr>
<tr>
<td>Teacher makes sure that every child has opportunities to actively participate and make contributions.</td>
<td>Children with special needs are constantly pulled out of the classroom to receive services elsewhere in the building.</td>
</tr>
<tr>
<td>Respect for individual, social, ethnic, and cultural differences expected and encouraged. Inclusive classrooms are grounded in the lives of our students. An inclusive classroom is one where, first and foremost, there is a simple but profound respect for all students.</td>
<td>No assistance from teachers to help children in developing positive relationships and respect for others who are individually, socially, ethnically, and culturally different.</td>
</tr>
<tr>
<td>Teacher has high expectations and standards for every child that is both challenging and achievable, and believes that “all children can learn.” Teacher knows each child and plans learning experiences that take into account individual differences and experiences.</td>
<td>Teacher has low expectations of the children’s learning abilities or potential. Minimal competence is expected, and is communicated to the children. Teacher uses the same lesson and methods for all children without regard to individual differences and experiences.</td>
</tr>
<tr>
<td>Teacher uses a variety of strategies in order to develop a democratic community of learners where children participate in group decision making and group activities take place.</td>
<td>Teacher’s behaviors and techniques undermine a sense of community; children work alone or in competition with others.</td>
</tr>
</tbody>
</table>

*Figure 1. Developmentally Appropriate Versus Developmentally Inappropriate Practice*
<table>
<thead>
<tr>
<th><strong>Teacher brings each child’s home culture and language into the shared culture of the school so that children feel accepted and gain a sense of belonging.</strong></th>
<th><strong>Children’s cultural and linguistic backgrounds and other individual differences are devalued or ignored.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator works with teachers to create a school climate that promotes an attitude of “we’re in this together” to ensure that every child succeeds.</td>
<td>Administrator employs a highly competitive, hierarchical management style with inflexible schedules and structures that discourage collegiality among teachers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>DAP</strong> Teaching to enhance development and child-centered learning</th>
<th><strong>DIP</strong> Teaching to enhance development and child-centered learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher provides a variety of materials and activities which use concrete hands-on manipulatives, real, and relevant to children’s lives to help children to construct an understanding of mathematics concepts.</strong></td>
<td><strong>Available materials are limited primarily to textbooks, worksheets, and pencils with few manipulatives available to help children construct their understanding of mathematics concepts.</strong></td>
</tr>
<tr>
<td><strong>Teacher facilitates and uses a variety of strategies to ensure each child’s progress and adapts instruction for individual children who are having difficulty or who are capable of more advanced levels of competence.</strong></td>
<td><strong>Instructional strategies involve limited individual teacher-child interaction. Teacher lectures to the whole group and assigns paper and pencil practice exercises or worksheets to be completed by the children working at their desks.</strong></td>
</tr>
<tr>
<td><strong>Children are allowed to actively explore their environment, using materials in a hands-on fashion to learn specific concepts and building on their natural curiosity and desire to make sense of the world around them.</strong></td>
<td><strong>Young children spend large blocks of time sitting quietly at desks while the teacher “teaches,” or working independently and silently on assigned tasks and worksheets.</strong></td>
</tr>
<tr>
<td><strong>Children interact with other children to practice their emerging social skills and develop a common frame of reference.</strong></td>
<td><strong>Children are restrained from interacting and communicating with their peers.</strong></td>
</tr>
<tr>
<td><strong>DAP</strong> Constructing appropriate and integrated curriculum content</td>
<td><strong>DIP</strong> Constructing appropriate and integrated curriculum content</td>
</tr>
<tr>
<td><strong>Teacher uses an integrated approach to content rather than a subject-specific approach to meet children’s learning needs.</strong></td>
<td>Children are taught in discrete blocks of time, with primary emphasis on reading and, secondarily, mathematics.</td>
</tr>
</tbody>
</table>

*Figure 1. Developmentally Appropriate Versus Developmentally Inappropriate Practice (continued)*
<table>
<thead>
<tr>
<th>Teacher facilitates and scaffolds student’s learning and encourages interaction with their peers.</th>
<th>Children’s activities are teacher-initiated and directed; much of their time is spent in isolation, working on practice exercises and worksheets.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers and administrators view parents as partners in the educational process</td>
<td>The administration does not give teachers adequate time to work with parents and regards the school as being for teachers and children, not parents.</td>
</tr>
<tr>
<td>Each child’s progress is compared primarily to their own previous performance and to standards for their grade level.</td>
<td>Children are compared with each other, as if all have uniform development.</td>
</tr>
<tr>
<td>School adapts learning to individual children’s developmental needs rather than expecting children to be ready to meet the school’s expectations.</td>
<td>Exclusion – delaying children’s entry into school – and retention – requiring children to repeat an entire grade – have been two of the most widely used strategies for dealing with the readiness issue.</td>
</tr>
<tr>
<td>As children move from kindergarten through first, second, and third grades, they can gradually be introduced to more formal academic learning models.</td>
<td>Extending curriculum models that are appropriate for older children downward to ages where they are not appropriate with tests used for to determine children’s “readiness” for school.</td>
</tr>
</tbody>
</table>

Source: (Bredeamp, 1987; Bredekamp & Copple, 1997; Flynn, 1999; Roach, 1994; Lee Van Horn & Ramey, 2004).

**Figure 1.** Developmentally Appropriate Versus Developmentally Inappropriate Practice

**Constructivism**

The philosophical basis on which developmentally appropriate practice in early childhood education is built is constructivism. Constructivism is a theory of knowledge and an approach to teaching based on research about how people learn. McBrien & Brandt (1997) assert that many researchers contend that each individual constructs their own knowledge, rather than receiving it from others (Dewey, 1938; Piage, 1976; von Glaserfeld, 1989; Vygotsky, 1978).
The essential core of constructivism is that learners actively construct their own knowledge and meaning from their experiences (Fosnot, 1996). This core has roots that extend back through many years and philosophers, including Dewey (1938).

Constructivist epistemology assumes that learners construct their own knowledge on the basis of interaction with their environment. According to von Glaserfeld (1995), four epistemological tenets are at the heart of what we refer to as “constructivist learning.”

1. Knowledge is not passively accumulated, but is the result of active cognizing by the individual.
2. Cognition is an adaptive process that functions to make an individual’s behavior more viable in a given environment.
3. Cognition organizes and makes sense of one’s experience, and is not a process that renders an accurate representation of reality.
4. Knowing has its roots in both biological/neurological construction, and social, cultural and language based interactions (von Glaserfeld, 1995)

Constructivism is not a unitary theoretical position; rather, it is a continuum (von Glaserfeld, 1995). The assumptions that underlie the continuum vary along several dimensions and have resulted in the definition and support for several types of constructivism which are divided into three broad categories: (a) Cognitive Constructivism (Piaget, 1976); (b) Social Constructivism (Vygotsky 1978); and (c) Radical Constructivism (von Glasersfeld, 1995).

Constructivist teaching is based on the belief that students learn best when they gain knowledge through exploration and active learning (Piaget, 1976). The classroom
environment must be developed in a manner in which hands-on materials are used in place of textbooks and numerous worksheets. Students should be encouraged to think and explain their reasoning rather than have repetitive rote memorization and recitation of isolated facts imposed upon them (McBrien & Brandt, 1997). Appropriate education should be centered on themes and concepts emphasizing the connections between them, rather than the teaching of isolated information that has no connections to prior learning (McBrien & Brandt, 1997).

Types of Constructivism Related to Education

Piaget’s cognitive constructivism, is considered the weakest type of constructivism on the continuum, because it embraces only the first two tenets of constructivism (von Glasersfeld, 1995). Piaget’s cognitive constructivism was based on an evolutionary epistemology analogizing the development of mind to a biological point of view and so, highlighting the adaptive function of cognition. Piaget maintained that Knowledge is actively constructed by the learner, not passively received from the environment (von Glasersfeld, 1989). According to von Glasersfeld (1989), Piaget perceived the development of human intellect as a process that proceeds through adaptation and organization. Adaptation is a process of assimilation and accommodation, where, on the one hand, external events of the environment are assimilated into thoughts and, on the other, new and unusual mental structures are accommodated into the mental environment. Piaget maintained that thought is highly egocentric and highly personal (Piaget, 1963). Piaget further believed that intelligence is an equilibrium between the processes of assimilation and accommodation (Piaget, 1963). Piaget also believed that a balance between these two functions were necessary
in the process of intellectual development (Piaget, 1963). Piaget considered that the organization of the mind was accomplished through a series of increasingly complex and integrated ways, of which the simplest is the scheme or a mental representation of some action that can be performed on an object (von Glasersfeld, 1989).

Vygotsky’s social constructivism, falls between cognitive constructivism and radical constructivism on the continuum, and is considered a strong type of constructivism because it embraces all four of the tenets of constructivism (von Glasersfeld, 1989). Vygotsky (1978) was concerned with the process of cultural transmission and its role in cognitive development. It is a type of cognitive constructivism that emphasizes the collaborative nature of much learning. In social constructivism, all cognitive functions originate in, and must therefore be explained as products of, social interactions within the classroom environment. Learning is the process by which learners are integrated into a knowledge community. Every function in the child’s cultural development appears twice: first, on the social level and, later on, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. Vygotsky maintained that all higher functions originate as actual relationships between individuals (Vygotsky, 1978).

von Glasersfeld’s (1989) radical constructivism, is considered a strong type of constructivism on the continuum because it embraces three of the four tenets of constructivism. It emphasizes the ability of human beings to use the understandings they create through interacting with their environment to help them navigate life, regardless of whether or not such understandings match an external reality. The radical
The constructivist movement abandons the traditional philosophical position of realism according to which knowledge has to be a representation of an essential reality, i.e., an “out there” world prior to having been experienced. On the contrary, it adopts the relativist position that knowledge is something, which is personally constructed by individuals in an active way, as they try to give meaning to socially accepted and shared notions. von Glasersfeld (1995) contended that knowledge is the result of an individual subject’s constructive activity in their environment, not a commodity that somehow resides outside the knower and can be conveyed or instilled by diligent perception or linguistic communication.

Developmentally appropriate practice is based primarily on the cognitive constructivism of Piaget, and the social constructivism of Vygotsky (Bredekamp, 1987). Constructivists view young children as active participants in the learning process (Piaget, 1963; Vygotsky, 1985). Additionally, they believe young children initiate most of the activities required for learning and development. Because active interaction with the environment and people are necessary for learning and development, constructivists believe that children are ready for school when they can initiate interactions with the environment and people around them (Mooney, 2000; Morrison, 2003).

The Major Theorists of Developmentally Appropriate Practice

In reviewing the major theorists that have historically contributed to our present understandings of developmentally appropriate practices (DAP) in early childhood education, the researcher will begin with the field’s most prominent constructivist theorists. The work of Dewey, Piaget, Vygotsky, Montessori, and Bruner, provide
historical precedents for constructivist learning theory, along with Erickson’s psychosocial theory, and Gardener’s multiple intelligence theory. Although their work varies greatly, each articulates a similar context of learning and development. They are consistent in their constructivist beliefs that learning and development occur when young children interact with the environment and people around them (Hunt, 1969).

*Dewey*

Dewey (1859-1952) was an American educator who has greatly influenced our thinking about education in this country. Dewey established the movement toward more democratic and child-centered education, known as progressive education. The progressive education movement emphasized that curriculum content should be based on children’s interests, discovery learning, parent involvement in education, and education of children for today—not tomorrow. Dewey believed that children need assistance from the teacher in making sense of their world, and also maintained that knowledge was built through inquiry and logic, which was depicted in a definition of “reflective thought involves a state of doubt, hesitation, perplexity, mental difficulty, in which thinking originates, and an act of searching, hunting, inquiring, to find material that will resolve the doubt, settle and dispose of the perplexity” (Dewey, 1933, p. 12). Dewey also believed that educators had a serious responsibility to invest in planning and organizing an appropriate environment for children’s learning activities. Dewey maintained that it was the teacher’s job to determine that the academic content is based on knowledge of their students and their abilities. Dewey also believed that the path to quality education was to know the children well, to build their experiences on past learning, to be organized, and to plan well. Dewey also felt that teachers needed to
invest time in close observation of the children and in the documentation of their activities, interests, and experiences in order to plan curriculum content and the classroom environment (Dewey, 1938; Tanner, 1997).

Piaget

Cognitive constructivist, Piaget (1896-1980), is best known for theories on cognitive development based on the stages of children. Piaget’s theory on cognitive development has greatly influenced America’s early childhood programs for over 30 years (Bredekamp, 1987; Bredekamp & Copple, 1997. Piaget’s theory of intellectual development provided early childhood educators with the following: the recognition of infancy as a critical period in cognitive development; the concept that the child is an active participant in the learning process from birth. Piaget believed that cognitive development is influenced by experience and maturation. According to Piaget, children’s cognitive development is formed in four distinct sequential stages, however the age categories have been added by interpreters of Piagetian theory. Piaget’s stages are as follows: (Mooney, 2000; Morrison 2003).

1. Sensorimotor - Children learn through senses, reflexes, and the manipulation of objects.

2. Preoperational - Children form ideas based on their perceptions, are able to focus on only one variable at a time, and over-generalize based on their limited experience.

3. Concrete Operational - Children form ideas based on reasoning and, limit thinking to objects and familiar events in their environment.

Piaget was interested in finding the answer of how children arrive at what they know, and stages of cognitive development have created an overall view of how children think in their early years. Piaget maintained that children construct their own knowledge by giving meaning to the people, places, and things in their environment. Through interaction with their environment, the constructivist process of learning takes place as they continuously organize, reorganize, structure and restructure everyday experiences in relation to existing schemes or mental images, of thought. Thus, according to Piaget, cognitive development takes place through the process known as adaptation of mental constructs. Adaptation is composed of two interrelated processes of assimilation and accommodation functioning together. Assimilation is the process of taking in, making sense of, and the incorporation of, new information and sensory data into one’s existing knowledge. Accommodation is the process involved in changing old methods and adjusting to new situations (Morris, 2003; Singer & Revenson, 1996).

Piaget placed a heavy emphasis on the role of self-directed activity in cognitive development, and believed that children literally construct their knowledge of the world through the process of self-directed activity (Piaget, 1963). Each child organizes, structures, and restructures experiences in accordance with their schemes of thought through the process of equilibration (Morris, 2003). Kamii (1982) emphasized that constructivism refers to the fact that knowledge is built by an active child from the inside rather than being transmitted from the outside through the senses. Children
literally create their intelligence by experimenting with the world and their environment.

Piaget believed that children learn only when their curiosity is not fully satisfied, and that curiosity is the factor that drives their learning, and was certain that children build their understanding of their environment by the things they do (Piaget, 1963). Piaget maintained that a change in the role of the teacher from an imparter of information, to a designer of activities in the classroom environment which are appropriate to a child’s level of development, would allow young students to act on materials and develop thinking skills. Piagetian theory provides a means by which to assess children’s levels of intellectual functioning, intellectual readiness, and the appropriateness of classroom activities. Piaget believed that children’s learning was neither exclusively intrinsic nor extrinsic, but rather based upon a their interactions with their environment (Mooney, 2000).

Vygotsky

Social constructivist Vygotsky (1896-1934) was born in the U.S.S.R., and was responsible for the social-development-theory of learning. Vygotsky was a contemporary of Piaget and, believed that the life long process of development was dependent on social interaction and that social learning actually would lead to cognitive development; it called the zone of proximal development (ZPD). Vygotsky (1978) described ZPD as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable
peers” (p. 87). Vygotsky believed that a student could perform a task under adult guidance or with peer collaboration that could not be achieved alone.

Vygotsky’s theory was that the zone of proximal development bridges the gap between what is known and what can be known. Vygotsky claimed that learning occurred in this zone. Vygotsky focused on the connections between people and the environmental/cultural context in which they act and interact in shared experiences (Crawford, 1996). Vygotsky conceptualized a zone of proximal development as a way of viewing what children are coming to know. Vygotsky recognized that children were able to solve problems beyond their actual development level if they were given guidance from someone more advanced. The person, could be another student, a sibling, a parent, or a teacher (Vygotsky, 1978). Vygotsky defined the zone as:

The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance of in collaboration with more capable peers (Vygotsky, 1978 p. 86).

Vygotsky’s framework of proximal development is important for teachers because it can be used as a guide for a child’s development (Wink & Putney, 2002). It allows a teacher to know what a student is able to achieve on their own, and through the process of scaffolding, the child can attain a higher level of competence (Driscoll, 1994). Central to Vygotsky’s theory was a belief that biological and cultural development do not occur in isolation (Driscoll, 1994). Vygotsky approached development differently from Piaget. Piaget believed that cognitive development consists of four main periods of cognitive growth: sensorimotor, preoperational, concrete operations, and formal operations (Saettler, 1990). Piaget’s theory suggests
that development has an endpoint in goal. Vygotsky, in contrast, believed that development is a process that should be analyzed, instead of a product to be obtained. According to Vygotsky, the developmental process that begins at birth and continues until death is too complex to be defined by stages (Driscoll, 1994; Hausfather, 1996).

As a constructivist, Vygotsky maintained that humans use tools that develop from a culture, such as speech and writing, to mediate their social environments. Initially children develop these tools to serve solely as social functions, and in ways to communicate needs (Driscoll, 1994). Vygotsky believed that the internalization of these tools led to higher thinking skills. When Piaget observed young children participating in egocentric speech in their preoperational stage, he believed it was a phase that disappeared once the child reached the stage of concrete operations. In contrast, Vygotsky viewed egocentric speech as a transition from social speech to internalized thoughts (Driscoll, 1994). Thus, Vygotsky (1985) believed that thought and language could not exist without each other. Language holds a central role in Vygotsky’s theory, and is essential to the development of thinking skills; therefore, the school needs to provide an environment with many opportunities which allow children to reach the third stage of speech which is responsible for all higher levels of functioning (Driscoll, 1994). Lefrancois (1994), points out the three underlying themes unify Vygotsky’s rather complex and far-reaching theory. The first theme was the importance of culture, the second theme was the central role of language, and the third theme was what Vygotsky called the zone of proximal development. Vygotsky is credited with changing the way educators think about children’s interactions with others (Mooney, 2000. This work has shown that social and cognitive development
work together and build on each other, and the world which children inhabit is an environment that is shaped by their families, communities, socioeconomic status, education, and culture (Mooney, 2000).

Montessori

Montessori (1870-1952), a predecessor to both Piaget and Vygotsky, was nominated for the Nobel Peace Prize three times, and is credited with leaving educators of every nation a legacy of ideas and a collection of writings that still affect current educational practices for young children. Montessori did not believe there were children who could not learn. Montessori was convinced that if children were not learning, adults were not listening carefully enough or watching closely enough (Morrison, 1990). In other words, Montessori believed that observation of children was important and the key to determining what children were interested in and needed to learn (Elkind, 2003). Montessori also stressed the importance of teacher-reflection on the observations used to guide a child-centered environment and the planning of academic content.

Montessori’s constructivist leanings were reflected in a constant emphasis upon the child’s own activity in their construction of knowledge and intelligence. Montessori wrote in 1967, “The hands are the instruments of man’s intelligence. . . . Thus, mind is constructed step by step till it becomes possessed by memory, the power to understand, the power to think” (p. 150). Like Piaget, Montessori emphasized the importance of the child’s own activity in the construction of both mind and knowledge. To a greater extent than Piaget, Montessori (1967) emphasized the importance of the hand in the constructive process: “Hands under the guidance of intellect transform the
environment and thus enable the child to perform a mission in the world” (p. 150). Montessori was thus, a constructivist to the extent of regarding the child as an active participant in constructing and transforming the environment through their own activity (Elkind, 2003).

Montessori maintained that children should be able to do everything they are capable of and that it was the teacher’s responsibility to increase each child’s competence whenever possible. The innovations Montessori brought to early childhood education include: (a) the belief that each child develops from within as an individual; (b) that a child must be free to select and use materials with a minimum of adult interference for as long as desired (Stokes, 1912); (c) children are capable of concentration for long periods of time when they are surrounded by many interesting things to do; (d) that children need large blocks of open-ended time and freedom to do their learning; and (e) Montessori placed emphasis on the preparation of child-centered environments that exuded beauty, order, sensory experiences, real tools that work, and that materials and equipment should be kept accessible to the children (Mooney, 2000).

Bruner

A major theme in the theoretical framework of Bruner, born in 1915 and considered to be a contemporary cognitive constructivist theorist and cognitive psychologist, was that learning is an active social process in which learners construct new ideas or concepts based upon their current/past knowledge. During this process, the learner selects and transforms information, constructs hypotheses, and makes decisions, relying on a cognitive structure to do so. Bruner’s work emphasized mentalism, and the ways that individuals make sense of their environment by going
beyond the information given. In other words, the individual takes in information from their external environment and applies internal cognitive processes to it, and acts on the results. Thus, the cognitive structure or schema developed through the process would provide meaning and organization to the child’s experiences and allows them to move beyond the given information (Bruner, 1974).

Like Piaget, Bruner also demonstrated how thought processes can be subdivided into distinct modes of reasoning as children construct knowledge. However, rather than relating each mode to a specific period of childhood development, Bruner saw each mode as dominant, present, and accessible throughout each developmental phase. The three modes reflected in Bruner’s model of cognitive development are: (a) the enactive mode; most evident during the early years of development, in which a child learns by means of their own actions on things within their environment, the manipulation of objects, and the development of spatial awareness through using their body; (b) iconic representation, evident during the middle childhood years of development; the visual recognition and the ability to compare and contrast helps children learn to understand what pictures and diagrams are and how to do arithmetic using numbers without counting objects; and (c) the symbolic mode, in which abstract reasoning is most dominant, occurs around adolescence (Bruner, 1972).

Bruner’s cognitive approach to work in childhood learning and perception has made him a key figure in educational reform in the United States and Britain. Bruner stated that a theory of instruction should address four major aspects: (a) predisposition towards learning; (b) the ways in which a body of knowledge within the learning
environment can be structured so that it can be most readily grasped by the learner; (c) the most effective sequences in which to present material; and (d) the nature and pacing of rewards and punishments (Bruner, 1966). In more recent publications, Bruner expanded the theoretical framework to include the social and cultural aspects of learning (Bruner, 1986, 1990, 1996).

_Erikson_

Although not credited with being a constructivist, Erikson’s (1902-1994) is important to the field of early childhood education. Erikson’s theory on psychosocial development shows how children develop the foundation for emotional and social development and mental health. Erikson’s theory, _The Eight Ages of Man_, covers the entire life span of a human life. Erikson’s idea that there is a task that must be accomplished at each stage of an individual’s development and that successful resolution of each stage affects the next stage (Mooney, 2000). Erikson maintained that in order to negotiate each psychosocial stage, previous psychosocial stages must be resolved in a positive manner. Each psychosocial stage is developmentally related to previous stages (Erikson, Erikson, & Kivnick, 1986). Erikson also believed that earlier crises do not cease to influence an individual just because the optimum ages for resolution have passed. Remnants of these crises, substantially resolved or not, continue through subsequent stages” (Rosenthal, Gurney, & Moore, 1981, p. 532). In _Childhood and Society_, Erikson (1950) discussed the weaknesses that result from failure to resolve each crisis in the eight stages of psychosocial development of an individual. For example, when a child is dealing with issues of initiative, the meeting of the crisis turns upon relationships and ego strengths that were forged in the stages
previous to the initiative versus guilt crisis. Developing initiative is a recursive process that relies on previous ego strengths that were a result of previous crisis’ resolutions. Erickson (1950) was convinced that in the earliest years of life, patterns develop that regulate, or at least influence, a person’s actions and interactions for the rest of their life. Erickson also maintained that basic trust, autonomy/ independence, and initiative are formed early and affect later actions and attributes which are critical in one’s overall development, and when children’s needs go unmet, they are unable to develop trust in themselves or the environment around them, a strong sense of independence, or a sense of purpose based on their growing sense of competence. Erikson felt it is important for adults to encourage children to use their energy in active and involved ways so these important social/emotional attributes can develop (Mooney, 2000).

    Developmentally Appropriate Environments

As noted each of the early childhood theorists emphasized the importance of the environment for young children’s learning. Caples (1996) recommended that the classroom environment, which is the world for both the children and their teacher, should be a space that allows children to feel secure, is organized, and encourages exploration by the children. The environment ideally should provide an overall picture of surroundings that have been created for the children and teachers who share an early childhood setting (Caples, 1996). The quality of early childhood environments should provide and use space, materials, and experiences to enhance children’s development and learning (Harms, Clifford, & Cryer, 2004)
The following guidelines developed by NAEYC in collaboration with the National Association of State Boards of Education (NASBE), address environmental criteria and the interrelated dimensions of early childhood professional practice for creating a caring community of learners and teaching to enhance development and learning. The criteria that NASBE/NAEYC used for developing an environment that emphasizes the creation of a “caring community” is based on the epistemologies of the theorists previously discussed (National Association of State Boards of Education, 1991).

Creating a Caring Community of Learners

Developmentally appropriate practices occur within an environmental context that supports the development of relationships between adults and children, among children, teachers, and between teachers and families. Such a community reflects what is known about the social construction of knowledge and the importance of establishing a caring, inclusive community in which all children can develop and learn (Bredekamp, 1987). Notings, best known for work on the ethics of caring, and also for theory and practice on caring, defines care: “As being basic in human life and not something to be regarded as an added attraction—that indeed all people want to be cared for” (p. 12). Notings also points out the importance of caring in educational settings by stating:

The fundamental aim of education is to help children grow in desirable ways. This is best accomplished by modeling, dialogue, practice, and confirmation. Modeling is very powerful, and it appears as a component in almost every form of moral education. To be effective it must be genuine. (p. 287)
Early childhood education, as defined by NAEYC upholds the philosophy of caring, and also maintains that the educational setting should function as a community of learners in which all participants consider and contribute to each other’s well being and learning (Bredekamp, 1987). Consistent, positive relationships with teachers and other children are a fundamental determinant of healthy human development and provide the context for children to learn about themselves and their world and also how to develop positive, constructive relationships with other people (Bredekamp, 1987; Bredekamp & Copple, 1997). The early childhood classroom is a community in which each child is valued. Children learn to respect and acknowledge differences in abilities and talents of others (Bredekamp, 1987).

The social value of each person is based on their strengths and relationships, which are an important context for learning. Each child has strengths or interests that contribute to the overall functioning of the group. When children have opportunities to play together, work on projects in small groups, and talk with other children and adults, their own development and learning are enhanced (Bredekamp, 1987). Interacting with other children in small groups provides a context for children to operate on the edge of their developing capacities (The National Association of State Boards of Education, 1991). According to Bredekamp (1987), the learning environment should enable children to construct understanding through interactions with adults and other children in the following ways:

1. The learning environment must also be designed to protect children’s health and safety and is supportive of children’s physiological needs for activity, sensory stimulation, fresh air, rest, and nourishment. It is important that the program provides
a balance of rest and active movement for children throughout the program day. Outdoor experiences should be provided for children of all ages. The program must protect children’s psychological safety; that is, children should feel secure, relaxed, and comfortable rather than disengaged, frightened, worried, or stressed.

2. Children should experience an organized environment and an orderly routine that provides an overall structure in which learning takes place; the environment is dynamic and changing but predictable and comprehensible from a child’s point of view. It is necessary that the learning environment provide a variety of materials and opportunities for children to have firsthand, meaningful experiences.

3. Teaching should enhance development and learning.

4. Adults should be responsible for ensuring children’s healthy development and learning. From birth, relationships with adults on their environment are critical determinants of children’s healthy social and emotional development and serve as well as mediators of language and intellectual development. At the same time, children are active constructors of their own understanding, and benefit from initiating and regulating their own learning activities along with interacting with peers. Therefore, early childhood teachers must strive to achieve an optimal balance between children’s self-initiated learning and adult guidance or support.

5. Teachers should accept responsibility for actively supporting children’s development and provide occasions for children within the learning environment to acquire important knowledge and skills. Teachers must also, use their knowledge of child development and learning to identify the range of activities, materials, and learning experiences that are appropriate for a group or individual child. This
knowledge should be used in conjunction with knowledge of the context and understanding about individual children’s growth patterns, strengths, needs, interests, and experiences to design the academic content and learning environment which supports teachers’ interactions with children.

6. Teachers must respect, value, and accept children and treat them with dignity at all times. It is necessary for teachers to make it a priority to know each child well. In doing so, teachers establish positive, personal relationships with children to foster each child’s development and keep informed about each child’s needs and potentials. It is imperative that teachers listen to children and adapt their responses to children’s differing needs, interests, styles, and abilities.

7. Teachers should continually observe children’s spontaneous play and interaction with the physical environment and with other children to learn about their interests, abilities, and developmental progress. On the basis of this information, teachers should plan experiences that enhance children’s learning and development.

8. Teachers must understand that children develop and learn in the context of their families and communities. Teachers should establish relationships with families that increase their knowledge of children’s lives outside the classroom and their awareness of the perspectives and priorities of those individuals which are most significant in the child’s life. Teachers need to be alert to signs of undue stress and traumatic events in children’s lives, and be aware of effective strategies to reduce stress and support the development of resilience.

9. Teachers should be responsible for creating an intellectually engaging, and responsive environments to promote each child’s learning and development. It is
assumed that teachers will use their knowledge about children in general and the particular needs of children in the group. Teachers must also be familiar with what children need to learn and develop in each content area, and to organize the environment, plan academic content and, develop appropriate and teaching strategies.

10. Teachers should, in the development of an appropriate learning environment, provide children with a rich variety of experiences, projects, materials, problems, and ideas to explore and investigate, ensuring that they are worthy of children’s attention.

11. Teachers must provide children with opportunities to make meaningful choices and appropriate time to explore the learning environment through active involvement. Children should be given the choice of participating in a small-group or a solitary activity, and be provided with opportunities for practice of skills as a self-chosen activity.

12. And finally, the daily and weekly schedule which should be organized to allocate time to provide children with extended blocks of time in which they can engage in play, projects, and/or study in integrated curriculum (National Association of State Boards of Education, 1991).

NCTM /NAEYC Joint Position Statement

In 2000, with the growing evidence that the early years significantly affect mathematics learning and attitudes, a joint position statement of the National Association for the Education of Young Children and the National Council of Teachers of Mathematics (NCTM) was issued (NCTM & NAEYC, 2000). The position statement affirms that high-quality, challenging, and accessible mathematics education
for young children is a vital foundation for future mathematics learning. The position statement states that in every early childhood environment, children should experience effective, research-based mathematics content and teaching practices. Such high-quality classroom practice requires policies, organizational supports, and adequate resources that enable teachers to do the challenging and important work (NCTM & NAEYC, 2000). The joint statement, which describes what constitutes high-quality mathematics education for young children, is guided by NCTM’s (2000) six overarching Principles and Standards for School Mathematics (PSSM).

1. *Equity*: Excellence in mathematics education requires equally high expectations and strong support for all students.

2. *Curriculum*: Curriculum is more than a collection of activities; it must be coherent, focused on important mathematics, and well articulated across the grades.

3. *Teaching*: Effective mathematics teaching requires understanding of what students know and need to learn and then challenging and supporting them to learn it well.

4. *Learning*: Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.

5. *Assessment*: Assessment should support the learning of important mathematics and furnish useful information to both teachers and students.

6. *Technology*: Technology is essential to teaching and learning mathematics; it influences the mathematics that is taught and enhances students’ learning (Haugland & Wright, 1997; NCTM/NAEYC Joint Position Statement, 2000).
Recommendations for high-quality mathematics education for young children, made in the joint NCTM/NAEYC Position Statement (2000) are as follows: Teachers and other key professionals should enhance children’s natural interest in mathematics and their disposition to use it to make sense of their physical and social environments.

1. Teachers and other professionals should build on children’s experience and knowledge, including their family, linguistic, cultural, and community backgrounds; their individual approaches to learning; and their informal knowledge.

2. Mathematics content and teaching practices should be based on the knowledge of young children’s cognitive, linguistic, physical, and social-emotional development.

3. The use of mathematics content and teaching practices that strengthen children’s problem solving and reasoning processes as well as representing, communicating, and connecting mathematics ideas.

4. Provision for children’s deep and sustained interaction with key mathematics ideas.

5. The integration of mathematics with other activities and other activities with mathematics.

6. Provision of ample time, materials, and teacher support for children to engage in play, a context in which they explore and manipulate mathematics ideas with keen interest.

7. Use of activities to introduce mathematics concepts, methods, and language through a range of appropriate experiences and teaching strategies.
8. Support of children’s learning by thoughtfully and continually assessing all children’s mathematics knowledge, skills, and strategies (NCTM/NAEYC, 2000).

The knowledge base informing early childhood practice which led to the NCTM/NAEYC Joint Position Statement, is well-grounded in the early childhood learning theories of influential educators, child development specialists, theorists, and cognitive psychologists. For practitioners in the field, it is important to understand child development; how children think, act, and learn, in order to develop and maintain programs with high standards. Knowing the history of, and the theoretical foundations for early childhood education, provides the background, understanding, and guidance for implementing the interaction of theory and practice in effective educational settings for young children (Mooney, 2000; Morrison 2003).

NCTM’s Principles and Standards for School Mathematics

NCTM’s Principles and Standards for School Mathematics sets the direction of mathematics teaching and learning and holds to the organization’s tradition of high expectations for student learning, with an emphasis on understanding and communication about how students think about their answers. In its Process Standards section, problem solving is the first named, and is described as the heart and soul of mathematics curriculum content. It is considered to be an important cognitive function that is developed in a child’s early life experiences and is linked to mathematics education (NCTM/NAEYC, 2000). The Process Standards section details the methods by which content knowledge, as outlined in the Mathematics Curriculum Standards section, can be acquired. Burris (2005) maintains that problem solving is the heart of solid mathematics content. Students exposed to the logic behind problem solving in
mathematical procedures, are more likely to be able to learn and correctly apply them (Burris, 2005). Polya (1957), known as the Father of Problem Solving, identified four principles of problem solving: (a) understand the problem, (b) devise a plan to solve the problem, (c) carry out the plan, and (d) look back.

Many people have grown up with false ideas or misinformation about how children learn mathematics (Smith-Sperry, 2001). Borasi (1996), a proponent of constructivist inquiry based mathematics, maintains that teaching mathematics through inquiry represents a radical departure from traditional mathematics instruction. Most mathematics lessons follow the predictable sequence of review of homework, teacher presentation of new material, in-class practice exercises, and assignment of similar exercises for homework (NCTM, 1989; U.S. Department of Education, 1999). The pervasiveness of this practice is the logical consequence of the following set of assumptions informing most traditional schooling, and often referred to as the “transmission paradigm” (Borasi, 1996). The transmission paradigm found in traditional schooling, is recognized by and upholds the following teaching/learning methodologies:

1. Mathematical knowledge is viewed as a body of established facts and techniques that are hierarchically organized.

2. Learning is viewed as the successive accumulation of isolated bits of information and skills that are achieved mainly by listening, observing, memorizing, and practicing.
3. Teaching is viewed as the direct transmission of knowledge that can be achieved effectively as long as the teacher provides clear explanations and the students pay attention to them and follow them with memorization and practice (Borasi, 1996).

Borasi (1996) articulated that, in contrast to direct teaching, a constructivist view of knowledge and learning should be based on the following instructional methodologies:

1. Teachers should listen to their students so as to get clues about how to best support their learning (Confrey, 1991).

2. Teachers should value the knowledge learners already possess, and find ways to set up dialogues to help enhance and reshape such knowledge (Barnes, 1985).

3. Teachers can no longer be seen as the ultimate source of knowledge and truth; thus, shifting more responsibility on the students’ themselves for monitoring and justifying their own work (Borasi, 1992).

4. Teachers should design inquiry-based situations that can stimulate and support their students’ own inquiries and construction of meaning (Borasi, 1992; Richards, 1991).

5. Teachers should value uncertainty, and even confusion and errors as a positive element in mathematics lessons (Borasi, 1996).

6. Teachers and schools need to develop appropriate means to assess and reward students’ learning so a clear message is conveyed to students about what kind of learning processes and outcomes are really valued (NCTM, 2000; Borasi, 1996).

Nielsen (1989) perceives that the positivistic assumptions about absolute knowledge in learning along with other traditional goals for school mathematics are
being challenged. Neilsen maintains that the connection between teaching, and the other assumptions of a transmission paradigm are a result of our current educational system which has been largely shaped by mechanistic assumptions that equate knowledge with facts, skills and procedures. Educators have unconsciously subscribed, to a view that sees knowledge as objective, atomistic, and hence portable, educators have developed a system dominated by a pedagogy which places an overwhelming emphasis on teaching and considerable faith in direct instruction, lectures, readings, and drill exercises, as the chief means of transmitting the facts and skills that students will need to understand in order to operate in the world. This transmission pedagogy assumes that knowledge can be passed along from one person to another (Nielsen 1989).

The theoretical assumptions of Borasi (1989) on the inquiry approach to mathematics instruction are as follows:

1. Mathematics is viewed as a humanistic discipline; that is, the belief that mathematical knowledge is socially constructed rather than deterministic, and is shaped by cultural and personal values like other products of human activity.

2. Knowledge is generally constructed through a process of inquiry where uncertainty, conflict and doubt provide the motivation for the continuous search for a more and more refined understanding of the world.

3. Learning is a generative process of meaning making, requiring both social interaction and personal construction, and informed by context and purposes.

4. Teaching is stimulating and supports the students’ own inquiry by establishing a learning environment conducive to inquiry.
Taken together, these assumptions offer an alternative theoretical framework for mathematics instruction to replace the transmission paradigm (Borasi, 1996). This framework is supported by National Council Teachers of Mathematics’s most recent *Overview of Principles and Standards for School Mathematics 2000*, states:

All students deserve high-quality programs that include significant mathematics presented in a manner that respects both the mathematics and the nature of young children. These programs must build on and extend students’ intuitive and informal mathematical knowledge. They must be grounded in a knowledge of child development and provide environments that encourage students to be active learners and accept new challenges. They need to develop a strong conceptual framework while encouraging and developing students’ skills and their natural inclination to solve problems. Using concrete materials and calculators in appropriate ways can help students learn these concepts (NCTM, 2000 pp. 4 - 11).

**School Climate**

According to the National Association of Secondary School Principals (NASSP, 2002), there is a substantial body of literature relating school climate to effective schooling. Effective teaching practices require the support of building and district leaders. Successful leadership at the building level creates a physical, intellectual, and psychological environment in which optimal teaching and learning can occur. The nature of the school environment influences the ways students develop and learn (NASSP, 2002). It is perceived that student outcomes (cognitive, affective, and psychomotor) are an appropriate measure of the degree to which a school is effective (Keefe, Kelly, & Miller, 1985). Current measures of school climate have grown out of a body of research on organizational climates in industry and university contexts (Hoy & Sabo, 1998).
Definitions for School Climate?

According to NASSP, school climate is the shared perceptions that represent what most people believe, not the individual’s personal reaction to the environment. These shared perceptions tend to be persistent and stable over time. Just as meteorological climate is largely unaffected by daily shifts in temperature, the climate of the school is a relatively stable phenomenon (NASSP, 2002). School climate is defined by Keefe et al. (1985) as the relatively enduring pattern of shared perceptions about the characteristics of an organization and its members. Bulach (1993) maintained that school climate is composed of the psychological and institutional attributes that give an organization its personality. Additionally, Bulach (1993) listed several important attributes that contribute to the development of school climate:

1. Group trust – An interpersonal condition that exists between people when interpersonal relationships are characterized by an assured reliance or confident dependence on the character, ability, truthfulness, confidentiality, and predictability of others in the group.

2. Group openness – An interpersonal condition that exists between people in a group when (a) they tell each other what they think about facts, ideas, values beliefs, feelings and the way they do things; and (b) the recipient of a transmission is willing to listen to that transmission.

3. School-based decision making – The practice of shared decision making involving a school council on matters important to the operation of a school.
Researchers have described climate as a school’s personality. Lindelow, Mazzarella, Scott, Ellis, and Smith (1989) maintained that school climate is the feeling one gets from experiences within a school building. Hoy and Sabo (1998) stated, “School climate is the quality and consistency of interpersonal interactions within the school community that influences children’s cognitive, social, and psychological development” (p. 322). Researchers also conclude that school climate can be defined as the pervasive quality of a school environment experienced by both students and staff. Moos (1979) defined school climate as the social atmosphere of a setting or “learning environment” in which students have different experiences, depending upon the protocols set up by the teachers and administrators (p. 81). Moos categorized the social climate of schools in three ways:

1. Relationship, which includes involvement, affiliation with others in the classroom, and teacher support.

2. Personal growth or goal orientation, which includes the personal development and self-enhancement of all members of the environment.

3. System maintenance and system change, which includes the orderliness of the environment, the clarity of the rules, and the strictness of the teacher in enforcing the rules (p. 96).

School climate is defined as a set of distinguishable internal characteristics of a school that influence the behaviors of each school’s members (Hoy & Miskel, 1987). Kottkamp, Muthern, and Hoy (1987) suggested that climate consists of shared values, interpretations of social activities, and commonly held definitions of purpose (pp. 31-48), and Hoy and Tarter (1992) stated that “school climate is the relatively enduring
quality of the school environment that is experienced by participants, affects their behavior and is based on their collective perception of behavior in schools” (p. 10).

Why School Climate is Important

Over the past few decades, educators and policymakers have studied school effectiveness. A number of researchers and educators currently claim that school effectiveness hinges on communal organization (Phillips, 1997; Hoy & Miskel, 1987; Kottkamp, Muthern, & Hoy, 1987). They contend that a school climate in which shared values and activities, positive adult action, positive teacher-student relations, and democratic government enhance students’ school engagement and their academic achievement (Phillips, 1997).

Research indicates that school climate can affect many areas and people within schools. Positive interpersonal relationships and optimal learning opportunities for students in all demographic environments can increase achievement levels and reduce maladaptive behaviors (McEvoy & Welker, 2000). Positive school climate is also associated with increased job satisfaction for both teachers and administrators (Taylor & Tashakkori, 1995). Freiberg (1998) noted that “the interaction of various school and classroom climate factors can create a fabric of support that enables all members of the school community to teach and learn at optimum levels” (p. 22). Bulach’s research (1993) indicated that a strong positive relationship between levels of group trust and openness are important to a positive school climate. Sweeny (1988) stated, “A winning school climate provides the very foundation for a sound educational program. When the climate is right, people are inspired to do their best. Teachers and students…do what needs to be done to stimulate learning, and achievement generally rises” (p. 1).
The research of Hoy, Tarter, and Bliss (1990) indicated that a healthy organizational climate is crucial for a good school, and also helps to more effectively implement reform. They also found that long-term improvement in academic achievement was related to schools with strong academic emphasis within the context of healthy and open climates. Freiberg (1998) asserted that school climate can be a positive influence on the health of the learning environment or a significant barrier to learning. Freiberg also stressed that a positive school climate can enhance staff performance, promote higher morale, and improve student achievement. Heck (2000) connected positive school climate and student achievement when stated as, “School climate may be one of the most important ingredients of a successful instructional program” (pp. 513-522). Without a climate that creates a harmonious and well functioning school a high degree of academic achievement is difficult, if not downright impossible to obtain” (Hoyle, English, & Steffy, 1985, p. 15). Bulach, Malone, and Castleman (1995) found a significant relationship between student achievement and school climate. Additionally, Bulach and Malone (1994) concluded that school climate is a significant factor in successful school reform.

Bronfenbrenner (1979), generally regarded as one of the world’s leading scholars in the field of developmental psychology, emphasized that the developing person is embedded in a series of environmental systems that interact with one another and with the individual to influence their development. The environmental systems proposed by Bronfenbrenner are instrumental in shaping the developing person. Bronfenbrenner’s primary contribution was the Ecological Systems Theory, which used concentric circles increasing in size to depict the various layers of interaction in
delineating four types of nested systems. Brofenbrenner called these (a) the microsystem (such as the family); (b) the mesosystem (which is two microsystems in interaction, school, or classroom); (c) the exosystem (which is a system influencing development, i.e., parental workplace); and (d) the macrosystem (the larger cultural context). Each system contains roles, norms and rules that can powerfully shape development (Singleman & Shaffer, 1995). The major statement of this theory, The Ecology of Human Development, has had widespread influence on the way psychologists, educators, and others approach the study of human beings and their environment (Brofenbrenner 1979). In this work, Brofenbrenner provided the following definition of the ecological orientation:

The ecology of human development involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by the relations between these settings, and by the larger contexts in which the setting are embedded. (p. 21)

Brofenbrenner’s ecological systems theory places children with all their unique biological predispositions at the center of all their environmental interactions. It is the interactions between the biological makeup of a child and the environmental influences that affect a child’s development and behavior. Children are influenced by their environments that, in turn, impact all of their developmental domains. The ecological systems theory is extremely important when planning, implementing, and assessing educational programs for young children (Sayre & Gallagher, 2001).

Research supports school climate satisfaction as an important variable in the teaching/learning process. School climate, as measured by the National Association of
Secondary School Principals (NASSP) in their School Climate Survey, is a model based on (a) what most people believe; (b) a collection of perceptions of climate from all the major stakeholder groups; and (c) is a description of climate as a mediating variable as opposed to an outcome measure (NASSP, 2002).

Summary

Chapter II reviewed the historical perspective of early childhood education along with a substantial body of literature on developmentally appropriate practice and Constructivism, the philosophical basis of developmentally appropriate practice. The chapter also outlined and discussed the epistemologies of the major theorists contributing to the knowledge base of developmentally appropriate practice. Also delineated in the chapter, was the importance of the establishment of effective early childhood school environments as outlined in NAEYC’s position statement and its development of “caring communities” (Bredekamp, 1987; Bredekamp & Copple, 1997). Additionally, the educational mandate of inclusion which emanated out of the 1975, Education for All Handicapped Children (PL 94-142) is discussed as being an important facet of Best Practices in education in today’s society. Chapter II also reviewed NCTM’s literature on the Principles and Standards for School Mathematics, along with the theoretical views of a number of the well-known mathematical theorists of today.

Chapter II culminated with a discussion on the importance of a positive school climate satisfaction in the teaching/learning process, its effect on outcomes, and its impact on the physical, cognitive, social, and emotional nature of students. In the discussion, school climate was defined using a number of definitions of school climate
as expressed by a number of experts and researchers. Also delineated were the methods of school climate measurement, and its persistence and stability over time. Each of these single factors is regarded as important, and together perceived to lead in the development of positive student learning outcomes (NASSP 2002).
CHAPTER III

PROCEDURES

Research Design

This dissertation is an exploratory mixed methods study which focused on investigating the relationship between teacher candidates’ perceptions of school climate and the creation and implementation of developmentally appropriate mathematic lesson plans for the primary grades of kindergarten through Grade 3. The mixed methods design utilized in this study used several strategies to answer the appropriate questions. The general research questions for this study are as follows:

Question 1. Does school climate account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans?

Question 2. Is there a significant relationship between school climate and the selection of developmentally appropriate content in the creation of mathematic lesson plans?

Question 3. Is there a significant relationship between school climate and the selection of developmentally appropriate child-centered mathematic lesson plans?

Question 4. Is there a significant relationship between school climate and the selection of developmentally appropriate mathematic assessment in the lesson plans?
Question 5. Is a relationship between school climate and the creation or developmentally appropriate lesson plans based upon teacher candidate interviews?

According to Newman and Benz (1998), the decision about what data to collect, as well as what to do with the data after collection, should be dictated by the research question. The research question always initiates any set of decisions the researcher makes however, within the dimensions following the question, the decisions may be cyclical. When this occurs, quantitative and qualitative methods may cross over in particular situations (Newman & Benz, 1998). Ridenour and Newman (2005) stated: “one can mix methods to address different components of the same study” by utilizing one method to inform the other (p. 11). The overall intent of this study was to present research holistically, not as a dichotomy thus, discussing both paradigms in similar conceptual ways as much as possible (Newman & Benz, 1998).

In this study, the research "methods" consisted of a dimension that crosses both paradigms. The mixed methods approach for this study was chosen by the researcher in order to answer questions of interest utilizing a wide variety of “ways of knowing,” and to examine and use multiple approaches in the data collection for the study (Newman & Benz, 1998). Data for this mixed methods study was gathered using numeric information found in two instruments; The School Climate Survey and the lesson plan rubric. Text information was gleaned through the transcribed interviews. Thus, both quantitative and qualitative information were represented in the final database (Creswell, 2003).

Green, Caracelli, and Graham (1989) maintained that the results from one method can help develop or inform the other method. Another advantage of the mixed
methods approach is that one method can be nested within another to provide insight into different levels or units of analysis (Tashakkori & Teddie, 2003). Creswell (2003) maintained that the use of mixed methods research encompasses procedures using both predetermined (quantitative) and emerging (qualitative) methods along with the use of both open- and closed-ended questions. Thus, the researcher is enabled to use multiple forms of data drawing on all research possibilities, using both statistical and text analysis. Also important, according to Creswell (2003), the mixed methods approach is based upon pragmatic knowledge claims which permit the researcher to collect both quantitative and qualitative data sequentially. This researcher based methodological choice of inquiry on the assumption that the best understanding of the research problem would be provided by the collection of diverse types of data. In an effort to add to and strengthen the knowledge base of early childhood teacher education, the researcher studied the perceptions of school climate and the creation and implementation of developmentally appropriate lesson plans by teacher candidates during their mathematic field placements. The use of mixed methods in this study was dictated by the identified purpose of the study which in turn, determined the manner in which the research questions were studied.

The mixed methods design used both quantitative and qualitative paradigms; the quantitative paradigm was used to hypothesize the relationships among variables by numerical measurement, and the qualitative paradigm was designed to address questions of meaning, interpretation, and socially constructed realities (Newman, Ridenour, Newman, & DeMarco, 2003). The researcher determined that by using both the inductive perspective and the deductive perspective, that each would inform the
other by building on the information derived from the other approach (Newman & Benz, 1998). Since the theories of both philosophies overlap, the motivating purposes were both theory building and theory testing in this mixed methods design. This is conceptually depicted through the model of the interactive continuum where theory is neither at the beginning nor at the end, but overlap and continue the cycle closing the qualitative-quantitative gap.

Figure 2. The Interactive Qualitative-Quantitative Continuum of Research (Newman & Benz, 1998, p. 21).

The Qualitative-Quantitative Interactive Continuum model emphasizes four major principles:

1. The research question dictates the selection of research methods;
2. The assurance of “validity” of the research—both measurement validity and design validity—is central to all studies;

3. The interactive continuum model is built around the place of “theory;”

4. Consistency between question and design is the standard criterion for planning studies of high quality and scientific value (Newman & Benz, 1998).

Quantitative Research

An ex post facto research design was utilized in this study since the researcher could not control the independent variable. According to Newman, Newman, Brown, & McNeely (2005). Ex post facto is a term that describes research which is initiated after the independent variable has already occurred or the independent variable is a type that cannot be manipulated.

Leedy and Ormrod (2005) define the term ex post facto as “after the fact” (p. 232). The ex post facto design involves no direct manipulation of the independent variable as the presumed “cause” that has already occurred. The ex post facto research design enables the researcher to study the possible effects of an environmental factor that has occurred prior to the study itself. The ex post facto research design also involves looking at the existing conditions which have clearly identifiable independent and dependent variables (Leedy & Ormrod, 2005).

Gall, Gall, and Borg (1999) stated that ex post facto “refers to correlational or causal-comparative research because, in these types of investigations, causes are studied after they presumably have exerted their effect on the variable of interest” (p. 624).
Kerlinger and Lee (2000) stated:

Ex post facto research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables. (p. 379)

In this research study the independent variable was school climate and the dependent variable was the teacher candidates’ lesson plans. The ex post facto research design used did not control the independent variable; causation cannot be inferred where the independent variable is not under the control of the researcher, regardless of what technique is used. However, relationships among variables may be demonstrated from an ex post facto design (Newman et al., 2006).

Ex post facto research has three major weaknesses: (a) the inability to manipulate independent variables, (b) the lack of power to randomize, and (c) the risk of improper interpretation, which is because of the lack of control (Kerlinger & Pehazur, 1973). These weaknesses relate to the internal validity of the research. Internal validity is the extent to which one can say that the effects on the dependent variable are caused by the independent variable. Regardless of the inability to determine causation when using an ex post facto research design, the ability to determine if relationships can exist among variables is important when the researcher is trying to build a systematic argument that is data based (Newman et al., 2005; Leedy & Ormrod, 2005).
Data Collection

Quantitative Data

Lee Van Horn and Ramey (2004) have disclosed that for both scientists and educators, a major research issue is how to measure DAP. Evaluations of the effects of DAP in regards to educational benefits for learners depend upon having a valid and reliable measure of DAP itself. To date, there is a lack of quantitative research on assessing developmentally appropriate programs for the elementary grades of kindergarten through Grade 3. Also, there is not a clear standard that dictates how to assess whether a classroom achieves the DAP ideals (Lee Van Horn & Ramey, 2004). Charlesworth, Hart, Burts, and DeWolf (1993) also note that there is little empirical support for the conclusion that DAP is more advantageous for young children than traditional practice. When attempts were made by the Far West Laboratory for Educational Research and Development (1994) in *The Teacher Training Project* (TTP) to gather concrete evidence of achievement from teachers and schools using DAP, inconsistent practices between teachers and schools prevented meaningful comparisons.

Since DAP is a philosophy and not a curriculum (Galen, 1994), it has been conceptualized as a continuous dimension, rather than as a dichotomy consisting of developmentally appropriate practice versus traditional education (Johnson & Johnson, 1992). Most research available on DAP is based on teachers’ perceptions of how instructional settings are structured to fulfill the philosophical impetus of DAP to meet children’s needs in a holistic way (Stafford, Van Rensburg, & Green, 2000). Abbott-Shim and Sibley (1992) assert that classroom observations have been the primary
method for determining the level of implementation of developmentally appropriate practices in classrooms using the Assessment Profile for Early Childhood Programs, Research Version. Each of the three DAP levels of high, medium, and low were found to be significantly different from the others based upon the instrument’s five subscales derived from the classroom observations (Abbott-Shim & Sibley, 1992). In a longitudinal study by Stafford et al. (2000), DAP and traditional education were viewed as the extremes of this dimension, with implementation in classrooms falling along the continuum of high levels of DAP to low levels of DAP.

*Quantitative Data Collection*

In this study, the researcher used two methods for quantitative data collection. The first instrument used to collect quantitative data was the NASSP School Climate Survey Teacher Satisfaction Survey. The instrument was used to collect and to measure both the teacher candidates and their cooperating teachers’ perceptions of school climate. Permission to administer the NASSP School Climate Survey to the cooperating teachers in each of the thirteen field placement schools was obtained from the school principals in mid August of the 2006 fall semester. The NASSP School Climate Survey was administered to both the teacher candidates and their cooperating teachers to obtain a fuller understanding of the school climate in the teacher candidates’ placement schools. This took place during the teacher candidates’ mathematic field placements in late September of the 2006 fall semester. The instrument is designed to collect data about teacher perceptions on nine subscales of the Teacher Satisfaction Survey. Satisfaction is the personal, affective response of an individual to a specific situation or conditions (Kelly, Howard, Miller, Schmitt, &
The following lists the nine subscales of the NASSP School Climate Survey Teacher Satisfaction Survey (2002):

1. Administration. Teacher reactions to administrator behaviors of concern, support, feedback, supervision, and praise for teacher’s efforts.

2. Compensation. Teacher satisfaction with salary, fringe benefits, and job financial security.

3. Opportunities for Advancement. Teacher satisfaction with opportunities for career advancement through promotion or professional development for new career roles.

4. Student Responsibility and Discipline. Teacher satisfaction with student conduct and disciplinary practices in the school.

5. Curriculum and Job Tasks. Teacher satisfaction with the school program and teacher workload.

6. Co-workers. Teacher satisfaction with the personal and professional characteristics and behavior of colleagues.

7. Parents and Community. Teacher satisfaction with the levels of involvement and support provided by parents and community members.

8. School Buildings, Supplies, and Maintenance. Teacher satisfaction with the quality and availability of supplies and with the adequacy and maintenance of the buildings and grounds.

9. Communication. Teacher satisfaction with the accuracy and availability of information about important school and district events (Kelly, et al., 2002).
The seven subscales from the NASSP School Climate Survey Teacher Satisfaction Survey that the researcher used in the study were: (a) Administration, (b) Student Responsibility and Discipline, (c) Curriculum and Job Tasks, (d) Co-workers, (e) Parents and Community, (f) School Buildings, Supplies, and Maintenance, and (g) Communication. The seven subscales that were chosen were those that were most applicable to the study.

The second instrument used for the collection of quantitative data was a lesson plan rubric developed by the researcher. The rubric was used to determine if the mathematic content in the teacher candidates’ lesson plans was developmentally appropriate. The measurement of DAP was based on standards from the following professional organizations: the NAEYC Developmentally Appropriate Practice; NCTM/ODE Standards and Learning; NCATE Standards; and the Ohio Department of Education Curriculum Standards, Benchmarks, and Grade-level Indicators. The standards were categorized by the researcher under three out of the six NAEYC 1997 DAP guidelines. The three NAEYC 1997 DAP principles also served as the subheadings under which the categorized rubric criteria were placed. NAEYC’s six principles for developmentally appropriate practice are: (a) teaching to enhance development, (b) constructing appropriate and integrated curriculum, (c) assessing children’s learning and development, (d) creating a caring community of learners, (e) establishing reciprocal relationships with parents, and (f) policies supporting learning (Bredekamp & Copple, 1997). Three of the six the guidelines that were used in the rubric were those which the researcher considered to be measurable. The three principles used were: (a) the guideline for constructing appropriate and integrated
mathematic content in the lesson plans, (b) the guideline for teaching to enhance development and child-centered learning, and (c) the guideline for creating a caring community to help enable the learner in his/her psycho-social development. Each of the teacher candidates’ lesson plans were then analyzed using the rubric levels of (3) Exceeds - Exceptional 90-100% of the time, (2) Meets - Adequate 70 – 90% of the time, and (1) Does not meet - Unacceptable less that 70% of the time.

During the last week of September and the second week of October, the lesson plan rubric designed by the researcher was utilized by both the university supervisors of the teacher candidates and the researcher to measure developmentally appropriate practice and mathematic lesson plan content exhibited in two of the teacher candidates’ mathematic lesson plans. The data was analyzed in mid October.

**Qualitative Data**

There were two instruments used to gather the qualitative data for this study. The first qualitative tool used for data collection were two reflections based on two lesson plans which were developed by each teacher candidate. The researcher chose the four interviewees based on an assessment for DAP on each of two lesson plan reflections that were developed by each of the 29 teacher candidates. The four teacher candidates chosen to be interviewed were the two who most reflected the principles of DAP and the two who least reflected the principles of DAP in the creation of their lesson plans. The interview was the second instrument used for gathering qualitative data. Most of the interview questions were designed to be open-ended. The interview provided the researcher with “indirect” information that was filtered through the views of the interviewees.
A system of data reduction and color coding were used to analyze data from the interview to discover common themes derived from the candidates’ perceptions of DAP in their field schools. Validity for the interview questions was established by DAP subject experts and a qualitative research professor from the candidates’ university. The questions were evaluated by for grammatical completeness, understandability of the questions, and whether the interview questions portrayed the information asked in the research questions (Creswell, 2003; Miles & Huberman, 1994; Newman & Benz, 1998). Reliability was established by the same subject experts by assessing the consistency of the instrument to the research purpose and research questions (Newman et al., 2003). The analysis of the data was completed in mid-October.

Participants

Twenty-nine undergraduate early childhood teacher candidates were chosen from a private university located in Northeast Ohio. The participants were students currently enrolled in the researcher’s early childhood (K-3) mathematic methods course. Eighteen of the 29 participants were classified as traditional-aged students, ranging in age from 18 to 24 years, and 11 were non-traditional students with an age range of 25 to 45 years. Of the 29 participants, 27 were female, 2 were male; 27 participants were White, and 2 participants were from other ethnic backgrounds. All participants were residents from Northeastern Ohio communities that were classified demographically as urban, suburban inner ring and outer ring communities, and also rural communities. Information from the U.S. Census Bureau of 2000 classified urban and rural areas as low SES, with a per capita income ranging from $9,740- $28,697;
the suburban areas as medium, ranging from $28,697- $46,367; and high SES, ranging from $46,367- $1,000,000 – plus (http://www.epodunk.com/ counties/oh_county.html).

The 29 cooperating teachers who participated in the study were selected through the recommendation of the elementary school principals and the university field placement director to mentor teacher candidates in their field placements. The cooperating teachers from the 13 Northeastern Ohio elementary schools where the teacher candidates were placed for their field experiences, all had earned either a Bachelor’s or a Master’s degree, and were certified in elementary education in the state of Ohio. Both the teacher candidates and the cooperating teachers serving as their mentors were asked to answer questions from the NASSP School Climate Survey about their perceptions of the school climate in the elementary schools they represented. The university teaching supervisors participated by evaluating the mathematic lesson plans using the lesson plan rubric designed by the researcher.

Mathematic Teaching Methods Class

The mathematic methods class taken by the teacher candidates was required in the final block of classes and field experiences prior to student teaching. During the first 2 weeks of class, the researcher taught and scaffolded their teaching experiences and lesson plan development through classroom assignments for practice teaching of their mathematic lesson plans. Also included prior to and during their field teaching experiences, were the following required components of the class: (a) a review of developmentally appropriate teaching practices; (b) the teaching of and emphasis on, the Standards as developed by NCTM and required the University; (c) an emphasis on mathematic problem solving skills; (d) the development of interactive mathematic
bulletin boards; (e) an original design of an appropriate classroom using centers for each of the various curriculum content areas; and (f) an emphasis on the integration of subject content areas, with the terminal project being a collaborative development between two students of an extensive integrated thematic unit. The thematic unit incorporated all curriculum content areas, and emphasized the integration and use of appropriate literature across all academic content areas.

The mathematic methods class was one of six classes, with a total of 18 semester hours, taken by the teacher candidates in the final block of designated classes prior to their student teaching. The final block provided seminars and field experiences in an early primary setting to provide the teacher candidates with information on professional issues along with the opportunity to implement and practice methods learned in previous and concurrent courses in preparation for student teaching. Other than the mathematic methods class, the block consisted of courses in: science methods, social studies methods, assessment and evaluation of young children with special educational needs, early intervention and integration for young children with special educational needs, and a workshop in teaching and intervention. Previous to the final block of courses, the participants had taken all other required methods classes and field teaching experiences to meet the requirements of the university and state for teaching young children.

Lesson Plan Format

The lesson plan format used by the participants of the study was the modified Praxis III lesson plan. This standard form is used by the university in teaching all
undergraduate teaching methods courses (see Appendix C). The lesson plan is comprehensive and includes the following criteria:

1. **Learning Goal/Objectives** - This includes an explanation of what the pupil will be able to do as a result of the lesson, a statement of the objective for the course of study, identifying appropriate ODE Academic Curriculum Standards, identifying what prior knowledge and skill are required by the pupils, and an explanation of how the lesson objective connects with previous and future lessons/learning.

2. **Assessment** – Both Pre and Post. An explanation of how and when the teacher candidate will evaluate the objective and student learning, and a requirement that a copy of the assessment instrument be attached to the lesson plan.

3. **Methods/Strategies** – The teacher candidate must state what teaching methods will be used (e.g. teacher presentation, demonstration, simulation, role playing, peer teaching, laboratory activity, etc.) The type of learning must be explained (inductive/inquiry questioning for student discovery or deductive/direct modeling). The accommodation for student differences must be outlined along with an explanation of the classroom climate or environment.

4. **Grouping** – The teacher candidate must indicate whether teaching/learning will take place in a large/small group, cooperative groups, etc.

5. **Equipment and Material** – The teacher candidate must identify what instructional equipment and materials are required to help students reach the objective (e.g. textbook, lab equipment, technology, activity sheet, CD-ROM, Website, etc.).

6. **Instructional Delivery** – The teacher candidate is required to explain the introduction to the lesson that will be used (e.g. motivate, elicit student interest, review
past learning, background in the topic; And to communicate expectations, procedures required for the lesson.)

7. Activity – An explanation by the teacher candidate to discuss what activities have been planned; What will the teacher candidate do, and What will the pupils do? Along with the explanation of the activity the teacher candidate must indicate the time allotment for the activity.

8. Conclusion/Summary – The teacher candidate is asked to review how the pupil demonstrated achievement; and discuss what connection the lesson will have with future lessons.

9. Practice and/or Assessment – The teacher candidate must explain the method of assessment (e.g. Guided, independent; Help with initial steps and monitor, correction, or to re-teach if necessary).

10. Teacher Reflection/Self-Evaluation – The teacher candidate must reflect by answering the following questions on a separate paper, attached to lesson plan:
   (a) What pleased you? (b) What would you do differently next time? (c) Was re-teaching or intervention required? (d) Did the assessment instrument measure what was intended for student learning? If no, what are some alternatives?

Sampling Procedures

Seventeen schools were chosen from three Northeastern Ohio Counties on the basis of the teacher candidates’ field placements during the 2006 fall semester. Each principal in the 13 elementary schools where the teacher candidates assigned for their field placements was asked for permission, through a letter of consent written by the researcher, to administer the NASSP School Climate Survey to the 29 cooperating
teachers. Both the teacher candidates and their cooperating teachers were asked to voluntarily complete the survey.

Instruments

Four instruments were used for this study; two instruments for the quantitative research and two for the qualitative research.

Quantitative NASSP

The first of the quantitative instruments used for this study was the NASSP School Survey developed at the University of Nebraska-Lincoln. An item bank was created for the development of this instrument. This item bank was generated from a comprehensive review of both the climate and effective school literature and an analysis of existing climate instruments used by both researchers and practitioners. After initial pilot tests, two forms of the instrument were further refined in a national pilot study. A second national study was conducted to collect normative data for the final version of the instrument. The survey instruments were administered to more than 1,500 teachers, 14,600 students, and 4,400 parents during the national pilot and normative studies. These two national studies and related data analysis were conducted at Western Michigan University. The seven NASSP subscales used in this research study are indicative of the research that correlates positive school environment with improvement of student achievement. The task force which created and piloted the instrument concluded that the NASSP School Climate Survey has high face validity and good psychometric properties (NASSP, 2002). The following is a discussion of these characteristics.
Instrument Reliability

For the instrument, internal consistency coefficients (Cronbach’s alpha) have been calculated for each subscale based on data collected in pilot and normative studies. The indices provide an estimate of the degree to which items on a given subscale are similar in meaning. The average internal consistency reliability of the climate subscales is 0.81, with a range of 0.67 to 0.92 (Kelly, Howard, Miller, & Schmitt, & Keefe, 2002).

Instrument Validity

Validity is the extent to which an instrument actually measures what it purports to measure (McNeil, Newman, & Kelly, 1996; Newman et al., 2006). Content validity is the extent to which items on a scale are representative of the domain(s) of interest (Newman et al., 2006). The climate and satisfaction instruments were developed by NASSP task force members. A data bank of items was generated, based on the review and on existing measures of climate. The task force acted as an expert panel in the development and selection of items.

In the NASSP pilot studies, climate items were listed at random for purposes of exploratory factor analysis (Kelly et al., 2002). The climate items were field tested and subjected to factor analysis. Redundant and ambiguous items were revised or excluded. Both empirical data from the field studies and rational considerations guided the formation of subsequent drafts of the instrument.

Construct validity is an abstraction, not directly observable that attempts to account for measured behaviors (McNeil et al., 1996; Newman et al., 2006). Construct
validity is concerned with the meaningfulness of a test, whether it really measures the underlying trait or characteristic that gives it meaning; school climate is one such construct. The construct validity of the School Climate Survey is the indicator of how well the instrument measures school climate of the target role group (Newman et al., 2006; McNeil et al., 1996). During the development of the instrument, extensive use of exploratory and confirmatory factor analysis ensured that only concepts and items with strong factor loadings were retained.

Quantitative Lesson Plan Rubric

The second quantitative instrument used in the study was a lesson plan rubric (see Appendix C) designed by the researcher. It measured the degree of developmentally appropriate content exhibited in lesson plans. Prior to use in the research study, the lesson plan rubric was evaluated by six DAP subject experts and augmented to align with their suggested content changes. The researcher trained the university field supervisors of the teacher candidates’ on the appropriate use of the instrument in the evaluation of the candidates’ mathematic lesson plans.

The lesson plan rubric was formatted to utilize and adhere to the national program standards agreed upon by NCATE’s Specialty Areas Studies Board (SASB), 2005; NAEYC’s Principles, 1997; and NAEYC’S Revised Standards for Early Childhood Professional Preparation (2002). These standards serve as the guidelines for institutions of higher education that prepare future early childhood teachers. Schools must document compliance with the standards in order to earn approval from NAEYC and move toward accreditation from NCATE. The principles and standards serve as
program guidelines for teachers of early childhood programs and schools (NCATE, 2005).

The purpose of this lesson plan rubric was to serve as a tool for the assessment of teacher candidates in their development of appropriate mathematic lesson plan content for young children in kindergarten through Grade 3. The lesson plans of the teacher candidates required them to reflect the knowledge, skills, and dispositions needed to create and teach child-centered, constructivist learning experiences for all children in inclusive and diverse classrooms.

The lesson plan rubric was also designed to measure the degree to which the teacher candidates met the Ohio Department of Education (ODE), and NCTM’s Standards for Early Childhood Education Mathematics, and the Ohio Department of Education (ODE) mandates that for Ohio licensure, that early childhood teachers must be prepared to work with children who are typically developing, at-risk, gifted, or who have mild/moderate special needs.

The evaluation criteria of the rubric for the lesson plans of teacher candidates, were also based on three of the six guidelines and principles that NAEYC developed for DAP which served as subheadings within the rubric. Three guidelines and principles out of six were chosen, because they were most relevant to the study and congruent with the guidelines and standards for both early childhood and mathematic educational programs. Additionally, the researcher chose the three guidelines on the basis that each informs appropriate practice for the teacher preparation programs promulgated by the National Association for the Education of Young Children.
(NAEYC), the National Council for Teachers of Mathematics (NCTM), and The National Council for Accreditation of Teacher Education (NCATE).

It was imperative that the teacher candidates’ lesson plan development indicate knowledge and skills in using the guidelines as outlined in the standards and three of the six guideline principles of NAEYC for DAP that were chosen by the researcher as being areas that were measurable. The principles and standards of the major professional national educational organizations used in the study were NAEYC, NCTM, and NCATE, as well as The Ohio Department of Education Academic Content Standards (http://www.pde.oh/academic content standards, 2003).

Lesson Plan Rubric Levels Defined

The lesson plan rubric used in the study was designed by the researcher to quantify the developmental appropriateness of each teacher candidates’ mathematic lesson plans. Sources from which the categorical content of the lesson plan rubric was derived were: (a) NAEYC 4b Teaching, (b) NAEYC 4c Developmentally Appropriate Practice, (c) NCTM/ODE Standards and Learning, (d) NCATE Standard 1, (e) Ohio Department of Education Content Standards, Benchmarks, and Grade Level Indicators, and (f) the 1997 NAEYC Principles. The lesson plan assessment rubric was composed of three levels of measurement, each having an allocated performance percentage range to assess the degree of developmental appropriateness of the lesson plan (Figure 3).
The teacher candidate has demonstrated an exceptional ability in developing Lesson Plans that consistently adhere to and reflect developmentally appropriate early childhood education concept, knowledge, skills, and standards as outlined by the major professional education organizations 90 to 100 percent of the time.

The teacher candidate has demonstrated satisfactory ability in developing lesson plans that adhere to and reflect developmentally appropriate early childhood education concepts, knowledge, skills, and standards as outlined by the major professional education organizations 70 to 90 percent of the time.

The teacher candidate has demonstrated unacceptable ability and lack of understanding in developing lesson plans that adhere to and reflect developmentally appropriate early childhood education concepts, knowledge, skills, and standards as outlined by the major professional education organizations less than 70 percent of the time.

Figure 3. Teacher Candidates’ Mathematics Lesson Plans Assessment Rubric

Statistical Treatment

Statistical analysis for the quantitative research used the F test. The F test was used to test the statistical significance of the proposed relationships in the hypotheses. The F test was chosen because it is very robust (Newman, Newman, Brown, & McNeely, 2006). The assumptions of random selection of subjects and normal distribution of the variables can be violated without doing serious harm to the procedure (Newman et al., 2006).

Multiple linear regression was used in analyzing the variance in predicting from one variable to another and in covarying some of the variables to test the alternative hypotheses. Multiple linear regression was chosen because it is more flexible than traditional analysis of variance (McNeil, Newman, & Kelly, 1996).
regression, one can write the models that reflect the specific research question being asked (McNeil et al., 1996). In addition, Newman et al. (2006) pointed out that with multiple linear regression, one can test relationships between categorical variables, between categorical and continuous variables, or between continuous variables.

Two-tailed tests of significance were used to test the relationships of those variables where the direction of the correlation was uncertain. One-tailed tests of significance were used where the direction of the correlation was quite certain based on previous research and experience. The .10 level of significance was applied to all tests of significance. Multiple comparisons were being made which increased the possibility of a Type I error. By adjusting the alpha level and by dividing the preferred alpha by the number of comparison groups minus one, alpha error buildup was controlled (Newman & Fry, 1972; Newman, Fraas, & Laux, 2000). And, a power analysis was done for an N = 52, alpha = .05, and for a medium effect size (.15). With one independent variable, power = .93. With six linearly independent variables, power = .69 (Cohen, 1988; McNeil et al., 1996).

*Qualitative*

The following is a description of the two qualitative instruments used to gather and analyze qualitative data for the study. The first instrument used was lesson plan reflections of all teacher candidates on two of their lessons plans. The reflections were used to choose four candidates for an interview. The interview, designed by the researcher, was the second instrument used to elicit the teacher candidates’ perceptions of DAP in their field placement.
Interview of Teacher Candidates

Since the researcher could not observe teacher candidates in their field placements, the researcher developed a face-to-face interview (see Appendix F) for administration, one on one, with four teacher candidates. The criteria used for choosing the four teacher candidates to be interviewed was based on the two candidates who exhibited the highest degree of DAP in their lesson plan reflections, and the two who exhibited least degree of DAP in their lesson plan reflections. In an effort to control for researcher bias so as not to affect the data analysis, the lesson plan reflections were coded using the last four digits of each teacher candidate’s social security number.

The purpose of the interview was for the researcher to establish a personal understanding of the teacher candidates’ perceptions, using their specific language for text information, in describing how they perceived school climate and its effect on their implementation of developmentally appropriate primary mathematic lessons plans. The narrative design predominately used pre-determined open-ended interview questions in which the key variables were categorized and listed accordingly in a structured manner (Miles & Huberman, 1994). The interview was used to make each entry thicker with data density by obtaining the interviewee's personal and verbal perspective on their experiences (Miles et al., 1994). This “indirect” information, as filtered through the views of the interviewees, aided the researcher to gain information that was meaningful, knowledgeable and explicit (Creswell, 2003; Miles & Huberman, 1994; Patton, 1987). The face-to-face interviews were tape-recorded in order to get accurate transcriptions which were later analyzed using data reduction and color coding. The interview questions were field-tested by six subject-experts; five experts in the field of
early childhood education, and one qualitative research professor representing the
teacher candidates’ university; revisions were made accordingly.

Lesson Plan Reflections

Since the lesson plan reflections were required as a part of the lesson plan, it
was the second qualitative instrument to be used by the researcher in the mixed
methods study. The purpose of the lesson plan reflections by teacher candidates is to
require that they personally analyze and assess the quality of their teaching and the
implementation of their mathematic lesson plans. The selection of the four
interviewees, from the pool of 29 candidates, was based on the following qualitative
and quantitative criteria: (a) the two teacher candidates who best reflected the
principles of DAP in their lesson plan reflections, and (b) the two teacher candidates
that displayed who least reflected principles of DAP in their lesson plans. The selection
of the four candidates was based on two lesson plan reflections developed by the
teacher candidates. The written reflections were coded using the last four digits of
each candidate’s social security number. This was done in an effort not to bias the
selection of candidates for the four interviews. Each reflection was read twice by the
researcher; a check list was used to determine DAP reflections for each of the 12
interview questions.

Content Analysis

To enhance the soundness of this study, the qualitative data for the study was
collected and used in conjunction with the quantitative data. During the content
analysis of the interview questions, the researcher used a data reduction system and
color coding to search for patterns, constructs, comparisons, and themes in the
collected data from the four interviews of: Candidate 1, Sue; Candidate 2, Mary; Candidate 3, Rose; and Candidate 4, Donna (pseudonym names). This process was utilized by the researcher to help build an understanding of the substance of the interview data. Data reduction and a color coding system helped the researcher to draw conclusions by noting the important patterns and themes derived from the interviewees descriptions of their experiences (Miles & Huberman, 1994). The data was used to identify and analyze each question one-by-one. The final result was a general description of each candidate’s first-hand experiences, as personally observed through the eyes of each teacher candidate (Leedy & Ormrod, 2005). Each question was numbered, coded, and categorized in an ordered manner in order to draw a meaningful conclusion from the data (Leedy & Ormrod, 2005; Miles & Huberman, 1994).

Summary

The study was a mixed methods approach that involved collecting and analyzing both quantitative and qualitative research data. The mixed methods approach was chosen by the researcher in order to examine and use multiple approaches in the data collection for the study. The advantages of the mixed methods approach is that one method can be nested within another to provide insight into different levels or units of analysis. The mixed methods approach is based upon pragmatic knowledge claims which permit the researcher to collect both quantitative and qualitative data sequentially.

Understanding the research questions was imperative, as the research questions initiated the decisions the researcher made and guided the selection of methods used in
the study. The methods were chosen in a coherent way through the use of a Qualitative-Quantitative Interactive Continuum which emphasizes four major principles.

The two instruments used in the quantitative data collection were (a) the NAASP School Climate Teacher Satisfaction Survey, and (b) a Lesson Plan Rubric designed by the researcher. The two qualitative instruments used were (a) two lesson plan reflections from each of the 29 participants, and (b) an interview, designed by the researcher to be administered to four teacher candidates. Candidates’ perceptions were later analyzed through a data reductions system, in order to systematically partition the interview data to generate explanations about and analysis of the variables and to provide a format to help build an understanding of the substance of the interview data.

The ex post facto research was used in this study since the researcher could not control the independent variable. Statistical analysis for the quantitative research used the F test. The F test was used to test the statistical significance of the proposed relationships in the hypotheses. The F test was chosen because it is very robust. The assumptions of random selection of subjects and normal distribution of the variables can be violated without doing serious harm to the procedure. Multiple linear regression was then used in analyzing the variance in predicting one variable to another and in covarying some of the variables to test the alternative hypotheses.

The data gleaned from the interview helped build an understanding of the teacher candidates’ perceptions, using their personal language for text information in describing how they perceived school climate and its effect on their creation of developmentally appropriate lessons plans. Throughout the process of the content
analysis of the qualitative data, the researcher searched for patterns, constructs, comparisons, and themes in the collected data from the interviews. Data reduction of the interview data helped the researcher to draw conclusions derived from each interviewee’s personal experiences. The data was used to identify and analyze each question one-by-one by noting patterns and comparisons using the variables to identify and analyze each question. Each question was numbered, coded, and categorized in an ordered manner in order to draw meaningful conclusions from the data.
CHAPTER IV
RESULTS OF THE STUDY

Quantitative Research

Results of the quantitative research are presented in this chapter. This chapter is organized into two sections: descriptive statistics and inferential statistics. Descriptive statistics such as minimum, maximum, and means displayed the demographic variables. Inferential statistics were utilized to test the research hypotheses. The chapter concludes with a summary of the results.

Descriptive Statistics

Demographic Information

Demographic information was obtained through students’ lesson plans and by having both the students and their supervisors fill out the NAASP School Climate Survey. There were 29 teacher candidates and cooperating teachers who were asked to complete the School Climate Survey. Of these, all of the teacher candidates and 27 of the cooperating teachers complied resulting in an average score on perceptions of school climate of 4.6 for the teacher candidates and 3.7 for the cooperating teachers (see Table 1).
Table 1

Descriptive Statistics: Perception of School Climate

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Candidates' Perception of School Climate</td>
<td>29</td>
<td>1</td>
<td>6</td>
<td>4.6</td>
<td>0.408</td>
</tr>
<tr>
<td>Cooperating Teachers' Perception of School Climate</td>
<td>27</td>
<td>1</td>
<td>6</td>
<td>3.7</td>
<td>0.378</td>
</tr>
</tbody>
</table>

Using a rubric developed by the researcher, the two lesson plans created by each of the 29 teacher candidates were scored by both the researcher and the university field supervisors (see Appendix C). Lesson plan scores on each component ranged from 1 indicating “Does Not Meet/ Unacceptable” to a score of 3 indicating “Exceeds/ Exceptional.” These scores were awarded to each of 19 criteria across the three constructs (Content, Child Centered Methodology, and Assessment). Each pair of lesson plans developed by the teacher candidates were scored by the researcher and the field supervisor, and an aggregated score was also calculated (see Table 2). The average total for the combined scores for the lesson plans was 2.04 with a standard deviation (SD) = .415. The average Content score was 2.277 ± SD = .404, the average Child Centered Methodology was 2.014 ± (SD) = .461 and the average Assessment was 1.737 ± SD = .378 (see Table 1).
To get an estimate of the construct validity of the rubric used to assess the teacher candidates’ lesson plans, a factor analysis was conducted. This analysis resulted in a three factor solution that approximated the three relevant theoretical constructs of developmental appropriate practices investigated in this study. The largest of these constructs was Child Centered Methodology which had an eigen value of 9.010 and accounted for 47.43% of the variance. The construct labeled Content had
an eigen value of 1.58 which accounted for 8.32% of the variance, and the Assessment construct had an eigen value of 1.36 which accounted for 7.15% of the variance (Table 3). These constructs accounted for 62.77% of the variance related to the scoring of the teacher candidates’ lesson plans for DAP.

Table 3

Factor Loading of the Lesson Plan Rubric

<table>
<thead>
<tr>
<th>Rotated Component Matrix(a)</th>
<th>Child Centered</th>
<th>Content</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score 1</td>
<td>0.158</td>
<td>0.676</td>
<td>0.318</td>
</tr>
<tr>
<td>Score 2</td>
<td>0.505</td>
<td>0.522</td>
<td>0.288</td>
</tr>
<tr>
<td>Score 3</td>
<td>0.546</td>
<td>0.322</td>
<td>0.453</td>
</tr>
<tr>
<td>Score 4</td>
<td>0.645</td>
<td>0.352</td>
<td>0.113</td>
</tr>
<tr>
<td>Score 5</td>
<td>0.567</td>
<td>0.536</td>
<td>0.178</td>
</tr>
<tr>
<td>Score 6</td>
<td>0.733</td>
<td>0.312</td>
<td>0.331</td>
</tr>
<tr>
<td>Score 7</td>
<td>0.648</td>
<td>0.445</td>
<td>0.282</td>
</tr>
<tr>
<td>Score 8</td>
<td>0.705</td>
<td>0.346</td>
<td>0.129</td>
</tr>
<tr>
<td>Score 9</td>
<td>0.762</td>
<td>0.257</td>
<td>-0.139</td>
</tr>
<tr>
<td>Score 10</td>
<td>0.846</td>
<td>0.131</td>
<td>0.056</td>
</tr>
<tr>
<td>Score 11</td>
<td>0.664</td>
<td>0.23</td>
<td>0.146</td>
</tr>
<tr>
<td>Score 12</td>
<td>0.708</td>
<td>0.218</td>
<td>0.305</td>
</tr>
<tr>
<td>Score 13</td>
<td>0.199</td>
<td>0.706</td>
<td>-0.146</td>
</tr>
<tr>
<td>Score 14</td>
<td>0.688</td>
<td>0.3</td>
<td>0.341</td>
</tr>
<tr>
<td>Score 15</td>
<td>0.664</td>
<td>0.047</td>
<td>0.476</td>
</tr>
<tr>
<td>Score 16</td>
<td>0.011</td>
<td>0.734</td>
<td>-0.085</td>
</tr>
<tr>
<td>Score 17</td>
<td>0.7</td>
<td>-0.15</td>
<td>-0.11</td>
</tr>
<tr>
<td>Score 18</td>
<td>0.794</td>
<td>0.103</td>
<td>-0.182</td>
</tr>
<tr>
<td>Score 19</td>
<td>0.064</td>
<td>0.066</td>
<td>-0.815</td>
</tr>
<tr>
<td>Eigen</td>
<td>9.01</td>
<td>1.58</td>
<td>1.36</td>
</tr>
<tr>
<td>Variance Accounted</td>
<td>47.43%</td>
<td>8.32%</td>
<td>7.15%</td>
</tr>
</tbody>
</table>


Consistency in the grading of the lesson plans by the researcher and the field supervisors was also investigated by correlating the two set of scores. Both the
researcher and the university supervisors scored both lesson plans, using the same rubric, created by each of the 29 teacher candidates. The correlations between the researcher’s scores and the field supervisors’ were moderate, ranging from .494 to .606 will all of them have in a p<.0009 (see Table 4). This indicated consistency between what the researcher and supervisors were scoring as DAP.

Table 4

Reliability Correlations: Researcher’s and Supervisors Consistency of Scoring Lesson Plans

<table>
<thead>
<tr>
<th></th>
<th>Researcher Total LP</th>
<th>Content Researcher</th>
<th>Child Centered Researcher</th>
<th>Assessment Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor Total LP</td>
<td>r 0.552</td>
<td>0.461</td>
<td>0.523</td>
<td>0.503</td>
</tr>
<tr>
<td></td>
<td>p 0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>N 58</td>
<td>58</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>Content Supervisor</td>
<td>r 0.479</td>
<td>0.606</td>
<td>0.380</td>
<td>0.461</td>
</tr>
<tr>
<td></td>
<td>p 0.000</td>
<td>0.000</td>
<td>0.003</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>N 58</td>
<td>58</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>Child Centered Supervisor</td>
<td>r 0.539</td>
<td>0.393</td>
<td>0.536</td>
<td>0.463</td>
</tr>
<tr>
<td></td>
<td>p 0.000</td>
<td>0.002</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>N 58</td>
<td>58</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>Assessment Supervisor</td>
<td>r 0.484</td>
<td>0.354</td>
<td>0.461</td>
<td>0.494</td>
</tr>
<tr>
<td></td>
<td>p 0.000</td>
<td>0.006</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>N 58</td>
<td>58</td>
<td>58</td>
<td>58</td>
</tr>
</tbody>
</table>

Research Hypotheses Results

This section reviews the statistical results as well and presents the findings in table form of the 12 research questions and hypotheses. The research hypotheses were tested using multiple linear regression. The alpha level was .10 because this was and exploratory study. Only the full models were present since for every hypotheses since
the restricted modes contained only the unit vector and, therefore, the $R^2$ associated with it is always 0. In addition, since all of the hypotheses were directional and in the wrong direction, the $p$ values was halved and then subtracted from 1 $p_{new} = 1 - (p/2)$.

**General and Specific Hypotheses**

General Hypothesis 1 (GH1): School climate does not account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by this investigator.

The calculated $F$ score equaled .115 with $df_1$ equal to 2 and $df_2$ equal to 24. This produced a $p$ equal to .544 and an $R$ square ($R^2$) equal to .035 (see Table 5).

**Table 5**

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$F_{df_1,df_2}$</th>
<th>$p$</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAP Faith $= 2.670 - (.002)\text{Student}$</td>
<td>0.097</td>
<td>0.009</td>
<td>.115</td>
<td>.544</td>
<td>No</td>
</tr>
<tr>
<td>School Climate $- (.002)\text{Supervisor}$</td>
<td>0.097</td>
<td>0.009</td>
<td>.115</td>
<td>.544</td>
<td>No</td>
</tr>
<tr>
<td>School Climate + E</td>
<td>0.097</td>
<td>0.009</td>
<td>.115</td>
<td>.544</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note: Alpha = < .10.*

Specific Hypothesis 1A: School climate does not account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by the supervisor.

The calculated $F$ score equaled .188 with $df_1$ equal to 2 and $df_2$ equal to 24. This produced a $p$ equal to .675 and an $R$ square ($R^2$) equal to .036 (see Table 6).
Table 6

Specific Research Hypothesis 1A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Practice in Lesson Plans Scored by the Teacher Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>F₁,₁₂</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAP Supervisor = 3.642 - (.002)Student School Climate – (.005)Supervisor School Climate + E</td>
<td>0.188</td>
<td>0.035</td>
<td>.438₂,₂₄</td>
<td>0.675</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note.* Alpha is < .10

Specific Hypothesis 1B: School climate does not account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by this investigator and the supervisor.

The calculated F score equaled .115 with df₁ equal to 2 and df₂ equal to 24.

This produced a p equal to .554 and an R square (R²) equal to .036 (see Table 7).

Table 7

Specific Hypothesis 1B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Practice in Lesson Plans Scored by This Investigator and the Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>F₁,₁₂</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAP Both = 3.156 - (.002)Student School Climate + (.004) Supervisor School Climate + E</td>
<td>0.097</td>
<td>0.009</td>
<td>.115₂,₂₄</td>
<td>0.554</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note.* Alpha is < .10
General Hypothesis 2: School climate does not account for a significant amount of variance in predicting developmentally appropriate content scored by this investigator.

The calculated F score equaled .264 with df₁ equal to 2 and df₂ equal to 24. This produced a p equal to .621 and an R square (R²) equal to .022 (see Table 8).

Table 8

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>F₁,₂</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Content Faith = 2.818 - (.003)Student School Climate + (.000 )Supervisor School Climate + E</td>
<td>0.147</td>
<td>0.022</td>
<td>.264₂,₂₄</td>
<td>0.621</td>
<td>No</td>
</tr>
</tbody>
</table>

Note. Alpha is < .10

Specific Hypothesis 2A: School climate does not account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans content scored by the supervisor.

The calculated F score equaled .134 with df₁ equal to 2 and df₂ equal to 24. This produced a p equal to .562 and an R square (R²) equal to .011 (see Table 9).
Table 9

Specific Hypothesis 2A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Content as Scored by the Teacher Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>F_{df1,df2}</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Content Supervisor = 2.628 - (.002)Student School Climate + (.001)Supervisor School Climate + E</td>
<td>0.105</td>
<td>0.011</td>
<td>.134_{2,24}</td>
<td>0.562</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note: Alpha is < .10*

Specific Hypothesis 2B: School climate does not account for a significant amount of variance in predicting developmentally appropriate content scored by this investigator and the supervisor.

The calculated F score equaled .206 with df₁ equal to 2 and df₂ equal to 24. This produced a p equal to .592 and an R square (R²) equal to .017 (see Table 10).

Table 10

Specific Hypothesis 2B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Content Scored by This Investigator and the Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>F_{df1,df2}</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Content Both = 2.723 - (.003)Student School Climate + (.001)Supervisor School Climate + E</td>
<td>0.13</td>
<td>0.017</td>
<td>.206_{2,24}</td>
<td>0.592</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note: Alpha is < .10*
General Hypothesis 3: School climate does not account for a significant amount of variance in predicting developmentally appropriate child centered methodologies as scored by this investigator.

The calculated F score equaled .134 with df₁ equal to 2 and df₂ equal to 24. This produced a p equal to .561 and an R square (R²) equal to .011 (see Table 11).

Table 11

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>F₁,₂₋₂⁴</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Child Centered Faith = 2.589 + 0.105 (Student School Climate - Student School Climate) + E</td>
<td>0.105</td>
<td>0.011</td>
<td>0.134₂,₂⁴</td>
<td>0.561</td>
<td>No</td>
</tr>
</tbody>
</table>

Note. Alpha is < .10

Specific Hypothesis 3A: School climate does not account for a significant amount of variance in predicting developmentally appropriate child centered methodology scored by the supervisor.

The calculated F score equaled 1.477 with df₁ equal to 2 and df₂ equal to 24. This produced a p equal to .876 and an R square (R²) equal to .11 (see Table 12).
Table 12

Specific Hypothesis 3A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Child Centered Methodologies Scored by the Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$F_{df_1,df_2}$</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Child Centered Supervisor = 4.024 - (.001)Student School Climate - (.000 )Supervisor School Climate + E</td>
<td>0.331</td>
<td>0.11</td>
<td>1.477,24</td>
<td>0.876</td>
<td>No</td>
</tr>
</tbody>
</table>

Note. Alpha is < .10

Specific Hypothesis 3B: School climate does not account for a significant amount of variance in predicting developmentally appropriate child centered methodology scored by this investigator and the supervisor.

The calculated F score equaled .706 with $df_1$ equal to 2 and $df_2$ equal to 24. This produced a $p$ equal to .749 and an $R$ square ($R^2$) equal to .056 (see Table 13).

Table 13

Specific Hypothesis 3B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Child Centered Methodology Scored by This Investigator and the Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$F_{df_1,df_2}$</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Child Centered Both = 3.307 - (.001)Student School Climate - (.005 )Supervisor School Climate + E</td>
<td>0.236</td>
<td>0.056</td>
<td>0.706,24</td>
<td>0.749</td>
<td>No</td>
</tr>
</tbody>
</table>

Note. Alpha is < .10
General Hypothesis 4: School climate does not account for a significant amount of variance in predicting developmentally appropriate assessment as scored by this investigator.

The calculated F score equaled .272 with df₁ equal to 2 and df₂ equal to 24. This produced a p equal to .618 and an R square (R²) equal to .022 (see Table 14).

Table 14

General Research Hypothesis 4: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Assessment Scored by This Investigator

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>F₁,₂ df₂</th>
<th>p</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Assessment Faith = 2.286 - (.003)Student School Climate + (.000) Supervisor School Climate + E</td>
<td>0.149</td>
<td>0.022</td>
<td>0.272₂,₂₄</td>
<td>0.618</td>
<td>No</td>
</tr>
</tbody>
</table>

Note. Alpha is < .10

Specific Hypothesis 4A: School climate does not account for a significant amount of variance in predicting developmentally appropriate assessment scored by the supervisor.

The calculated F score equaled .685 with df₁ equal to 2 and df₂ equal to 24. This produced a p equal to .733 and an R square (R²) equal to .054 (see Table 15).
Table 15

Specific Hypothesis 4A: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Assessment Scored by the Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Assessment Supervisor = 3.603 - (0.003)Student School Climate - (0.005)Supervisor School Climate + E</td>
<td>0.232</td>
<td>0.054</td>
<td>0.685</td>
<td>0.733</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note.* Alpha is < .10

Specific Hypothesis 4B: School climate does not account for a significant amount of variance in predicting developmentally appropriate assessment scored by this investigator and the supervisor.

The calculated F score equaled .509 with $df_1$ equal to 2 and $df_2$ equal to 24. This produced a $p$ equal to .696 and an $R$ square ($R^2$) equal to .041 (see Table 16).

Table 16

Specific Hypothesis 4B: School Climate Accounts for a Significant Amount of Variance in Predicting Developmentally Appropriate Assessment Scored by This Investigator and the Supervisor

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Assessment Both = 2.946 - (0.003)Student School Climate - (0.003)Supervisor School Climate + E</td>
<td>0.202</td>
<td>0.041</td>
<td>0.509</td>
<td>0.696</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note.* Alpha is < .10
Summary of Quantitative Research

None of the 12 research hypotheses were significant (see Table 17), indicating that there was no significant relationship between the teacher candidate’s perception of DAP as scored by the researcher and their field supervisors using the rubric created to evaluate their lesson plans.

Table 17
Summary Table

<table>
<thead>
<tr>
<th>Model</th>
<th>Hypotheses</th>
<th>$R^2$</th>
<th>$F_{df1,df2}$</th>
<th>$p$</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>GH1</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by this investigator.</td>
<td>0.009</td>
<td>0.115</td>
<td>0.544</td>
<td>No</td>
</tr>
<tr>
<td>SH1A</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by the teacher supervisor.</td>
<td>0.035</td>
<td>0.438</td>
<td>0.675</td>
<td>No</td>
</tr>
<tr>
<td>SH1B</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by this investigator and the supervisor</td>
<td>0.009</td>
<td>0.115</td>
<td>0.554</td>
<td>No</td>
</tr>
<tr>
<td>GH2</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate content scored by this investigator.</td>
<td>0.022</td>
<td>0.264</td>
<td>0.621</td>
<td>No</td>
</tr>
<tr>
<td>SH2A</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate content as scored by the teacher supervisor.</td>
<td>0.011</td>
<td>0.134</td>
<td>0.562</td>
<td>No</td>
</tr>
</tbody>
</table>

*(table continues)*
Table 17

Summary Table (continued)

<table>
<thead>
<tr>
<th>Teacher Candidate</th>
<th>Description</th>
<th>Significance</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH2B</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate content scored by this investigator and the supervisor</td>
<td>0.017, 0.206, 0.592</td>
<td>No</td>
</tr>
<tr>
<td>GH3</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate child centered methodologies scored by this investigator.</td>
<td>0.011, 0.134, 0.561</td>
<td>No</td>
</tr>
<tr>
<td>SP3A</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate child centered methodologies scored by the supervisor</td>
<td>0.11, 1.477, 0.876</td>
<td>No</td>
</tr>
<tr>
<td>SP3B</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate child centered methodology scored by this investigator and the supervisor</td>
<td>0.056, 0.706, 0.749</td>
<td>No</td>
</tr>
<tr>
<td>GH4</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate assessment scored by this investigator.</td>
<td>0.022, 0.272, 0.618</td>
<td>No</td>
</tr>
<tr>
<td>SP4A</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate assessment scored by the supervisor</td>
<td>0.054, 0.685, 0.733</td>
<td>No</td>
</tr>
<tr>
<td>SP4B</td>
<td>School climate accounts for a significant amount of variance in predicting developmentally appropriate assessment scored by this investigator and the supervisor</td>
<td>0.041, 0.509, 0.696</td>
<td>No</td>
</tr>
</tbody>
</table>

Teacher Candidates Interviews

*Qualitative Research*

The four of the teacher candidates for direct interviews, were selected on the basis of their lesson plan reflections; the two candidates that indicated the greatest
degree of DAP and the two that indicated the least degree of DAP. The interview consisted of 12 open-ended questions (see Appendix F). A content analysis was performed through the process of data reduction to abstract the major themes found in the interviews.

The major themes that emerged from the collected data, through the reduction process were as follows:

- The mathematics content of their field placement schools;
- The issue of the child-centeredness;
- The assessment procedures used in their field placement assignments; and
- The administrator’s and cooperating teacher’s role in the implementation of curriculum

The following are excerpts from three of the four candidates. They were chosen because the interview themes that emerged from the data analysis portrayed a continuum that ranged from the least developmental appropriateness to optimum developmental appropriateness.

*The Mathematics Content*

Sue (Candidate 1) stated the following about the mathematic content: “It’s very scripted. The children have had it since they were in Kindergarten and they are so bored with it.” They ask every morning, ‘Can we skip it?’"

“They really don’t like it. They’re so bored with it and it’s so hard to follow the script when you first get that. You have no idea how far you should actually go with the script and then everything is so repetitive it’s too long. It’s too boring.”

“It’s so scripted that there is no room for any kind of creativity for the teacher, for the students.
Mary (Candidate 2) stated the following about the mathematic content: “Usually they work using a workbook. They use a workbook and they usually do a unit every week and they actually have to split their time for mathematics. And, the math lessons are scripted and long. The math program also one that requires you to follow it in a verbatim manner.

Rose (Candidate 3) stated the following about the mathematic content: We teach in a very developmentally appropriate manner. It’s a math program that deals with a lot of hands on manipulatives, and it is in everything we do all day long.”

**Child-Centeredness**

Sue (Candidate 1) stated the following about child centeredness: “There is nothing in the realm of technology being used except for the overhead.” “The only thing they have is an overhead and a television with a VCR/DVD player. There are no hands-on materials or group activities, every thing they do is done by themselves. Well, what I’ve seen her doing is, having the children one at a time come up to the overhead and help do things on their generated work sheets so that everybody gets the same answer and everybody knows the same process. They don’t use centers.”

Mary (Candidate 2) stated the following about child centeredness: “The Only manipulatives I have seen are geo-boards, calculators and the overhead projector. I have not seen or used computers in teaching math, however there are two computers in the classroom. “There are no centers for math.”

Rose (Candidate 3) stated the following about child centeredness: “We use a lot of the smart board activities right now. So with the smart board we bring up games on the computer and it shows up on the smart board, and they can go up and manipulate and move around objects for when they’re counting or sorting. They do centers and they always have a mathematics center, which is really fun, incorporated with flash cards and their own personal whiteboard, which is fun for them because they get to use that. She teaches really well and she uses the board a lot and she uses hands-on. Most kids love to be able to write their own white board.”

**Assessment Procedures**

Sue (Candidate 1) stated the following about assessment procedures: “Everybody takes the same timed test, at least twice a week. They’re written tests. We have a stop watch and they get one minute and then when that one minute is up, they get one more minute, but they have to
change to a colored pencil or a pen or a crayon to finish up their work so that way we can see where they switched over after one minute.”

Mary (Candidate 2) stated the following about assessment procedures: “She let’s them take home a worksheet and it gets graded the next day and then they get it back. If they get so many wrong they have to have it signed by mom and dad.”

Rose (Candidate 3) stated the following about assessment procedures: “She uses observation for assessment.” The cooperating teacher observes them as the children work either individually or in their small groups, in their center activities, and as they respond orally to questions as they try to solve simple problems.”

Administrators’ Role in the Implementation of Mathematics Curriculum Content

Sue (Candidate 1) stated the following: “I’m not really sure what their policy is but I know that the principal does walk around and makes sure that everybody’s within one or two lessons of each other so everybody has to be approximately at the same level for whatever your grade level is. He expects that if he stands over your shoulder that he can follow right along with that script with you. If the principal comes in and you’re not doing what’s on the script, he’ll tell you ‘Stick to the script’.”

Mary (Candidate 2) stated the following: “Well, I think that they (teachers and principal) meet regularly and go over what their lessons are going to be for the following week. I want to say that four of the teachers stay on the same path and then they kind of partner-up in every subject. They’re kind of like a team; they work together.”

Rose (Candidate 3) stated the following: “There’s leeway. He reviews the lessons of what’s being taught; but just a general overview of what’s covered. They go by themes each month, or even weekly, and the teacher has a lot of leeway of what she wants to teach or encounter.”

Cooperating Teacher’s Role in the Implementation of Mathematics Curriculum Content

Sue (Candidate 1) stated the following: “Daily. She does the same things daily; math meeting, calendar, lesson, and worksheets, and on the days that I’m there she’s helping me to get used to the scripted policies of the
mathematics program. It takes me forever because it’s so hard to get used to the script.”

Mary (Candidate 2) stated the following: “She stays on track. She’s really with it.” She seems to keep on track and on pace. She give me leeway, and let’s me do my lessons how I want.” She may say, “That’s not how I would teach it, but the way you taught it is fine.”

Rose (Candidate 3) stated the following: “She uses the mathematics program everyday throughout everything the children do. Everything we do has some related math.”

In summary, the excerpts from the interviews of the least developmentally appropriate environments the mathematics content was scripted, and the mathematics content was boring, and repetitive. The degree of child centeredness in these environments was found to be very low, with very little to no hands-on materials or activities, minimal usage of technology, little to no use of learning centers that were appropriate for the age and developmental level of the children. The analysis also found that there were few or no learning opportunities which allowed for interaction between children or the use of learning groups. There were references to excessive use of work sheets, and also references to timed tests on a daily basis. There were references in each case indicated that the principal’s role was that of a program facilitator who overlooked and made sure the programs were being implemented in the manner that was required by the school districts’ standards. The interviewees also indicated that the teachers’ roles in the various school environments were to “stay on task and follow the routine as outlined.”

The exact opposite, of the above criteria, was found in the school which indicated the highest degree of developmentally appropriate practice. This interviewee indicated that there was cross-curricular integration, age, and
developmentally appropriate mathematics lesson plan content; small group learning was encouraged on a regular basis; daily use of learning centers; and the use of technology, including Smart Boards, on a regular basis.

Summary

Chapter IV identifies the research results of this study which used descriptive statistics to correlate, the perceptions of teacher candidates on school climate, and their use of DAP in lesson planning. Inferential statistics using Multiple Regression Analysis were also run to test the specific research hypotheses that were identified for this research study. This was a mixed methods study used both qualitative and quantitative data to obtain more holistic views of the teacher candidates perceptions and planning for practice in their filed placements. Additional qualitative data was collected through interviews.

The descriptive statistics identified demographic information which indicated the number of teacher candidates and their cooperating teachers who participated in the School Climate Survey. An analysis of the lesson plan scoring by both the researcher and their supervisor, using the lesson plan rubric developed by the researcher, indicated the minimum, maximum, mean, and standard deviation of the teacher candidates lesson plans for use of developmentally appropriate practices.

A factor analysis of the rubric used to assess the teacher candidate lesson plans, resulted in a three factor solution that approximated the theoretical constructs of the relevant developmentally appropriate practices investigated in this study. The consistency in the grading of the lesson plans by the researcher and field supervisor was also investigated by correlating the two sets of scores, using the same rubric.
Analysis of the reliability correlations between the researcher’s scores and the field supervisors’ were found to be moderately consistent (see Table 4). The 12 research questions and hypotheses were tested using, Multiple Linear Regression. An alpha level of $p = .10$ was selected because this was an exploratory study. None of the research hypotheses, as listed in the summary table, were significant indicating that there was no significant relationship between the teacher candidates’ perception of school climate and their creation of developmentally appropriate lesson plans as scored by the researcher and by the field supervisors.

The qualitative research used 12 open-ended interview questions, to gain the personal perceptions of developmentally appropriate practice in their field placements, as viewed through the eyes of four selected interviewees of developmentally appropriate practice in their field placements. A reduction process was used to determine themes which evolved which were analyzed and to assess developmentally appropriate practices. Both the lesson plan reflections and the interviews revealed that the teacher candidates know and understand what DAP is, however their lesson plans didn’t reflect this knowledge.
CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary of Study

This dissertation is an exploratory mixed methods study which analyzed teacher candidates’ and their cooperating teacher’s perceptions of school climate in an investigation to determine if there was a relationship between school climate and teacher candidate’s creation of developmentally appropriate lesson plans. Data for this mixed methods study was gathered using quantitative results from two instruments; the School Climate Survey and a lesson plan assessment rubric. Qualitative data was gleaned from two lesson plan reflection papers done by each of the 29 teacher candidates participating in the study, and four interviews of selected teacher candidates, which provided information about their perceptions of the school climate in their field placement schools. Thus, both quantitative and qualitative information were represented in the final database (Creswell, 2003). Comparative analysis was accomplished through the triangulation of data sources which permitted the researcher to compare and cross-check the consistency of information (Patton, 2002).
Statement of the Problem

Numerous studies on child development and learning equate DAP to best practices in the education of young children (Elkind, 1987; Bredekamp, 1987; Bredekamp & Copple, 1997; Bredekamp & Rosengrant, 1992). Effective schooling for young children is based on decisions about appropriate school and child-centered classroom environments, lesson content, and assessment practices which are three principles/guidelines outlined in NAEYC’S framework that form the basis of developmentally appropriate practice (Bredekamp, 1987; Bredekamp & Copple, 1997). DAP is based on knowledge of how children develop and learn. The nature of DAP is best described as a continuum which runs the gamut from an educational environment where very little DAP is implemented to an educational environment that fully implements DAP in its educational practices (Bredekamp & Copple, 1997).

School climate is defined by the National Association of Secondary School Principals (2001) as a relatively enduring pattern of shared perceptions about the characteristics of an organization and its members. A positive school climate would indicate positive relationships and interaction between administration and staff, staff and staff, students and staff, students and students, and administration and students (p. 12). Research literature supports the idea that there is a relationship of school climate to effective schooling (Bredekamp & Rosengrant, 1992; Bulach, 1993; Hoy & Miskel, 1987; Hoy & Sabo, 1998; Kottkamp, Muthern, & Hoy, 1987; Lindelow, Mazzarella, Scott, Ellis, & Smith, 1989; Moos, 1979; NASSP, 2002).

This study investigated the relationship between teacher candidates’ perceptions of school climate and their creation of developmentally appropriate
practices in the classroom teaching of kindergarten-third grade early childhood mathematics. Many early childhood teachers and child development specialists believe it is important that decisions about appropriate school and child-centered classroom environments, lesson plan content, and assessment practices be derived from the framework for developmentally appropriate practice as outlined by NAEYC (Bredekamp, 1987; Bredekamp & Copple, 1997). NAEYC’s framework for DAP provides guidelines to early childhood educators in teaching strategies which are based on specific knowledge and theories of how children learn and develop (Bredekamp, 1987; Bredekamp & Copple, 1997).

Statement of Purpose

The purpose for this study was to add pertinent information to the existing body of knowledge on the importance of DAP which includes: child-centered classroom environments, lesson plan content, and assessment practices about early childhood educational practices (Bredekamp & Copple, 1997). This information is perceived by the investigator, as pertinent in helping teacher educators to provide their students with strategies on how to bridge the gap between theory and practice in their creation of developmentally appropriate mathematic lesson plans during field experiences.

Statement of Procedures

This dissertation is a mixed methods exploratory study. The mixed methods design used both quantitative and qualitative research methodologies to gather the appropriate data. An ex post facto design was utilized in the qualitative research because of the researcher’s inability to manipulate the independent variables. The ex
post facto design does not control the independent variables and therefore causation cannot be inferred (Newman, Newman, Brown, & McNeely, 2006).

Quantitative Research

The researcher used two methods for quantitative data collection. The first instrument used to collect quantitative data was the NASSP School Climate Survey Teacher Satisfaction Survey. The instrument was used to collect and to measure both the teacher candidates’ and their cooperating teachers’ perceptions of school climate. Permission to administer the NASSP School Climate Survey to the cooperating teachers in each of the thirteen field placement schools was obtained from the school principals in mid August of the 2006 fall semester. The NASSP School Climate Survey was administered to 29 teacher candidates and 27 of their cooperating teachers during the teacher candidates’ mathematic field placements in early October of the fall semester. The instrument was designed to collect data about teacher perceptions using the NASSP Teacher Satisfaction Survey on nine subscales. The nine subscales are:

(a) Administration, (b) Compensation (c) Opportunities for Advancement, (d) Student Responsibility and Discipline, (e) Curriculum and Job Tasks, (f) Co-workers, (g) Parents and Community, (h) School Buildings, Supplies, and Maintenance, and (i) Communication. The researcher used seven of the subscales that were most relevant to the study. The subscales for Compensation (number 2) and Opportunities for Advancement (number 3) were not used by the researcher, since teacher candidates are rarely familiar with issues surrounding teacher compensation and opportunities for advancement (NASSP, 1994).
The second instrument used for the collection of quantitative data was a lesson plan rubric developed by the researcher (see Appendix C). The lesson plan rubric was used to determine if the mathematic content in the teacher candidates’ lesson plans was developmentally appropriate. The researcher designed the rubric using NAEYC principles/guidelines for Developmentally Appropriate Practice; the Standards of NCTM, ODE Curriculum Standards, Benchmarks, and Grade-level Indicators, and NCATE Standards. The standards were categorized by the researcher using three out of four NAEYC DAP guidelines/principles serving as subheadings for the components of the lesson plan rubric (Bredekamp & Copple, 1997). The three guidelines/principles chosen to be subheadings of the rubric were those that one would logically assume to be most relevant, and aligned with the purpose of the research study. The three guidelines/principles used were:

- constructing appropriate and integrated mathematic content in the lesson plans;
- teaching to enhance development and child-centered learning;
- assessment of each child’s learning progress through observation and work samples.

Lesson plan scores on each component ranged from 1 indicating “Does Not Meet/ Unacceptable” to a score of 3 indicating “Exceeds/ Exceptional.” These scores were awarded to each of 19 criteria across the three constructs (Content, Child Centered Methodology, and Assessment). Each pair of lesson plans developed by the teacher candidates were scored by the researcher and the field supervisor, from which an aggregated score was calculated (see Table 1 in Chapter 4).
A factor analysis was conducted for an estimate of the construct validity of the lesson plan rubric that was used to assess the teacher candidates lesson plans for DAP. The analysis resulted in a three factor solution that approximated the three theoretical constructs considered to be the most relevant DAP investigated in the study. The results indicated that the largest of these constructs was Child Centered Methodology, second, was the construct labeled Content, and third was the construct labeled Assessment. These constructs accounted for 62.77% of the variance related to the scoring of the teacher candidates’ lesson plans for DAP (see Table 3 in Chapter 4).

Consistency in the grading of the lesson plans by both the researcher and the field supervisors was investigated by correlating the two sets of scores. Both the researcher and the field supervisors used the same rubric to score the two lesson plans of the 29 teacher candidates. The reliability correlations between the researcher’s scores and that of the field supervisors’ were moderate, ranging from .494 to .606 with a p < .0009. This indicated consistency between what the researcher and supervisors were scoring as DAP (see Table 4 in Chapter 4).

**Qualitative Research**

The researcher also used two instruments for the collection of qualitative data. They were; two lesson plan reflections written by the teacher candidates on their mathematical lesson plans used in their field placement schools, and personal interviews with four of the teacher candidates. All 29 teacher candidates were assigned the task of writing two reflection papers to evaluate their first and second mathematical lesson plans. The lesson plan reflections were coded by using the last four digits of the teacher candidates’ social security numbers to provide non-biased
decisions in the criteria for the selection choice of the four interviewees. The researcher chose four interviewees, based on an assessment of all 58 (2 per candidate) of the teacher candidates’ lesson plan reflections. The four teacher candidates chosen to be interviewed were two who most reflected the principles of DAP in the development of their lesson plans, and two who least reflected the principles of DAP in the development of their lesson plans. The researcher read each reflection paper and used a checklist to determine which of the four candidates’ reflections most accurately portrayed the above criteria.

Since the researcher could not observe teacher candidates in their field placements, the researcher developed a face-to-face interview as the primary instrument used in administering one-on-one interviews with the four teacher candidates in early October of the 2006 fall semester. The interviews were recorded by the researcher, and later transcribed (see Appendix G). The interview questions were designed by the researcher, to be dominantly open-ended (see Appendix F). The interview provided the researcher with “indirect” information that was filtered through the viewpoints of the interviewees.

The researcher used a color coding system in the process of data reduction of the transcribed interviews. The data reduction was used in selecting, focusing, abstracting, and transforming data from the written transcriptions by clustering themes for the purpose of data analysis (Miles & Huberman, 1994; Newman & Benz, 1998; Patton, 2002). This was done for the purpose of drawing conclusions about the information gleaned through the face-to-face interviews.
Results

Quantitative Results

The quantitative research from the School Climate Survey indicated findings that were opposite of the expected outcomes in several areas. In other words, schools that were perceived to exhibit the least DAP, were those that often measured the highest teacher satisfaction on the School Climate Survey.

None of the twelve research hypotheses were found to be significant. The research hypotheses of this study were as follows:

General Research Hypothesis 1: School Climate accounts for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by this investigator. This was determined to be nonsignificant (p = 0.544).

Specific Hypothesis 1A: School climate does not account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by the supervisor. Specific Hypotheses 1A was found to be nonsignificant with the following p value: (p = 0.675).

Specific Hypothesis 1B: School climate does not account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans scored by this investigator and the supervisor. Specific Hypotheses 1B was found to be nonsignificant with the following p value: (p = 0.554).

General Research Hypothesis 2: School climate accounts for a significant amount of variance in predicting developmentally appropriate content scored by this investigator, was determined to be nonsignificant (p = 0.621).
Specific Hypothesis 2A: School climate does not account for a significant amount of variance in predicting developmentally appropriate practice in lesson plans content scored by the supervisor was found to be nonsignificant (p = 0.562).

Specific Hypothesis 2B: School climate does not account for a significant amount of variance in predicting developmentally appropriate content scored by this investigator and the supervisor. Specific Hypothesis 2B was found to be nonsignificant (p = 0.592).

General Research Hypothesis 3: School climate accounts for a significant amount of variance in predicting developmentally appropriate child centered methodologies scored by this investigator.

Specific Hypothesis 3A: School climate does not account for a significant amount of variance in predicting developmentally appropriate child centered methodology scored by the supervisor was found to be nonsignificant (p = 0.876).

Specific Hypothesis 3B: School climate does not account for a significant amount of variance in predicting developmentally appropriate child centered methodology scored by this investigator and the supervisor was found to be nonsignificant (p = 0.749).

General Research Hypothesis 4: School climate accounts for a significant amount of variance in predicting developmentally appropriate assessment scored by this investigator.

General Hypothesis 4 was found to be nonsignificant (p = 0.618).
Specific Hypothesis 4A: School climate does not account for a significant amount of variance in predicting developmentally appropriate assessment scored by the supervisor was found to be nonsignificant (p = 0.733).

Specific Hypothesis 4B: School climate does not account for a significant amount of variance in predicting developmentally appropriate assessment scored by this investigator and the supervisor was found to be nonsignificant (p = 0.696).

In summary, the results of the quantitative analysis found that none of the 12 hypothesized relationships were significant. These results were not consistent with the literature. Earlier research findings indicate that a positive perception of school climate supports DAP (Caples, 1996; Harms, Clifford, & Cryer, 2004; Sweeny, 1988). However, this research study yielded findings that were opposite of the outcomes expected. In other words, schools that were perceived to exhibit the least DAP, were those that often measured the highest teacher satisfaction on the School Climate Survey.

Qualitative Research Results

The choice of the four teacher candidates that were interviewed was based on their perceptions of DAP which was elicited from a total of 58 lesson plan reflections (two per candidate), and their perceptions of DAP in their field placement schools. The lesson plan reflections were coded by using the last four digits of the teacher candidates’ social security numbers to provide non-biased decisions in the criteria for the selection of the four interviewees. The four teacher candidates’ interviews were analyzed by the researcher to identify the themes that reflect their perceptions of their
understanding of developmentally appropriate practice. Three of the four candidates whose interview excerpts were chosen to be featured, were those whose perceptions of DAP portrayed a continuum that ranged from that which least reflected DAP to that which reflected the highest degree of DAP in the various mathematic programs in their field placement schools. The themes that are represented emerged from a data reduction process. The data gleaned from the interview excerpts also provided the data for the analysis of cross-data consistency for triangulation of methods. The following are excerpts which correlate with the three main data criteria of the lesson plan rubric; (a) DAP lesson plan content, (b) Child-centeredness, and (c) Assessment. The interview excerpts have been presented in that order. Pseudonyms were used to distinguish each of the three candidates.

Sue represents candidate 1 in the interview literature. She was placed in a field placement school which fell on the extreme end of the continuum perceived to be developmentally inappropriate. Sue’s field placement was at the third grade level in a school environment which she described in her reflection, as “both conservative and very traditional.” She indicated that the mathematics program used “seems like a good idea gone wrong.” She further stated in her reflection that “there has to be a better way to teach mathematics. I wish that we could make mathematics fun instead of one more boring thing to get through.” Each of Sue’s lesson plans were designed to precisely follow the mathematic program used in her field placement school. Each lesson was close to 2 hours in length, and precisely laid out, word-for-word in a program which each teacher in the school was required to follow on a daily basis. The program provided, and required that the teachers use, worksheets for homework
assignments on a regular basis, and to be graded by the next day. There also were many timed skills and drills activities required in many of the mathematics lessons.

Mary represents candidate 2, who was placed in a first grade classroom. She fell between the two extremes of DAP and DIP on the continuum. Her reflection indicated that the mathematic program in her field placement is also one that requires you to follow it in a verbatim manner. She states, “I have already taught two mathematical lessons. The last lesson was longer than I had expected, because there was so much dialogue; I was afraid that the students were losing interest because it was so hard to keep them engaged. I would much prefer to do more creative things in teaching mathematics.” However, she went on to say, “My cooperating teacher does do some really fun things with the first graders in the other curriculum areas, and I have found that the types of things she does really keeps their energy up. So far we have taken a boat ride down a river in the area, gone on a walk on the beach where we found buckeyes, shells, leaves, and a variety of other things. This type of teaching really reaches the children, and they had such a good time learning about the special things around them.”

Rose, Candidate 3 has been placed in a kindergarten room for her field placement school. Her reflections indicate that she fell on the other extreme end of the DAP/DIP continuum, in a school that mathematics is taught in a very developmentally appropriate manner. She stated:

I am teaching in a school in which mathematics is integrated in almost everything my cooperating teacher teaches. They have been working on counting the amount of days they have been in school; focusing on reaching their 100th school day celebration for kindergarten. We use mathematics in everything we do whether it’s reviewing the calendar,
calling our family on the phone, or splitting up into groups for activities.
The key focus in my field placement school is to understand the concept
that mathematics takes place in almost everything you do.

Mathematic Content

The theme of content emerged a number of times also indicating the extremes
on the DAP continuum that ranged from the very least to the very highest level.
Sue’ perceptions and her lesson plans consistently reflected the least DAP as she
commented on the scripted mathematic program in her field placement school. Her
perceptions of the mathematics content are found in the following statements:

It’s very scripted, and it’s so hard to follow the script. It’s so scripted that
there is no room for any kind of creativity for the teacher or for the
students. You really can’t change much of anything and the children
already know exactly what’s coming, and they tell you. . . . It takes
forever to teach, because it’s so hard to get used to the script.

Sue’s perceptions of the mathematical content and her lesson plans, for the
most part, fell in the center of the DAP continuum. She commented that the school
doesn’t really have a textbook.

They do use worksheets each day, and usually do a unit every week.
Although the mathematical lessons are scripted and long, we do usually
play a game or work with some hands-on materials. However, it is
important to stay on task and follow the scripted content when presenting
the lessons.

Mary’s perceptions of the mathematical content and lesson plans, for the
most part, fell in the center of the DAP continuum. She commented that the school
doesn’t really have a textbook.

They do use worksheets each day, and usually do a unit every week.
Although the mathematical lessons are scripted and long, we do usually
play a game or work with some hands-on materials. However, it is
important to stay on task and follow the scripted content when presenting
the lessons.

Rose’s perceptions of the mathematical content and lesson plans presented in
her reflections, fell on the extreme end of what would be considered to be very DAP.
She described the mathematic program in her field experience as; one that
Involves the children in working with a lot of hands on manipulatives to
develop an understanding of the concepts they are learning which include:
one-to-one correspondence, counting, matching, and patterning. There is
a lot of creativity used in the mathematical lessons in my field placement
classroom, as the children also learn about the days of the week, and
count the days they have been school. They are so anxious to reach the 100th day which we will celebrate.

Child-Centered Programs

The theme of child-centeredness emerged several times, again indicating the extremes of the DAP continuum. When describing child-centeredness in the mathematic program in her field experience, Sue remarked that

The children have had it since they were in Kindergarten and they are so bored. Everything is so repetitive, and it’s too long. It’s too boring. They hardly ever use hands-on materials, they just do worksheets and timed tests. Sometimes my cooperating teacher will go over the mathematical problems with the whole class and use the overhead projector, after that, the students do their worksheets for the day. There is absolutely no use of computers or technology other than using the overhead projector. Also, there absolutely are no small group activities, everything they do is done alone by themselves.

Mary reflected that in her placement the child-centeredness in the mathematics program is not widely practiced. She stated:

The teacher does not often use hands-on materials, just geo-boards, the overhead projector, and calculators. I have not seen or used computers in teaching mathematics, however there are two computers in the classroom. The students do have an opportunity to have Centers on Fridays where they can work together and use flashcards, and some mathematical games. I am allowed to be creative when I teach my lesson, and I do bring in other things. My cooperating teacher does allow me some leeway in developing my lesson plans, but I must ‘stay with the program’.

Rose described her field placement mathematical program as one “That is very child-centered and allows for a lot of creativity.” Rose also described her classroom as

one which uses mathematical centers on a regular basis, and the children mostly work in small groups to do their problem solving activities each day. The cooperating teacher ties mathematics to things that children do in their ‘real life’. We use white boards, and everyone has their own. . . . We use the smart board, a lot right now. So with the smart board we
bring up games on the computer and it shows up on the smart board and they can go up and manipulate and move around objects when they’re counting or sorting.

Assessment

Sue’s perceptions revealed that in her field placement school,

Everybody takes the same timed test, at least twice a week. They’re written tests, and they use a stop watch. The children get 1 minute, and when the minute is up, they get one more minute, but must change to a colored pencil or crayon to finish up their work so that we can see where they switched over after the one minute. When we’re finished we go over every answer on the page, and every child gets to read off an answer because there are that many questions.

Mary indicated that the students are assessed in a couple of ways. She stated:

They usually are graded on their work sheets. They do alot of worksheets at school, but they don’t have a lot of homework. They also are doing flash cards, with adding and subtracting. The cooperating teacher uses them as a filler to practice for their ‘five minute timed tests’ so they can get the information into their memories.

Rose indicated that assessment takes place in a very developmentally appropriate manner.

The cooperating teacher observes them as the children work either individually or in their small groups, in their center activities, and as they respond orally to questions as they try to solve simple problems. They do not do written tests because it is a kindergarten classroom.

Conclusions

This research is an exploratory mixed methods study. This chapter began with a summary of this research including a statement of the problem, a statement of the purpose, and a statement of the procedures. The results of the quantitative analysis found that none of the 12 hypothesized relationships between teacher candidates’ perceptions of school climate and their creation of developmentally appropriate lesson
plans were significant. These results were not consistent with the literature. The results showed that the research study found no significant relationship between school climate and the creation of developmentally appropriate lesson plans created by the teacher candidates.

The schools perceived as having positive school climates often had the least appropriate practices. The findings were not consistent with the literature as outlined by NAEYC (Bredekamp & Rosengrant, 1992; NASSP 2002).

The focus of this study was to explore whether there is a relationship between early childhood teacher candidates’ perception of school climate and their creation of developmentally appropriate lesson plans. The intention of the mixed methods design was to give a broader and holistic perspective in answering the research questions.

After careful examination of the data, the researcher perceived that there were a number of possible reasons that no significant difference was found in the relationship between school climate and the creation of developmentally appropriate lesson plans. Some of these explanations are as follows:

1. The teacher candidates were comfortable with the school climate of the schools where they had been placed for their mathematic field experience, thus making it harder for them to go against the norm which had already been established within the school.

2. Teacher candidates were in a position in which they were expected to take direction for the creation of their lesson plan development from their cooperating teachers.
3. The principal served as the program facilitator in a number of the field placement schools. The school districts that required uniformity of practice and time frames for the teaching of outlined mathematic content in their chosen textbook curriculum.

4. Because some cooperating teachers were held accountable for teaching the mathematic content on a schedule, as required in their school districts, a number of them had little time and encouragement for the development of creative, constructivist, and developmentally appropriate teaching methodologies as outlined by NAEYC.

5. The cooperating teachers were routinely monitored in a number of the schools to make sure that they were on the teaching schedule outlined for them by their school district, principal, and the other teachers on the team who were instructing at the same grade level.

All of these indicators sent a clear message; all teachers must follow the teaching requirements outlined for them by the administrators and their school district. The researcher concluded, after analyzing the multi-dimensional viewpoints presented by the data that when teachers are satisfied with their school climate, they seem to be less likely to “rock the boat” and change their well-established educational practices and teaching methodologies.

The researcher also observed that the teacher candidates were more comfortable and candid in answering the interview questions then they were in answering the School Climate Survey questions. The interviews gave a deeper and perhaps more vivid understanding, adding richness and depth to the research study. The data elicited from the School Climate Survey revealed a lower overall score on
the perceptions of school climate, as depicted by the cooperating teachers, than those perceived by the teacher candidates of the same school climate. This factor might be attributed to a more realistic perspective of the same school climates gained through the life experiences of the cooperating teachers. It is the opinion of the researcher that this phenomenon could possibly be a result of the teacher candidates’ lack of time in their field placement, and thus were unable to clearly perceive the realities of the school climate.

The data also revealed that there was a moderate correlation between the researcher’s assessment of developmentally appropriate practice in the teacher candidates’ lesson plans, and that of their field supervisors. This slight difference may be the result of the perceived differences in educational epistemologies and past educational practices between the researcher and the supervisors regarding developmentally appropriate practice. However, these differences were not significant and probably indicate that teacher candidates were getting relatively consistent feedback regarding whether their lesson plans were DAP. What one cannot be sure of, is whether the teacher candidates received a consistent message from this researcher and their field supervisor about the importance of being DAP in their teaching planning and practices.

The following themes emerged from the data reduction process of interviews with the four teacher candidates that were selected on the basis of their lesson plan reflections. The themes that emerged are:

- The mathematic content of their field placement schools
- The issue of the child-centeredness of the program
• The assessment procedures used in their field place assignments.

Excerpts from the interviews drawn from what was perceived to be the least developmentally appropriate environments indicated that mathematic content was “scripted, boring, and repetitive.” The principal’s role was that of a program facilitator who overlooked and made sure the program was being implemented in the manner that was required by the school district. The teacher’s role in this environment was to “stay on task and follow the routine as outlined.” The child centeredness of these environments was perceived to either not exist or to be very low, and used very few hands-on materials, considered to be appropriate for the age and developmental level of the children. Two of the three candidates interviewed perceived only minimal opportunities for technology to be used, and little or no interaction between children or the use of small learning groups. The opposite findings of the above characteristics, as perceived by one teacher candidate, were found in the school environment that displayed the highest degree of developmentally appropriate practices. In this environment the mathematical content was perceived to be age appropriate, using many relevant real life applications that the children could experience and understand. The program was child-centered because it reflected the use of small group learning activities to solve mathematical problems, everyday use of centers in which children were encouraged to explore, investigate, and construct their own mathematical knowledge using hands-on materials, both on their own and through interactions with other children and adults. Assessment in this environment was achieved through authentic teacher observation.
Data gathered from the qualitative interviews, suggest that there is a continuum of practices being used in the teacher candidates’ field experiences. Each end of the continuum indicates practices that are extreme opposites of each other. The practices on each end of the continuum indicate either ultimate usage of developmentally appropriate practice (DAP) or the other extreme; the use of DIP defined as developmentally inappropriate practices that do not take into consideration the age, developmental, or individual needs of the children. Somewhere in the center of these two extremes on the continuum, an overlap of practices took place.

Implications

This mixed methods study focused on exploring whether there is a relationship between teacher candidates’ perceptions of school climate and their creation of developmentally appropriate practices. This section contains the implications of the research, based on this research study and on research literature from the field of education. The data in this research were derived through the use of two quantitative research tools (a lesson plan rubric created by the researcher and the NASSP School Climate Survey) and two qualitative tools (lesson plan reflections and interviews with four teacher candidates).

The research literature indicates that many early childhood theorists and researchers have historically identified the holistic educational needs of young children, and the importance of developmentally appropriate practice for K-3 children cannot be understated (Bredekamp & Copple, 1987; Kamaai, 1982; 1990; Piaget, 1976; Vygotsky, 1978, 1985). Research literature emanating from NAEYC supports the premise that the extent to which a school supports and nurtures collegiality, open
communication, and mutual trust greatly influences teachers’ willingness to risk trying new and different teaching strategies (Bredekamp & Rosengrant, 1992). The assumption was that school communities perceived as being supportive and having a high degree of teacher satisfaction would also support developmentally appropriate practices.

The question that this study addressed was “Is there a significant relationship between perceptions of school climate and the creation of developmentally appropriate lesson plans? The quantitative research from the School Climate Survey yielded findings that were opposite of the outcomes expected based on a review of the literature. In other words, schools that were perceived to exhibit the least DAP, were those that often measured the highest teacher satisfaction on the School Climate Survey. Thus, all 12 research hypotheses of the study were found to be nonsignificant. The important implications that emerged from this mixed methods study are stated in the following paragraphs.

The first implication is that teacher candidates were aware of the importance of DAP even though many of their lesson plans written for their field placements did not reflect developmentally appropriate mathematic content and strategies. This implication can be supported through triangulation of data obtained from the quantitative scoring of the two lesson plans by the researcher and the qualitative data (two lesson plan reflections and interviews during which students expressed awareness of practices that would not be considered DAP. It is further supported by the field supervisors scoring of the lesson plans using the rubric developed by the researcher.
They, too, were able to identify areas in the teacher candidates planning that were and were not developmentally appropriate.

The second implication of the study is that when teacher candidates are placed in field settings where theories of DAP are not used as teaching strategies, the environment is more powerful and overrides their training, even if they are well-trained in DAP. Again, the triangulation of the interview data and the data gleaned from the lesson plan assessment rubrics as scored by the researcher and the field supervisors, indicated that teacher candidates knew the theories of DAP, but did not always create DAP lesson plans. As suggested by Johnson, Dupuis, Musial, Hall, and Gollnick, (1996), when teacher candidates enter an established climate they are powerless to change established norms, and find themselves in the position of acquiring a personal identity along with learning the norms, values, behavior, and teaching skills appropriate to that position. Lesson plan analyses indicate that the teacher candidates acquired the accepted norms for planning instruction in their placements, as suggested by Johnson et al. (1996).

This leads to the third implication which was based on both the quantitative and qualitative research data of this study. That is, Departments of Early Childhood Education need to work closely with cooperating teachers and supervisors in order to better support consistent teaching theories and practices for teacher candidates in their field experiences. The goals and processes must be well-defined so that teacher candidates, cooperating teachers, principals, and the university supervisors know what is expected. Departments of Early Childhood Education should have clear guidelines for the expectations of those who mentor and supervise teacher candidates in their
field experiences. It is not uncommon that part-time faculty members serve as field supervisors and have the responsibility for identifying and evaluating the competencies of future teachers. However, they typically are “outside the loop” when it comes to making policy decisions regarding the epistemological stances of the Early Childhood Department of teacher education (Desjean-Perotta, 2006). Thus, when the Department of Early Childhood Education, the cooperating teachers and the supervisors do not always share a common view of appropriate practices, teacher candidates receive mixed messages about the importance of implementing age and developmentally appropriate practices.

The fourth implication was derived from the data emanating from the interview questionnaire used in this study which found that the selection of field placement schools for teacher candidates often did not meet the NAEYC guidelines for being developmentally appropriate learning environments. Therefore, whenever possible, selection must be done on the basis of congruency of teaching epistemologies. It is imperative that principals and cooperating teachers who mentor teacher candidates in their field experiences, as well as field supervisors, be philosophically aligned with the university’s guidelines, policies, and programmatic expectations for their Early Childhood Teacher Education programs. When goals and processes are explicit on what the university expects, all parties are better prepared to adequately support and mentor teacher candidates in their field experiences.

The fifth implication, derived primarily from the quantitative lesson plan data, is that being able to consistently identify what is and what is not DAP is helpful for training instructors, field supervisors, and teacher candidates in recognizing and
planning developmentally appropriate lessons. Successful Early Childhood Teacher Education programs need assessment procedures that can provide a consistent view and can be used in their early childhood courses to assess DAP. A major consideration should be given to the development and use of rubrics. The rubrics could be designed to be used as reflection devices for assessing DAP, and for the training of cooperating teachers and university supervisors in their use. The development of rubrics could also be used as didactic tools in the implementation of discussion and the facilitation of appropriate instruction in the teacher candidates’ methods classes. Finally, rubrics could be used as both formal and informal evaluation tools in evaluating teacher candidates lesson plans for DAP.

The final implication drawn from this study is that, if we really believe there are practices that are developmentally appropriate for young children, and if we believe that these practices enhance learning, then we need to work more effectively to share these beliefs with schools that have abandoned DAP in an effort to improve test results. Educators in universities need to address issues on how the training of teacher candidates should be achieved in order to better prepare them to bridge the gap between theory and practice (Bredekamp & Rosengrant, 1995). The outcomes of positive and effective training programs would produce teacher candidates who can be both capable and confident in their implementation of DAP teaching strategies, and who would be better prepared to rely on their training in “best practices” in the school environments in which they teach.
Recommendations and Suggestions for Further Research

This research study focused on the relationship between teacher candidates’ perceptions of school climate and their creation of developmentally appropriate practices. Given the outcomes of this exploratory research study, validity estimates, which included content, expert judge, and concurrent validity gathered during the study, found that the lesson plan rubric developed by the researcher measures what it purports to measure. The instrument measured developmentally appropriate lesson plan content in three critical areas of early childhood education: (a) teaching integrated and appropriate mathematic content, (b) teaching to enhance development and child-centered learning, and (c) appropriate authentic assessment procedures based on individual children’s learning progress, achieved through observation and work samples.

It is recommended that further research take place to give deeper insights in how teacher educators can better help teacher candidates to bridge the gap between theory and practice. This research can be done using different tactics such as:

- Doing a longitudinal study extending over several semesters to produce a higher number of participants, and to give better over-all insights into the research questions.

- Using lesson plan evaluators who are well established both in early childhood education and in the epistemology of both constructivism and developmentally appropriate practices.

- Extending the qualitative research by enlarging the number of interviews and, also using focus groups to gain a fuller, deeper, and richer
understanding as filtered through the eyes of teacher candidates of what is happening in their field experiences.

- Studying first year of teachers’ lesson plan content and their implementation of developmentally appropriate practices.

Summary

Chapter V presented a summary of this research study, including the statement of the purpose, a statement of the problem, and a statement of the procedures. The results of the quantitative analysis of the School Climate Survey found that none of the 12 hypothesized relationships were significant. Schools in which the lesson plans were found to exhibit the least DAP, were those that often measured the highest teacher satisfaction on the School Climate Survey. The results of the research findings were not found to be consistent with the literature as outlined by early childhood theorists, child development experts, and NAEYC. The data also revealed that there was moderate correlation between the researcher’s assessment of developmentally appropriate lesson content, and that of the teacher candidates’ field supervisors. This suggests that there possibly was some inconsistency between what the researcher and the supervisors judge to be DAP. This might be attributed to perceived differences in educational epistemologies as well as background differences in educational practices between the researcher and the supervisors regarding developmentally appropriate practice.

Validity estimates, including content and expert judge validity were gathered during the procedures and suggested that the lesson plan rubric does measure what it purports of measure. This is valuable information, indicating that the instrument can
again be utilized in further research and as a valid tool for preservice and inservice instruction about and assessment of developmentally appropriate practices.

The qualitative research consisted of interviews conducted with four of the teacher candidates, selected on the basis of their lesson plan reflections. Three of the four candidates’ excerpts that were quoted from the interviews presented the students “voice” as they described their field placements. Themes from the interview were identified through a data reduction process of the transcribed interviews. A number of important implications that emerged from the study were identified and the chapter concluded with recommendations and suggestions for further research.
REFERENCES


APPENDIX A

HUMAN SUBJECTS APPROVAL

May 30, 2006

Faith Wesolik
1680 Elm Drive
Avon, Ohio 44011

Ms. Wesolik:

The University of Akron’s Institutional Review Board for the Protection of Human Subjects (IRB) completed a review of the protocol entitled "The Relationship between School Climate and Creating Developmentally Appropriate Lesson Plans by Early Childhood Teacher Candidates: A Mixed Methods Study". The IRB application number assigned to this project is 20060413.

The protocol was reviewed on May 24, 2006 and qualified for exemption from continuing IRB review. The protocol represents minimal risk to subjects and matches the following federal category for exemption:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior; unless: (i) Information is recorded in such a manner that subjects can be identified, directly or through identifiers linked to subjects; AND (ii) any disclosure of responses outside the research could reasonably place the subjects at risk of civil or criminal liability or be damaging to subjects' financial standing, employability or reputation

Enclosed are copies of the informed consent documents, which the IRB has approved for your use in this research.

Annual continuation applications are not required for exempt projects. If you make any changes or modifications to the study's design or procedures that either increase the risk to subjects or include activities that do not fall within one of the categories exempted from the regulations, please contact the IRB first, to discuss whether or not a request for change must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to their implementation.

Please retain this letter for your files. If the research is being conducted for a master's thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

Sincerely,

Sharon AcWhorter
Interim Director

Cc: Carole Newman, Advisor
    Department Chair
    Phil Allen, IRB Chair
On May 18, 2006, The Human Subject Review Board of the North Eastern Ohio University involved in the study approved the research proposal that was submitted by Faith Wesolik, by indicating that the investigator could proceed with the research project.
APPENDIX B

CONSENT LETTERS AND FORMS FOR DATA COLLECTION

[Principal]

August 1, 2006

Principal/Superintendent
Elementary School
Street
City

Dear

I am researching the relationship between perceptions of School Climate and the implementation of Developmentally Appropriate Practice in Math Education for my dissertation entitled: The Relationship Between Teacher Candidates Perceptions of School Climate and Creating Developmentally Appropriate Lesson Plans: A Mixed Methods Study. I am completing my doctoral work through The University of Akron, and I need your help in collecting data.

I would like to give the attached copy of the NASSP School Climate Index to the cooperating teachers of the Teacher Candidates from my University who are participating in their Math Field Experience in your school. The survey is both voluntary and confidential, and will take approximately fifteen minutes to complete. I have enclosed a copy for your review.

I am attempting to ascertain whether a relationship exists between the teacher’s perception of school climate and early childhood teacher candidates who create developmentally appropriate math lesson plans and those who do not. Please be assured that all data collected is confidential, and voluntary.

If I have your permission to collect this data, I will make arrangements with the cooperating teacher(s) in your building for the distribution and collection of the survey. If you will graciously agree to allow me to gather this data, please sign the appropriate space below and return it to me as soon as possible. You can return the signed permission document in the envelope provided. Your help in this process would be greatly appreciated. I thank you in advance for your consideration of helping to add to the body of knowledge. I believe my work will help Teacher Candidates develop and teach math content that is developmentally appropriate, and also believe the results will help student achievement.

Sincerely,

Professional Instructor

Signed______________________________
As a student, you are invited to participate in a study conducted by your Instructor who is a Professional Instructor in Early Childhood Education, and a doctoral level student from the College of Education, Department of Curriculum and Instruction, University of Akron, Akron, Ohio.

The project focuses on perception of school climate and its relationship to the creation of developmentally appropriate lesson plans by teacher candidates in their field placements.

I will be collecting survey data from the elementary schools in which you are placed for your math methods field experience. I will be using a nationally developed standardized survey, the NASSP’s: Comprehensive Assessment of School Environments Teacher Satisfaction Survey. I along with your university supervisor, will also be using a math lesson plan assessment rubric to assess your math lesson plans. Additionally, I will choose several teacher candidates for a personal interview. The interviewees will be chosen to represent the various field placement areas in Northeastern Ohio.

If you agree to participate, you will be asked to complete a survey may be asked to participate in an interview at a convenient time and place for you. The lesson plans will coordinate with your regular math teaching schedule.

Participation in the project is completely voluntary. There will be no grade penalty if you do not participate. If you agree to participate, you may refuse to answer any questions and may withdraw from the study at any time without penalty.

Your confidentiality will be protected throughout the study. Any data obtained from you through the study will be kept confidential and will not be viewed by anyone but the researcher. All identifying information will be retained in a locked storage area. The data will be destroyed upon completion of the project.

There are no anticipated benefits or risks to you as a participant, aside from helping us have a better understanding of factors that could effect decisions regarding reforms which have the potential to improve effective instruction. By reading this Informed Consent Form, responding to the survey, participating in the lesson plan assessments, the possible interview, and signing this form, you are agreeing to participate in this study.

If you have any questions about the research project, you can call me at 440-337-7794 or my advisor, Dr. Carole Newman at 330-973-6465.

This research project has been reviewed and approved by both the University of Akron Institutional Review Board and the University of the Teacher Candidates’ Human Subjects Review Board for the Protection of Human Subjects. Questions about your rights as a research participant can be directed to Ms. Sharon McWhorter, Associate Director, Research Services, The University of Akron at 1-330-973-7666 or 1-888-232-8790. Thank you for your participation!

Professional Instructor
Signed___________________________________
Informed Consent Form

You are invited to participate in a study being conducted by Faith Wesolik, Professional Instructor in Early Childhood, and a doctoral level student from the College of Education, Department of Curriculum and Instruction, University of Akron, Akron, Ohio.

The project focuses on perception of school climate and its relationship to the creation of developmentally appropriate lessons plans by Teacher Candidates in their field placements.

I will be collecting survey data from thirteen elementary schools in Northeastern Ohio where Teacher Candidates from their University have been placed to fulfill required field experiences in the Math methods Block prior to student teaching. I will be using a nationally developed standardized survey, the NASSP’s: Comprehensive Assessment of School Environments Teacher Satisfaction Survey.

If you agree to participate, you will be asked to complete a survey at a convenient time and place for you. The survey should take approximately fifteen minutes

Participation in the project is completely voluntary. If you agree to participate, you may refuse to answer any questions and may withdraw from the study at any time without penalty.

You can be assured that all data and all information obtained from you through the survey will be kept confidential and will not be viewed by anyone but the researcher. All identifying information will be retained in a locked storage area. The data will be destroyed upon completion of the project.

There are no anticipated benefits or risks to you as a participant, aside from helping us have a better understanding of factors that could effect decisions regarding reforms which have the potential to improve effective instruction. By reading this Informed Consent Form, responding to the survey, and signing this form, you are agreeing to participate in this study.

If you have any questions about the research project, you can call me at 440-937-7794 or my advisor, Dr. Carole Newman at 330-972-6465.

This research project has been reviewed and approved by both the University of Akron Institutional Review Board and the Human Subjects Review Board of the University where the Teacher Candidates are students for the Protection of Human Subjects. Questions about your rights as a research participant can be directed to Ms. Sharon McWhorter, Associate Director, Research Services, The University of Akron at 1-330-972-7666 or 1-888-232-8790.

Thank you for your participation!

Professionnal Instructor                  Signed __________________________________
# APPENDIX C

## LESSON PLAN RUBRIC

### TEACHER CANDIDATE’S MATH LESSON PLAN ASSESSMENT RUBRIC

<table>
<thead>
<tr>
<th>TEACHER CANDIDATE’S MATHEMATIC LESSON PLANS REFLECT:</th>
<th>3 EXCEEDS (Exceptional)</th>
<th>2 MEETS (Adequate)</th>
<th>1 DOES NOT MEET (Unacceptable)</th>
<th>TOTAL SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAEYC Principle I Constructing and teaching appropriate and integrated mathematic content</td>
<td>Lesson plans demonstrate approximately 90 - 100 percent of the time:</td>
<td>Lesson plans demonstrate approximately 70 - 90 percent of the time:</td>
<td>Lesson plans demonstrate less than 70 percent of the time:</td>
<td></td>
</tr>
<tr>
<td>Lesson Plan demonstrates knowledge and use of appropriate Standards and GLIs</td>
<td>Exceptional Evidence of… Knowledge and skills demonstrated through frequent selection and use of the guidelines and standards of the professional organizations.</td>
<td>Adequate Evidence of… Knowledge and skills demonstrated through frequent selection and use of the guidelines and standards of the professional organizations.</td>
<td>Little Evidence of… Knowledge and skills demonstrated through frequent selection and use of the guidelines and standards of the professional organizations.</td>
<td></td>
</tr>
<tr>
<td>Developmentally Appropriate Content Standards and Grade-Level Indicators in Planning Mathematical Content of lesson plans.</td>
<td>Exceptional Evidence of… Knowledge about the continuum of development and learning in each content area.</td>
<td>Adequate Evidence of… Knowledge about the continuum of development and learning in each content area.</td>
<td>Little Evidence of … Knowledge about the continuum of development and learning in each content area.</td>
<td></td>
</tr>
<tr>
<td>NCATE Standard 1, NAEYC 4c NCTM/ODE STANDARDS; GLs; NCATE; NAEYC 4c, and guidelines.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

161
<table>
<thead>
<tr>
<th>TEACHER CANDIDATE’S MATH LESSON PLANS REFLECT DAP</th>
<th>3 EXCEEDS (Exceptional)</th>
<th>2 MEETS (Adequate)</th>
<th>1 DOES NOT MEET (Unacceptable)</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and use of core mathematical content:</td>
<td>Exceptional Evidence of teacher candidate’s personal knowledge and skills reflected in core mathematical content of the lesson plan.</td>
<td>Adequate Evidence of teacher candidate’s personal knowledge and skills reflected in core mathematical content of the lesson plan.</td>
<td>Little Evidence of teacher candidate’s personal knowledge and skills reflected in core mathematical content of the lesson plan.</td>
<td></td>
</tr>
<tr>
<td>NAEYC Principle I</td>
<td>Core mathematical content is appropriately sequenced across the K-3 age/stage span based on individual child’s skills and progress.</td>
<td>Core mathematics content that is sequenced across the K-3 age/stage span based on individual child’s skills and progress.</td>
<td>Core mathematics content that is sequenced across the K-3 age/stage span based on individual child’s skills and progress.</td>
<td></td>
</tr>
<tr>
<td>NAEYC 4B, 4C</td>
<td>Lesson plans indicate approximately 90 percent of the time</td>
<td>Lesson plans indicate approximately 70 percent of the time</td>
<td>Lesson plans demonstrate less than 70 percent of the time</td>
<td></td>
</tr>
<tr>
<td>NCTM/ODE Standards &amp; GLIs. NCAE Standard 1, NAEYC 4c</td>
<td>Exceptional Evidence of … Mathematical reasoning skills used to enhance the students’ mathematical thinking and development of age-appropriate skills.</td>
<td>Adequate Evidence of… Mathematical reasoning skills used to enhance the students’ mathematical thinking and development of age-appropriate skills.</td>
<td>Little Evidence of … Mathematical reasoning skills used to enhance the students’ mathematical thinking and development of age-appropriate skills.</td>
<td></td>
</tr>
<tr>
<td>Demonstrates and utilizes Knowledge of Child Development Theories apply to practice.</td>
<td>Evidence of Exceptional… Knowledge and understanding of child development theories and their application to facilitate growth in skills, strategies, and concepts for mathematical thinking.</td>
<td>Evidence of Adequate… Knowledge and understanding of child development theories and their application to facilitate growth in skills, strategies, and concepts for mathematical thinking.</td>
<td>Little Evidence of … Knowledge and understanding of child development theories and their application to facilitate growth in skills, strategies, and concepts for mathematical thinking.</td>
<td></td>
</tr>
</tbody>
</table>

162
<table>
<thead>
<tr>
<th>Implements DAP instructional principles and process standards</th>
<th>Exceptional Evidence of... Instructional planning &amp; use of a wide variety of instructional approaches and technique.</th>
<th>Adequate Evidence of... Instructional planning &amp; use of a wide variety in instructional approaches and techniques.</th>
<th>Little Evidence of... Instructional planning &amp; use of a wide variety in instructional approaches and techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td>To facilitate mathematical reasoning and problem solving skills which to enhance development and child-centered learning</td>
<td>Exceptional Evidence of... Building mathematical reasoning through using the tools of inquiry, exploration of environment, and problem solving skills.</td>
<td>Adequate Evidence of... Building of mathematical reasoning through using the tools of inquiry, exploration of environment, and problem solving skills.</td>
<td>Little Evidence of... Building of mathematical reasoning through using the tools of inquiry, exploration of environment, and problem solving skills.</td>
</tr>
<tr>
<td>Demonstrates scaffolding for optimal student learning</td>
<td>Exceptional Evidence... That the TC scaffolds learning and functions as a facilitator rather than through direct instruction</td>
<td>Adequate Evidence... That the TC scaffolds learning and functions as a facilitator rather than through direct instruction</td>
<td>Little Evidence... That the TC scaffolds learning and functions as a facilitator rather than through direct instruction.</td>
</tr>
<tr>
<td>Utilizes teaching strategies that adapt to individual learning levels rather than competition between students</td>
<td>Evidence of Exceptional... Skills development in young children that adapt to the individual children’s level of competence rather than competing with each other to develop fluency skills.</td>
<td>Evidence of adequate... Skills development in young children that adapt to the individual children’s level of competence rather than competing with each other to develop fluency skills.</td>
<td>Little Evidence... Skills development in young children that adapt to the individual children’s level of competence rather than competing with each other to develop fluency skills.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEACHER CANDIDATE’S MATH LESSON PLANS REFLECT DAP</th>
<th>3 EXCEEDS (Exceptional)</th>
<th>2 MEETS (Adequate)</th>
<th>1 DOES NOT MEET (Unacceptable)</th>
<th>TOTAL SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAEYC Principle II (continued) Teaching to enhance development and child-centered learning</td>
<td>Lesson plans indicate, approximately 90-100 percent of the time</td>
<td>Lesson plans indicate approximately 70-90 percent of the time</td>
<td>Lesson plans demonstrate less than 70 percent of the time</td>
<td></td>
</tr>
<tr>
<td>Knowledge of children’s holistic ways of learning through curricular integration of content.</td>
<td>Exceptional Evidence of... The implementation of an integrated approach for mathematical instruction using other curricular areas to enhance mathematical content rather than only using a subject-specific approach.</td>
<td>Adequate Evidence of... The implementation of an integrated approach for math instruction using other curricular areas to enhance mathematical content rather than only using a subject-specific approach.</td>
<td>Little Evidence of... The implementation of an integrated approach for math instruction using other curricular areas to enhance mathematical content rather than only using a subject-specific approach.</td>
<td></td>
</tr>
<tr>
<td>Knowledge of children’s holistic ways of learning through exploration and interaction with relevant materials.</td>
<td>Exceptional Evidence of...</td>
<td>Exceptional Evidence of...</td>
<td>Exceptional Evidence of...</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>That children are encouraged to construct their own knowledge by exploring, and interacting with materials rather than using practice worksheets and rote memorization.</td>
<td>Adequate Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
</tr>
<tr>
<td>That children are encouraged to construct their own knowledge by exploring, and interacting with materials rather than using practice worksheets and rote memorization.</td>
<td>That children are encouraged to construct their own knowledge by exploring, and interacting with materials rather than using practice worksheets and rote memorization.</td>
<td>That children are encouraged to construct their own knowledge by exploring, and interacting with materials rather than using practice worksheets and rote memorization.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of children’s holistic ways of learning through student collaboration by using small groups.</td>
<td>Exceptional Evidence of...</td>
<td>Exceptional Evidence of...</td>
<td>Exceptional Evidence of...</td>
<td></td>
</tr>
<tr>
<td>Interaction with peers rather than working alone.</td>
<td>Adequate Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
</tr>
<tr>
<td>Thorough knowledge and ability to use a variety of teaching hands-on manipulatives and instructional materials.</td>
<td>The use of teaching materials and hands-on manipulatives for instruction and concept development of mathematical content.</td>
<td>The use of teaching materials and hands-on manipulatives for instruction and concept development of mathematical content.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge and use of DAP teaching materials</td>
<td>Exceptional Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
</tr>
<tr>
<td>Exceptional Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thorough knowledge and ability to use a variety of teaching hands-on manipulatives and instructional materials.</td>
<td>Thorough knowledge and ability to use a variety of hands-on manipulatives and instructional materials.</td>
<td>Thorough knowledge and ability to use a variety of hands-on manipulatives and instructional materials.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEACHER CANDIDATE’S MATH LESSON PLANS REFLECT DAP</td>
<td>Exceptional Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
</tr>
<tr>
<td>Use of materials and hands-on manipulatives for instruction of and concept development of mathematical content.</td>
<td>The use of teaching materials and hands-on manipulatives for instruction and concept development of mathematical content.</td>
<td>The use of teaching materials and hands-on manipulatives for instruction and concept development of mathematical content.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceptional Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson plans indicate approximately 90-100 percent of the time</td>
<td>Lesson plans indicate approximately 70-90 percent of the time</td>
<td>Lesson plans demonstrate less than 70 percent of the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of technology and hands-on manipulatives for instruction.</td>
<td>Exceptional Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
</tr>
<tr>
<td>Exceptional Evidence of...</td>
<td>Adequate Evidence of...</td>
<td>Little Evidence of...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of technology and hands-on manipulatives for instruction to enhance learning.</td>
<td>The use of technology and hands-on manipulatives for instruction to enhance learning.</td>
<td>The use of technology and hands-on manipulatives for instruction to enhance learning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principle III</td>
<td>Lesson plans indicate approximately 90-100 percent of the time</td>
<td>Lesson plans indicate approximately 70-90 percent of the time</td>
<td>Lesson plans demonstrate less than 70 percent of the time</td>
<td></td>
</tr>
<tr>
<td>Teachers assess each child’s learning progress through written records of observation and work samples</td>
<td>Lesson plans indicate approximately 90-100 percent of the time</td>
<td>Lesson plans indicate approximately 70-90 percent of the time</td>
<td>Lesson plans demonstrate less than 70 percent of the time</td>
<td></td>
</tr>
<tr>
<td>Use of DAP Assessment techniques</td>
<td>Exceptional Evidence of … Demonstrating the assessment of children’s learning and development on a daily basis.</td>
<td>Adequate Evidence of … Demonstrating the assessment of children’s learning and development on a daily basis.</td>
<td>Little Evidence of … Demonstrating the assessment of children’s learning and development on a daily basis.</td>
<td></td>
</tr>
<tr>
<td>Use of assessment techniques that are natural and an ongoing part of learning.</td>
<td>Exceptional Evidence of … The use of observation and portfolios as an ongoing part of learning rather than timed tests.</td>
<td>Adequate Evidence of … The use of observation and portfolios as an ongoing part of learning rather than timed tests.</td>
<td>Little Evidence of … The use of observation and portfolios as an ongoing part of learning rather than timed tests.</td>
<td></td>
</tr>
<tr>
<td>Each child’s progress is compared primarily to his or her own previous performance and to standard for their grade level rather than compared with other children, as though all children have uniform development.</td>
<td>Exceptional Evidence That assessment of each child’s progress is compared primarily to his or her own previous performance and to standard for their grade level rather than compared with other children, as though all children have uniform development.</td>
<td>Adequate Evidence That assessment of each child’s progress is compared primarily to his or her own previous performance and to standard for their grade level rather than compared with other, as though all children have uniform development.</td>
<td>Little Evidence That assessment of each child’s progress is compared primarily to his or her own previous performance and to standard for their grade level rather than compared with other children, as though all children have uniform development.</td>
<td></td>
</tr>
</tbody>
</table>

Sources: 1. NAEYC 4b Teaching, 2. NAEYC 4c Developmentally Appropriate Practice, 3. NAEYC Assessment guidelines, 4. NAEYC 1997 Teaching/Learning Principles, 5. NCATE Standard 1, 6. Ohio Department of Education Academic Content Standards, Benchmarks, and GLIs., and 7. NCTM/ODE Standards for Learning

Abbreviations:
- TC = Teacher Candidate
- DAP = Developmentally Appropriate Practice
- NAEYC = National Association for the Education of Young Children
- NCATE = National Council FOR Accreditation of Teacher Education
- ODE = Ohio Department of Education
- NCTM = National Council of Teachers of Mathematics
APPENDIX D

LESSON PLAN FORMAT

Lesson Plan Form (B)

Name of Instructor: ___________________  Grade Level: __________  Subject: ___________________

Unit Title: ___________________________  Time Length: __________  Date of Lesson: ___________

1. **Learning Goal/Objective** — a. What will the pupil be able to do as a result of the lesson? State your objective from the course of study or DSE Academic Content Standards; b. Prior knowledge/skills required by students; c. Connection — how does the lesson objective connect with previous and future lessons/learning?

   The student will ...

2. **Assessment (Pre & Post)** — How and when will you evaluate the objective and student learning? Attach a copy of the assessment/evaluation instrument you will use.

   Type of assessment: ___________________  When: ___________________

3. **Methods/Strategies** — a. What teaching methods will you use (e.g. teacher presentation, demonstration, simulation, role-playing, peer teaching, laboratory activity, etc.); Type of learning: inductive/inquiry, questioning or student discovery or deductive/direct modeling?; b. Accommodations — How will you accommodate for student differences?; c. Learning climate/environment — How might you establish a safe and effective environment?

4. **Grouping** — Large/small group, cooperative groups (pairs, threes, etc.); Is this typical?

5. **Equipment and Material** — What instructional equipment and materials are required to help students reach the objectives (e.g. textbook, lab equipment, technology, activity sheet, CD-ROM, Web Site, etc.)?

Over
6. Instructional Delivery

a. INTRODUCTION (e.g. motivate, elicit student interest, review past learning, background in topic; Communicate expectations, procedures required for the lesson.)

b. Activity: What activities have you planned? What will you do? What will the students do? (e.g. small steps, examples, clues, feedback/checking for understanding, etc.)

The Instructor will:                      The students will:                      TIME ALLOTTED

---

c. Conclusion/Summary - Review; Students demonstrate achievement; Connection with future lesson.

d. Practice and/or Assessment - Guided, independent; Help with initial steps and monitor; Corrections, re-teach if necessary.

---

7. Teacher Reflection/Self-Evaluation - Answer the following questions on a separate paper: What pleased you? What would you do differently next time? Re-teaching or Intervention required? Did the assessment instrument measure intended student learning? If no, what are some alternatives?

Attachment(s):
APPENDIX E

QUANTITATIVE POST HOC TABLES

Post Hoc 1

<table>
<thead>
<tr>
<th></th>
<th>Factor_1</th>
<th>Factor_2</th>
<th>Factor_3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Researcher Total LP Score</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.845</td>
<td>0.591</td>
<td>0.268</td>
</tr>
<tr>
<td>p</td>
<td>0.000</td>
<td>0.001</td>
<td>0.159</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td><strong>Supervisor Total LP Score</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.365</td>
<td>0.475</td>
<td>0.289</td>
</tr>
<tr>
<td>p</td>
<td>0.051</td>
<td>0.009</td>
<td>0.129</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td><strong>Combined Total LP Score</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.526</td>
<td>0.599</td>
<td>0.313</td>
</tr>
<tr>
<td>p</td>
<td>0.000</td>
<td>0.000</td>
<td>0.098</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td><strong>Content Researcher</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.155</td>
<td>0.688</td>
<td>0.115</td>
</tr>
<tr>
<td>p</td>
<td>0.421</td>
<td>0.000</td>
<td>0.552</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td><strong>Content Supervisor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.350</td>
<td>0.843</td>
<td>0.162</td>
</tr>
<tr>
<td>p</td>
<td>0.063</td>
<td>0.000</td>
<td>0.400</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td><strong>Content Combined</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.906</td>
<td>0.434</td>
<td>0.340</td>
</tr>
<tr>
<td>p</td>
<td>0.000</td>
<td>0.019</td>
<td>0.071</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td><strong>Child Centered Researcher</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.417</td>
<td>0.398</td>
<td>0.349</td>
</tr>
<tr>
<td>p</td>
<td>0.024</td>
<td>0.033</td>
<td>0.063</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td><strong>Child Centered Supervisor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>0.759</td>
<td>0.468</td>
<td>0.387</td>
</tr>
<tr>
<td>p</td>
<td>0.000</td>
<td>0.010</td>
<td>0.038</td>
</tr>
<tr>
<td>N</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
</tbody>
</table>

*(table continues)*
<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>p</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Researcher</td>
<td>0.709</td>
<td>0.000</td>
<td>0.664</td>
<td>0.000</td>
<td>-0.020</td>
</tr>
<tr>
<td></td>
<td>0.338</td>
<td>0.073</td>
<td>0.343</td>
<td>0.069</td>
<td>0.223</td>
</tr>
<tr>
<td>Assessment Supervisor</td>
<td>0.567</td>
<td>0.001</td>
<td>0.548</td>
<td>0.002</td>
<td>0.141</td>
</tr>
<tr>
<td>Assessment Combined</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The above table adds evidence in supports of construct validity of the rubric for assessing the lesson plans.

### Post Hoc 2

<table>
<thead>
<tr>
<th></th>
<th>Teacher Candidates School Climate Survey</th>
<th>Teacher School Climate Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>p</td>
</tr>
<tr>
<td>Factor_1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.099</td>
<td>0.609</td>
</tr>
<tr>
<td>Factor_2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.207</td>
<td>0.280</td>
</tr>
<tr>
<td>Factor_3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.154</td>
<td>0.425</td>
</tr>
</tbody>
</table>

*Note.* There is no significant relationship between the school climate surveys and the empirically derived factors of the Rubric.
APPENDIX F

INTERVIEW QUESTIONS

1. Describe the mathematic content used in the school where you are doing your field experience?

2. How closely does the school administration require adherence to the selected math content?

3. How closely does your Cooperating teacher adhere to the selected mathematic content of the curriculum?

4. To what extent do your lesson plans include the use of technology to enrich the mathematic content?

5. To what extent do your lesson plans permit young students to construct mathematical knowledge through interacting with their physical and social environment?

6. Describe how the mathematic content helps young students to practice their mathematical skills?

7. Describe how your lesson plans provide an opportunity for exploration and problem solving, in order to solve mathematical problems?

8. How do your lesson plans provide an opportunity for students to apply their understanding of mathematical concepts using real-life experiences?

9. How do your lesson plans provide activities to help students reinforce learned mathematical concepts and skills?

10. Describe how materials and manipulatives are used in the math centers of the classroom where you are currently doing your field placement?

11. What evidence do you have that your Cooperating Teacher is using DAP?
12. In what ways do you perceive the mathematical content to be developmentally appropriate?
APPENDIX G

TRANSCRIPTION OF INTERVIEWS

CANDIDATE #1

INTERVIEWER: Hi. How are you this morning?

CANDIDATE #1: Fine.

INTERVIEWER: Can you tell me what grade are you teaching currently in your field experience?

CANDIDATE #1: Third grade.

INTERVIEWER: All right, I have some questions I’m going to ask you and you can elaborate as fully as you want on them and that would be fine. We’re just trying to get some information on the tape recorder so feel free to elaborate. Everything will be kept confidential. All right?

INTERVIEWER: Question 1: Describe the mathematic content used in the school where you are doing your field experience?

CANDIDATE #1: It’s Saxon Math. It’s very scripted. The children have had it since they were in Kindergarten and they are so bored with it. They ask every morning, “Can we skip it?”

INTERVIEWER: You’re kidding?

CANDIDATE #1: They really don’t like it. They’re so bored with it and it’s so hard to follow the script when you first get that. You have no idea how far you should actually go with the script and then everything is so repetitive it’s too long. It’s too boring.

INTERVIEWER: So, you’re saying that you have trouble with the script as you try to teach this?
CANDIDATE #1: Yes. It’s so scripted that there is no room for any kind of creativity for the teacher, for the students. You really can’t change much of anything and the children already know exactly what’s coming and they tell you. They will tell you, “I’m bored, do we really have to do this?”

INTERVIEWER: Oh, I’m sad to hear that. That certainly would be a problem for a teacher candidate trying to do their very best and be creative.

INTERVIEWER: Question 2: How closely does the school administration require adherence to the selected mathematic content?

CANDIDATE #1: I’m not really sure what their policy is but I know that the principal does walk around and he makes sure that everybody’s within one or two lessons of each other so everybody has to be approximately at the same level for whatever your grade level is.

INTERVIEWER: Okay, so I am assuming then in your school that the school administration would be the principal and he is requiring that everybody kinda stays on track by teaching about the same thing. When he comes in does he expect that you’re gonna be using the script?

CANDIDATE #1: Yes, he does and he expects that if he stands over your shoulder that he can follow right along with that script with you.

INTERVIEWER: That’s very interesting so I would say then that he does require you to follow and adhere to that selected mathematic content.

INTERVIEWER: Question 3: How closely does your Cooperating Teacher adhere to the selected mathematic content of the curriculum?

CANDIDATE #1: Daily. She does it daily and on the days that I’m there she’s helping me to get used to the scripted policies of the Math program I’ve been taking over for the math meeting which is doing their calendar and their money counting and their match sentence and stuff like that so I’ve been doing that. But it takes me forever because it’s so hard to get used to the script.

INTERVIEWER: Okay now when you say “Math Meeting” does that take place in the morning, is it an ongoing thing all day long or is it just a time frame that is called Math?
CANDIDATE #1: No, the Math Meeting is what starts out the Math so it’s your morning ritual. The children, when they come in usually do their DLR, which is their Directed Language Review. And then after fifteen minutes we go into Math. We start out with the Math Meeting, with the Calendar, and then there are several steps to it and then an assessment and then we go into the lesson and then there’s a guided practice review at the end and they have homework with it every single night.

INTERVIEWER: So how long does that take to get through all of that? You mentioned that it was a long process.

CANDIDATE #1: If you’re not used to the script and you have to sit there and think about what comes next it takes almost two hours to get through it.

INTERVIEWER: For third grade?

CANDIDATE #1: For third grade.

INTERVIEWER: That’s a long time, I agree.

INTERVIEWER: Question 4 To what extent do your lesson plans include the use of technology to enrich the mathematic content?

CANDIDATE #1: Well right now their computers have not been unpacked and set up so currently there is nothing in the realm of technology being used except for the overhead.

INTERVIEWER: So the overhead is basically what you’re using in terms of technology. Would you guess that if the computers were unpacked you’d be using them with the Mathematic Program?

CANDIDATE #1: Probably not because they do not have any websites or web pages that are listed in their script, so I would assume that computers would not be used. It’s basically just the overhead and the chalkboard and lots and lots of student worksheets.

INTERVIEWER: So a lot of worksheets? How interesting.

INTERVIEWER: Question 5: To what extent do your lesson plans permit young students to construct mathematical knowledge through interacting with their physical and social environment?
INTERVIEWER: Now when we talk about construction we’re meaning that they can work with materials, the hands-on materials and work together in groups. That’s exactly what that question is asking you.

CANDIDATE #1: Well, right now my CT, because they’ve just moved into a new building and it’s the first time she’s also teaching third grade, she has not located all of the manipulative materials so when I teach the lessons, what I’ve been doing is having the children one at a time come up to the overhead and help do things on their generated work sheets so that everybody gets the same answer and everybody knows the same process of how to do the different addition or subtraction or the fractions or the temperature measurements, whatever we’re doing. I try to have as many children as possible be able to come up to the overhead.

INTERVIEWER: So in other words you’re kind of teaching the whole class at one time using a few manipulatives, if you have them available?

CANDIDATE #1: Yes, but they don’t always have everything available; at least not when I’m there. If there are other materials that are being used, they’re being used on the days that I’m not there.

INTERVIEWER: Okay, you say at third grade do you think that there are perhaps there are fewer manipulatives. Do you use Centers at all in your program?

CANDIDATE #1: No. It’s always whole group instruction and it’s directed at the entire classroom. Everybody does it together. Everybody works on the same problem at the same time. Everybody takes the same timed tests. Everybody follows through with the same scripted programs on a daily basis.

INTERVIEWER: So do they have timed tests everyday?

CANDIDATE #1: I don’t know if they have the timed tests everyday, but I know there’s at least twice a week that they do them.

INTERVIEWER: Now when you talk about timed tests, are you talking about them doing them orally or written?

CANDIDATE #1: They’re written. We have a stop watch and they get one minute and then when that one minute is up, they get one more minute, but they have to change to a colored pencil or a pen or a crayon to finish up their work so that way we can see where they
switched over after one minute. It’s easier to see what they knew in the first minute and what they knew in the second minute and then when that’s finished then we go over every answer on the page and every child gets to read off an answer because there’s that many questions that’ll cover the class of twenty-four.

**INTERVIEWER:** Are they graded on this?

**CANDIDATE #1:** I don’t know if they’re graded. I know that my CT collects the papers, but I don’t know if they’re graded and if they are, I don’t know how they’re used.

**INTERVIEWER:** That’s interesting. Let’s go on to the next question.

**INTERVIEWER:** **Question 6:** Describe how the mathematic content helps young students to practice their mathematical skills.

**CANDIDATE #1:** For our Math program, I think it’s basically just repeating, and repeating, and repeating and repeating.

**INTERVIEWER:** All right, so you’re saying a lot of repetition as basically how they’re learning their skills? Do you feel that they understand the process as they do this or is it more an automatic Rote Memory thing?

**CANDIDATE #1:** It’s probably more of an automatic Rote Memory because they have to do it everyday and they have to do it.

**INTERVIEWER:** No choice?

**CANDIDATE #1:** Nope. No choices.

**INTERVIEWER:** **Question 7:** Describe how your lesson plans provide an opportunity for exploration and problem solving in order to solve math problems. I think you’ve kind of covered this, but if you’d like to elaborate on a little more.

**CANDIDATE #1:** Well, if I could add or subtract to our Math program and have a little bit of creative freedom with it, I think it would be more fun for the children. They would probably learn things other than just being told this is what it is so that they would have a better understanding of what it is they’re supposed to be learning.

**INTERVIEWER:** So you don’t have that lead way?
CANDIDATE #1: No.

INTERVIEWER: Do you think that’s because you are there as a teacher candidate or do you think they follow this daily?

CANDIDATE #1: No. I think it’s because they have to follow the scripted lesson daily.

INTERVIEWER: I can see what you’re saying. So, there isn’t much room for exploration and problem solving on their own?

CANDIDATE #1: No, and they really don’t have a whole lot of hands on things either unless there’s a lesson that comes with some type of a manipulative that’s supposed to be passed out to each student. Generally, on a daily basis, it’s just worksheets.

INTERVIEWER: Question 8: How do your lesson plans provide an opportunity for students to apply their understanding of mathematical concepts using real-life experiences?

CANDIDATE #1: With Saxon Math you really can’t do a whole lot outside of their script because if the principal comes in and you’re not doing what’s on the script, he’ll tell you “Stick to the script.”

INTERVIEWER: He’ll absolutely point that out then?

CANDIDATE #1: Yes. He did that with my CT one day. I think it was one of the first days I was there. He told her “You’re a little behind, you have to get going with this script.”

INTERVIEWER: That’s interesting. So you’re not really applying what you’re learning in Mathematics then to everyday life experiences like playing store, or you know, some way they can use it in real life?

CANDIDATE #1: No. But when I did the lesson about thermometers, I incorporated Science and we made a thermometer in there so that they could watch liquid move up a straw so that they had a better understanding of what a thermometer was instead of just writing down temperatures on an overhead.

INTERVIEWER: So you integrated Science into it? Well good for you. That was positive. Do you think the students enjoyed seeing that?
CANDIDATE #1: Oh yeah. They asked if we would do it again. They said, “Instead of doing the Math program, can we just do this all the time?” I said, “Well, no, we still have to do our Math.”

INTERVIEWER: So, you have to follow that. Of course, being in your position you have no choices, you’re there to learn.

Question 9 has been skipped

INTERVIEWER: Question 10: Describe how the materials and manipulatives are used in the math Centers of the classroom where you are currently doing your field placement? Now I kind of got the impression they weren’t using Centers, did I understand that correctly?

CANDIDATE #1: Yes, they don’t use Centers, but the children do have play money that they use to count money every morning. That’s part of their Math Meeting.

INTERVIEWER: So they do that every morning with the money? Do you feel they understand that because of the manipulatives?

CANDIDATE #1: I think some children understand that a dime is worth ten-cents and some children understood that the nickel is worth five-cents and then they can add those together. But there are some children that it really doesn’t mean anything to them yet. I don’t think they even understand the concept of the money. They’re just repeating what everybody around them is repeating because they have to do it together as a large group.

INTERVIEWER: So there isn’t that independent thought process that would help you evaluate. Is there ever a time when you can individualize if you see that a child is struggling with a concept?

CANDIDATE #1: No. What they do is they do individual assessment tests if it seems like somebody is lagging behind. They want to figure out how far behind they are or what point they started falling behind. Then, usually, it’d be my job to take the child out into the hallway and do an individual assessment with them.

INTERVIEWER: An assessment rather than re-teaching or elaborating on the concept, you’re doing another assessment?

CANDIDATE #1: Yes. Doing another assessment. If there isn’t more than half the class, then we’ll go back and re-teach, but so far that hasn’t
happened. I’ll go out into the hallway with two or three children and help them read through when they have to do their math tests and things because they don’t understand the way the questions are worded so I have to read the questions to them and wait to see if they have any questions about that. Then I have to explain what it is they are supposed to be answering on their test but I’m not allowed to give them the answers, obviously, because it’s their test.

**INTERVIEWER:** It’s their test. So if a child is having difficulty with reading and these tests are so scripted, they’re going to have difficulty with the mathematics as well, is that right?

**CANDIDATE #1:** Yes. We have two children that are in Title I Reading. It’s their reading comprehension that they have problems with so when they’re reading these story questions and things like that pertaining to the date and being able to count how many months in a year. Like if you’re saying two months and three days from today, what date is it – they don’t quite understand that concept so somebody has to tell them that so that they can hear it and be able to think about because reading it, they’ll tell you straight up that they don’t get this.

**INTERVIEWER:** All right because often times what will happen with a child that’s having some reading or word processing problems. They don’t understand it and that could be a problem then with the scripted math lesson.

**INTERVIEWER:** Question 11: What evidence do you have that you Cooperating Teacher is using DAP?

**CANDIDATE #1:** Saxon Math for third grade was designed for third grade and that’s what you follow. That’s all there is to it.

**INTERVIEWER:** Do you feel she understands Developmentally Appropriate Practice or that this is something that is imposed on her?

**CANDIDATE #1:** I think it’s imposed on her because she came from a kindergarten classroom and this is the first time she’s teaching third grade and she seems as dissatisfied with this whole scripted program as I do. Coming from a background of being able to write all of my own lesson plans and being as creative as I want to be to help the children learn, this really is a wet blanket on a fire. It just puts it right out.
INTERVIEWER: Do you at all use literature with this to integrate literature helping them see how science and literature and math and a thematic approach helps them to learn holistically?

CANDIDATE #1: Nope. You get your Saxon Math Script and that’s what you get.

INTERVIEWER: So that’s the whole program. Well, we have one more question.

INTERVIEWER: **Question 12:** In what ways do you perceive the math content to be developmentally appropriate?

CANDIDATE #1: Well, I think that the concepts behind it are appropriate for third grade because they’re adding, subtracting, and they’re beginning to do simple division with fractions and things like that. Finding one-third, one-fourth, one-half, and stuff like that so I really think that’s all developmentally appropriate. It’s just that it could definitely be put into a better format.

INTERVIEWER: So it’s the format and they way the content has to be presented to the students that is a problem, as opposed to letting them explore and construct some of that understanding on their own using the hands-on materials. Did I understand that correctly?

CANDIDATE #1: Yes. I really think that if they were allowed to touch things and manipulate things and be able to work as little groups that they would be able to understand all of this better. IF they actually had the geometric shapes then they would know the difference between a pentagon and a hexagon, rather than something that’s been drawn on the chalkboard or placed on the overhead, because they’re all asking about what those are. I did teach a geometry lesson and they don’t remember those shapes because they never got to touch them.

INTERVIEWER: And work with them in a different way. Well, I have to commend you. You have really helped us understand the content in the material you’re teaching currently as an experience in your program, your field experience. You’ve articulated it very well and I thank you for your help. This is going to be meaningful for my research.
CANDIDATE #2

INTERVIEWER: Candidate #2. Hi! How are you doing?

CANDIDATE #2: Good.

INTERVIEWER: I’m going to ask you some questions; answer honestly and as fully as you want. If you want to elaborate more, that’ll be fine. I’ll kind of point this at you because that’s where the microphone is okay?

INTERVIEWER: Question 1: Describe the mathematic content in the school where you are doing your field experience? That can be the curriculum that the math content is coming from or whatever.

CANDIDATE #2: Usually they work using a workbook. They don’t really have a textbook, I don’t think. They use a workbook and they usually do a unit every week and they actually have to split their time for math. They do a half an hour in the morning and fifteen to twenty minutes in the afternoon just because that’s how they did their block.

INTERVIEWER: And what grade level is this?

CANDIDATE #2: Grade one

INTERVIEWER: Grade one? Interesting. Okay now you aren’t familiar with the textbook that you’re using?

CANDIDATE #2: No, I’m not familiar.

INTERVIEWER: Okay, so you don’t know what that is. But it sounds like they kind of divide it between the morning and the afternoon so that the kids are not over loaded with one subject. What comes after math in the morning?

CANDIDATE #2: Actually lunch. They do math from 11:00 to 11:30 and then in the afternoon they do it for the last fifteen to twenty minutes of the school day.

INTERVIEWER: Okay. So it’s not overwhelming to the children?

CANDIDATE #2: No.
**INTERVIEWER:** **Question 2:** How closely does the school administration require adherence to the selected mathematic content? In other words, the principal or the superintendent, or whomever. Where’s that math content emanating from and how closely do they require the teacher and you to follow it?

**CANDIDATE #2:** Well, I think that they meet regularly and go over what their lessons are going to be for the following week. I think that a lot of the teachers, there are 12, actually, there’s 12 third-grade teachers, so I want to say that four of the teachers stay on the same path and then they kind of partner-up in every subject, not just Math, but for Science they do the same lessons. They’re kind of like a team; they work together so for Math, I know that they kind of like to keep on track and the same pace as each other. I know that the principal has met with them to make sure that they keep on track.

**INTERVIEWER:** So does he come into the classroom and check whether they’re on track? How is that handled?

**CANDIDATE #2:** It’s actually a woman, and I don’t believe I’ve ever seen her in a classroom during teaching.

**INTERVIEWER:** So, it’s a woman principal? I’m sorry, I should have asked.

**CANDIDATE #2:** I haven’t seen her; I just know that they talk about it.

**INTERVIEWER:** Well, so they have a team cooperative situation where they plan and try to stay kind of current and together, is that right?

**CANDIDATE #2:** It seems to me that’s what they do.

**INTERVIEWER:** Well, you’re observing and this is your perception. I realize that you’re a teacher candidate right now and we don’t always get the fullest direction.

**INTERVIEWER:** **Question 3:** How closely does your Cooperating Teacher adhere to the selected mathematic content of the curriculum?

**CANDIDATE #2:** She stays on track. She’s really with it. She teaches really well and she uses the board a lot and she uses hands-on. She seems to keep on track and on pace.

**INTERVIEWER:** So she uses a lot of hands-on materials?
CANDIDATE #2: Yes. She uses the rubber band like what we used in our class, I don’t remember what they’re called. She brings them to the carpet and actually does a lesson right on the white board and calls children up the white board and writes the answers on the white board so she keeps them all involved, which is nice.

INTERVIEWER: Well, that is nice and they get to actually use the materials themselves then?

CANDIDATE #2: Yes, it keeps them active and they also use it, as well.

INTERVIEWER: Well, that’s how they develop their understanding by interacting with the materials, right?

CANDIDATE #2: Right. They seem to enjoy it.

INTERVIEWER: Question 4: To what extent do your lesson plans include the use of the technology to enrich the mathematic content?

CANDIDATE #2: The technology I’ve seen used, pretty much everyday, is an overhead. She uses that and I use that. I’ve taught one math lesson so far and I’ve used the overhead. I haven’t used the computer with it. Oh, and calculators I’ve seen them use, and I think that’s it.

INTERVIEWER: So you’re using the overhead projector and calculators, but you haven’t seen computers in use? Do you have computers in your classroom?

CANDIDATE #2: Well, we have two computers in the classroom and right across the hall is the computer lab in which every student can get their own computer, but they haven’t used that for Math. I’ve seen them use it for Social Studies, but not Math.

INTERVIEWER: Social Studies, but not Mathematics?

CANDIDATE #2: Right.

INTERVIEWER: Well, that’s interesting, but there is some use of technology, which is a good sign.

INTERVIEWER: Question 5: To what extent do your lesson plans permit young students to construct mathematical knowledge through interacting with their physical and social environment? Now
that would be the group situation, Centers, interacting with materials, that’s basically what this question is asking.

**CANDIDATE #2:** Every Friday morning they do Centers and they always have a Math Center, which is really fun, incorporated with flash cards and their own personal white board, which is fun for them because they get to use that. Most kids love to be able to write their own white board. For groups they are able to complete their work pages in groups sometimes. They can partner-up and complete that. They usually do that in the afternoon and that’s always for fun them just so it’s not the same, where as they’re at their own desk. They can partner up and work on it together and then if they have time also they can show each other flash cards.

**INTERVIEWER:** So they’re using flash cards. What are the flash cards used for? What concept are you teaching?

**CANDIDATE #2:** They’re doing adding and subtracting right now; it’s just the beginning of the year.

**INTERVIEWER:** So you’re really working on the Rote Memory piece with the flash cards? After they understand the process, or before? How is that introduced?

**CANDIDATE #2:** Usually they do that as a filler sometimes because they are doing their adding and subtracting 5-minute timed tests. So I think that they just want to get it in their memory so they’re more accurate at simple addition and subtraction facts.

**INTERVIEWER:** Now is your curriculum or your math content scripted, or does it have some leeway for you to develop your own ideas?

**CANDIDATE #2:** For the most part I think it’s scripted, at the same time she encourages to bring in your own ideas too, to help them understand the concept a little bit better if they need a different way to get that concept across, she’s open to different suggestions.

**INTERVIEWER:** So along with the scripted, you’re allowed to be creative and bring in other things, which helps embellish or enrich what they’re learning already in class? Well that’s good to hear.

**CANDIDATE #2:** Yeah, I like that.

**QUESTION 6 HAS BEEN SKIPPED**
INTERVIEWER: **Question 7:** Describe how your lesson plans, the ones you develop, provide an opportunity for exploration and problem solving, in order to solve mathematic problems. If you remember problem solving was a big thing.

CANDIDATE #2: Well, for instance, when she tells me what math I’m going to be teaching, she’ll pretty much show me the work page they need to complete and, for instance, they needed to work on number stories. They were simple number stories and you need to solve by either adding or subtracting in the problem and I brought in my own little idea. I made them each make a flash card. I supplied a yellow paper and an orange paper and they were to write addition, with an addition sign on one, and then subtraction, with a subtraction sign on the other. Then at the beginning of a lesson, we went over a key word that they needed to look for in a number problems and that verified that they kind of knew what they were looking for. Then with the flashcards, I would just read simple story and they were to either show me what was going to solve the problem, either addition or subtraction. They were to either show me the yellow card or the orange card. It was just a cute little way to get them involved and a little bit more hands-on.

INTERVIEWER: Right. Now when you taught that lesson, was that to the whole group at once or in a smaller group?

CANDIDATE #2: Yeah, to the whole group.

INTERVIEWER: Okay, so you present the lesson to the whole group and then you engage them by giving them a little cues and hand-on materials so that they can work from that perspective?

CANDIDATE #2: Right, and then we went ahead and did the worksheet that she wanted me to do with them.

INTERVIEWER: Are there a lot of worksheets?

CANDIDATE #2: Yeah, there are a lot of worksheets.

INTERVIEWER: Describe. What do they do with the worksheets?

CANDIDATE #2: A lot of the times they just do them. Maybe you’ll go over the first or second problem together on the overhead and then you let them complete it on their own for the next 10 or 15 minutes and then for the next 5 minutes so go over head. And that can
get a little monotonous and so that’s why I thought of the cute idea to do the orange and yellow cards just to change it up a little bit.

**INTERVIEWER:** And you’re free to do that?

**CANDIDATE:** Yeah, she’s very open to that, which is very nice.

**INTERVIEWER:** That helps a lot. I can understand where just doing worksheets can get boring for them at their grade. Do they have homework with that then?

**CANDIDATE #2:** They usually don’t have a lot of math homework. Sometimes they do and we just rip out the page at the end of the day, but a lot of times they don’t have math homework. They complete it in class.

**INTERVIEWER:** Okay, well that’s good to hear. Third graders still need to play a little bit.

**INTERVIEWER:** **Question 8:** How do your lesson plans provide an opportunity for students to apply their understanding of math concepts using real-life experiences? Now when you develop a lesson plan, do you bring in real world, real life things?

**CANDIDATE #2:** I actually have one planned that’s coming up and they’re not really going over money yet, but I’d like to reintroduce it because like I said, it’s not just a work sheet, it’s hands-on. She may want to do it as a Center instead of a math lesson. It’s bringing in the groceries, having a price on them and having a store in one corner. I was actually going to set up two teams and give them each ten dollars. And then each player at one time has to go and pick out an item and as a group they needed to figure out how many items they can get and how many items they can purchase and stay under ten dollars. So, that’s something I’d like to introduce and some more hands-on would be good like fun activities like that. She’ll probably want me to that on a Friday’s Centers day or something.

**INTERVIEWER:** Is Friday the Centers day?

**CANDIDATE #2:** Yeah.
INTERVIEWER: That’s interesting. How does she set up the Center?

CANDIDATE #2: It depends on the week. Usually she’s got a reading Center, ya know, every subject; reading, a game Center, and then a math Center, art Center.

INTERVIEWER: So it’s across the curriculum?

CANDIDATE #2: Yeah.

INTERVIEWER: But they get to do the more fun things and interactive with the materials on Friday.

CANDIDATE #2: Yeah, which is nice and some of the parents come in and help and so it’s kind of a nice way to start the morning.

INTERVIEWER: Kind of a gives them something to look forward to during the week. That helps a whole lot. So you say that she does use Centers. I like your idea about using money because what a real-life experience that is. They’re going to be using money the rest of their lives so they’d better learn it well.

CANDIDATE #2: Right, I think they’re at the age too where they need to understand their limits. If they only have ten dollars in their hand they need to figure this out before they walk up to the cash register and say “Here ya go,” and it not work.

INTERVIEWER: It may also help them to understand why parents watch their money too, a little bit.

INTERVIEWER: Question 9: How do your lesson plans provide activities to help students reinforce learned mathematical concepts and skills? Okay, when you develop your lesson plans, how do you provide activities to reinforce what they’ve learned?

INTERVIEWER: Is it the worksheets, or is it other things?

CANDIDATE #2: Usually it’s the worksheets because that’s what’s actually given to me, again. I feel like I’m repeating myself, but that’s pretty much what they give me and then I work around with it. Since they’re in third grade I feel like I have more leeway and I know that they know more, which makes my job a little bit easier. I like to try to give them things that they can remember from before. Bring things that they haven’t worked on, but they know they need to keep practicing.
INTERVIEWER: So you’re trying to build on prior experiences?

CANDIDATE #2: Exactly, right.

INTERVIEWER: Well that’s very good. That’s they way you should do it and I’m proud that you’re doing that.

CANDIDATE #2: Thanks.

INTERVIEWER: **Question 10:** Describe how materials and manipulatives are used in the mathematic centers of the classroom where you are currently doing your field placement?

CANDIDATE #2: The only manipulatives I have seen, and I should just go in the math closet and see what else they have, but they do use calculators, which they love. They do love hands-on things. I’ve seen them use the rubber band boards with the shapes.

INTERVIEWER: Geo boards.

CANDIDATE #2: Geo boards. And I know that I’ve counted out and put in bags the one units and the ten units and the one hundred units. So they do also do that too with the little tiny blocks. That’s helps that concept, tens, hundreds, and they’re working on that concept also so those seem to help during a lesson. Those are the manipulatives.

INTERVIEWER: It helps them visualize what they’re learning.

CANDIDATE #2: When they’re not just building with the blocks! It does help them count it at and she says to set nine units and it’s interesting.

INTERVIEWER: Well, it’s a temptation to be creative with your materials, right?

CANDIDATE #2: And she does give them time afterwards. She gives them two minutes to build so that’s nice too.

INTERVIEWER: Well, she probably knows they need that time to be creative.

CANDIDATE #2: I think that’s good, yeah.

INTERVIEWER: Gives them some motivation to do what she wants them to do too.
INTERVIEWER: **Question 11:** What evidence do you have that your Cooperating Teacher is using DAP?

CANDIDATE #2: Well since I’m writing my own lesson plans, I look in the Content Standard Book and I know that she’s definitely going from there as well and I’ve heard her talk with her Cooperating Teachers about what standards they’ve met during each unit. So I know that’s always in the back of her head when she teaches, is what standard she’s been hitting on and what she needs to hit on for the next time.

INTERVIEWER: So she knows they are age appropriate and she has to build on those standards.

CANDIDATE #2: Right.

INTERVIEWER: Which they’re held accountable for.

CANDIDATE #2: They seem like they’re very important to them so she must be very aware that she needs to hit on those.

INTERVIEWER: Well, you’re right and that’s why you hear them in class too. It’s that accountability factor, but it’s also making sure that the appropriate materials are used and concepts are taught at the age that they’re supposed to be so that sounds positive that she’s following the standards.

CANDIDATE #2: Yes, I think she definitely is.

INTERVIEWER: **Question 12:** In what ways do you perceive the math content to be developmentally appropriate? I know it sounds like you’re repeating yourself, but you can obviously tell I’m finding out about what’s developmentally appropriate.

CANDIDATE #2: Third grade, they’re learning a lot. They’ve reviewed a lot and I think that they’re staying on task. I think that’s important. And they’re doing an excellent job at the school I’m at.

INTERVIEWER: Well, I’m glad to hear that you’re so happy with that.

CANDIDATE #2: Oh, I’m very happy, yeah.

INTERVIEWER: Having the freedom to do a few things that are creative and yet still going along with the program is where you are right now.
CANDIDATE #2: Yeah, I am lucky.

INTERVIEWER: Would you do things any differently if you were out on your own or would you pretty much use this as a model for yourself?

CANDIDATE #2: I’m definitely using it as a model. I’ve definitely been taking a lot of notes on what I do want to use, and of course there’s going to be some differences, but I think manipulatives are important. I think that working in groups and I think that the videos I’ve seen in class also give you ideas of letting them think outside the box more. I don’t see that very often. It’s more structured and sometimes it’s nice to just kinda have a lesson happen on it’s own.

INTERVIEWER: Well the videos you’re seeing in class are reinforcing the standard that problem solving is so important and that’s what we’re trying to emphasize in class is letting kids do some problem solving. Do you see that happening quite a bit?

CANDIDATE #2: No, I haven’t seen that so much. I think that would be a great lesson. In fact, I want to think about doing something like that where they get into groups and they have to discuss solving a problem. I think that would be interesting for a teacher to watch the kids and how they would be thinking.

INTERVIEWER: Maybe it’ll help her get some ideas, huh?

CANDIDATE #2: Yeah!

INTERVIEWER: I always look forward to having student in my room because they brought in ideas. It wasn’t always my ideas, it was what they could bring in too and hopefully you’re doing that real well. I’m sure that your CT is enjoying working with you.

CANDIDATE #2: Well, I hope so.

INTERVIEWER: And I thank you for your time, it’s been very interesting.

CANDIDATE #2: Good.
CANDIDATE #3

INTERVIEWER: Interview #3. How are you doing today?

CANDIDATE #3: Good, tired.

INTERVIEWER: Glad to have your day off tomorrow, huh?

CANDIDATE #3: Oh yeah.

INTERVIEWER: When I interview you, you will talk towards the microphone, which is right there.

CANDIDATE #3: Okay.

INTERVIEWER: Question 1: Can you describe the mathematic content used in the school where you are doing your field experience?

CANDIDATE #3: They’re using the McGraw textbook.

INTERVIEWER: Okay.

CANDIDATE #3: Right now they’re doing estimation and rounding and then adding the numbers together. Like if you have two numbers, which ones equal 70. That’s what they’re on right now. They do everything individually. There’s never any group work. And it’s all do these problems and then I’ll bring them up to the teacher and she’ll check them and go back and do the next set, bring them up and she’ll check them and that’s everyday, how it’s done.

INTERVIEWER: Are you doing worksheets or they ditto sheets?

CANDIDATE #3: They do a lot of like number your paper 1 to 17 and then do 1 to 5 and I’ll check them and then 6 to 10 and I’ll check them. Sometimes there’s a homework sheet. A lot of times it’s do numbers 20 through 30 in your textbook.

INTERVIEWER: Okay, so they’re copying the problem and then doing it on paper?

CANDIDATE #3: Right.

INTERVIEWER: All right. What grade level are you teaching? I forgot to ask that at the beginning.
CANDIDATE #3: Third.

INTERVIEWER: **Question 2:** How closely does the school administration require adherence to the selected mathematic content? In other words, the principal or the superintendent, how much do they require that the teachers adhere to the curriculum?

CANDIDATE #3: From what I can tell they can do whatever they want.

INTERVIEWER: The teachers?

CANDIDATE #3: Right. When I did my lesson, it didn’t quite fit in the whole scheme of the week, but she was like “Okay, go ahead and do it, I’ll just back track or go forward or whatever.” I’ve never seen the principal stop in her room to check on her. I’ve never seen her lesson book just Math, page 23. Everyone does math separately and everyone seems to be in a different spot, and that’s okay.

INTERVIEWER: So they don’t work together in teams?

CANDIDATE #3: No, it’s all on your own.

INTERVIEWER: So whatever they’re decision is what they do?

CANDIDATE #3: Right. Wherever they feel their class is at. My CT feels that on Friday, whether they have the concept or not, it’s time to move on. They’ve worked five days on it; it’s time to move on to the next concept. She’s very worried about making it through the book.

INTERVIEWER: So she doesn’t back track and re-teach?

CANDIDATE #3: No, that’s what she feels tutors are for.

INTERVIEWER: Oh, okay. Well, she’s probably right!

INTERVIEWER: **Question 3:** How closely does your Cooperating Teacher adhere to the selected mathematic content of the curriculum?

CANDIDATE #3: This is what we do, this is what we’re doing today, this is all we’re doing today and if they get it in ten minutes, then they can have reading time. If it takes the forty-five minutes, then it just takes the forty-five minutes.
INTERVIEWER: Is your mathematic lesson usually timed to be about forty-five minutes?

CANDIDATE #3: That’s what it’s blocked for. Every day is a different time. It’s never always like 8:15 to 9:30. It’s never that block of time.

INTERVIEWER: Does she teach other things at that time frame?

CANDIDATE #3: It depends on their specials; their Phys. Ed, Art and the Music. It depends on their whole schedule for the day, and when they have Religion class.

INTERVIEWER: Okay, so you’re teaching at a Parochial School?

CANDIDATE #3: Yeah.

INTERVIEWER: Well, that’s fine, that is part of the curriculum and it should be.

INTERVIEWER: She stays with the curriculum the book though?

CANDIDATE #3: Right.

INTERVIEWER: Question 4: To what extent do your lesson plans include the use of technology to enrich the mathematic content?

CANDIDATE #3: The only thing they have is an overhead and a television with a VCR/DVD player. There are no smart boards in school. So everything is done on overheads. They don’t even have dry erase boards, everything is done on chalkboards. So the most technological thing she does is on the overhead.

INTERVIEWER: The overhead. Do you use computers in your classroom?

CANDIDATE #3: There is none.

INTERVIEWER: There are none?

CANDIDATE #3: I take that back, there is one for her, but the kids do not go on it. It’s her personal, that’s where she keeps her notes and her lesson plans and her use of the Internet. But the kids do not go on it. I do not know if they have a lab time scheduled in another block.

INTERVIEWER: Okay, but they don’t use the computers at all for teaching mathematics?
CANDIDATE #3:  No.

INTERVIEWER:  It’s overheads, basically?

CANDIDATE #3:  And most of the time it’s lecturing from the text, and then writing something on the chalkboard and then here’s your problems.

INTERVIEWER:  Okay, so she’s lecturing the third graders. Does she do a lot of demonstration with that?

CANDIDATE #3:  If they’re really struggling she will, but she prefers just to read from the text, here’s the practice problems, we’ll do those together and then you’re on your own.

INTERVIEWER:  So does she read the textbook?

CANDIDATE #3:  For example, #1: This jar is half full of jellybeans, this jar is three-fourths; how many do you think might be in this one? She’s reading from the text, but not in the order it’s put in.

INTERVIEWER:  I see what you’re saying. So she sticks with the text real closely, but…

CANDIDATE #3:  She doesn’t elaborate on it. She doesn’t do anything extra with it. It’s this is the text, here’s your problems, here’s your worksheet; hope you got it.

INTERVIEWER:  Question 5: To what extent do your lesson plans permit young students to construct mathematical knowledge through interacting with their physical and social environment? In class we’ve been talking how children construct knowledge by interacting with each other in a social way and by interacting with materials. Are you able to put that in your lesson plans or do you have to follow what she wants?

CANDIDATE #3:  She let’s me do my lessons how I want. She may say, “That’s not how I would teach it, but the way you taught it is fine. I like the way you did it, it’s just not how I would do it.” The one lesson I have done is estimation with different size jars and different objects. They were put into pairs and they could hold the jar, see the jar, feel it, and shake what was in it. They held them up for everyone in the class to see. Everyone took a guess about what was in it. I had a huge vase full of cotton balls that they could guess about and they had a week to put their guesses in there, so it was much more hands-on. They could see it, they
could feel it, and they could touch it. They could work together, which they were excited about. My introduction was dumping pennies into a full glass and guessing how many it would take. I knew they’d be wrong, and I told them that they could be wrong because they don’t think they can. They think they always have to be right to answer a question. From my point of view, I really wanted to tell them that it’s okay to take a guess, you can be wrong. She liked the lesson, it wasn’t she would teach, it wasn’t the way she would have taught it, but she like it. It’s just not her style. But she was okay with it. We both understand that and she was willing to look and see how I do it and vice versa.

INTERVIEWER: So she does allow you to be creative and hands-on?
CANDIDATE #3: Yeah.

INTERVIEWER: Which is good.
CANDIDATE #3: Right.

INTERVIEWER: It makes you comfortable and you can be creative as you teach and let the kids interact with the materials, which is good.
CANDIDATE #3: Yes, I wish I had more opportunities to do it.

INTERVIEWER: Your time will come!
CANDIDATE #3: Yeah, one day!

INTERVIEWER: One of these days you’re going to be the one that’s the decision maker.

INTERVIEWER: Question 6: Describe how the mathematic content helps young students to practice their mathematical skills? Now, they have a lesson, the teacher presents a lesson, how does she let them practice their mathematical skills?
CANDIDATE #3: She let’s them take home a worksheet and it gets graded the next day and then they get it back. If they get so many wrong they have to have it signed by mom and dad. But she never does the whole, “here’s your real-life instance; this is when you might use it.” Like why would you need estimation? You go to a store and you only have twenty dollars and you need milk, eggs, and bread and there are three different brands and you only have so much, which ones would you get. She doesn’t do that. It’s all
just straight from the book. Here are your problems; here’s your worksheet. That’s it, everyday.

**INTERVIEWER:** She’s not allowing them to see how you’d apply it to real-life situations?

**CANDIDATE #3:** There’s no real-life, there’s none of that connection made, unless one of the children makes it and then shares it with the class. But she doesn’t offer it; she doesn’t offer that connection of how they would use it in reality.

**INTERVIEWER:** Okay, so her style is more just strictly from the textbook and the curriculum that they’re teaching for the day?

**CANDIDATE #3:** Yes.

**INTERVIEWER:** *Question 7:* Describe how your lesson plans provide an opportunity for exploration and problem solving in order to solve mathematical problems. Now we’re talking about your lesson plans and you kind of talked about how you worked with estimations. Do you want to expand on that?

**CANDIDATE #3:** The only thing I left on that was a little bit off the beaten path. I gave them a jar full of silver change, there were no pennies, so it was quarters, dimes, and nickels. I said, “I don’t know how many coins, I want to know how much, and I want you to take a guess.” It was a big pickle jar so they could shake it and look at it, but you’d never be able to count it. I said, “I want to know how much is in here, not how many coins individually, I want to know how much it would add up to. That way, if you had some change in your pocket and you were at the bookstore and you’re going “I probably have about…."

**INTERVIEWER:** So you wanted them to figure out how much money they had?

**CANDIDATE #3:** Right, and three of them came within two-dollars of guessing how much was in there.

**INTERVIEWER:** Well, that’s pretty good.

**CANDIDATE #3:** And some of them were really far off. I got the whole ______ spectrum of it. I left it there for a week for them to look at and mull over and think about it. At the end, I gave them a pencil, the ones that came the closest.
INTERVIEWER: So they got a little reward for being right on the task?

CANDIDATE #3: Right. I didn’t want to give them candy because they were having an ice cream party that day, so they got a Halloween pencil if they were right.

INTERVIEWER: Pencils are good reinforcements for a task like that. I like that. That’s a good activity that you had and I like the fact that you leave it there so they can look at it and ponder it. I also like the way you allow them to make mistakes, because what happens? They learn by their mistakes as well as getting everything right.

CANDIDATE #3: Not how my CT does it. If you’re wrong, she will publicly humiliate you in front of your classmates.

INTERVIEWER: Oh, that’s sad.

CANDIDATE #3: I had a little boy come to me in tears because he didn’t understand something and he didn’t want to raise his hand and ask.

INTERVIEWER: Why do you think he didn’t want to do that?

CANDIDATE #3: Because she would say, “I don’t understand why you’re not getting it.” She even admitted that in one point in the year she said to them, “Stop saying I don’t know. Stop saying it.” Because all the kids were going, “I don’t know, I don’t understand.” And she told them to stop. So now nobody will raise their hand and say “I don’t know, I don’t understand,” because they’re afraid that she’ll get mad at them. So he came over to my table with tears streaming down his face. He sat down for five minutes and he understood, he just didn’t get the concept of rounding from the hundreds and then rounding from the tenths. He didn’t get it. But he just needed someone to block of the numbers for him and show him the different way you could do it; a different method. And he was so grateful.

INTERVIEWER: That was individual instruction.

CANDIDATE #3: That was individual. And then I had about five more come up right after that saying, “I don’t get can you help me?” “I really don’t understand it, can you help me?”

INTERVIEWER: So they’re feeling comfortable approaching you without the fear?
CANDIDATE #3: I won’t humiliate them. I won’t say “why don’t you get it, what’s wrong with you.” “Everyone else got it, what’s wrong with you?”

INTERVIEWER: Not a good way to handle your children if you want to build confidence, right?

CANDIDATE #3: No, it’s not.

INTERVIEWER: Question 8: How do your lesson plans provide an opportunity for students to apply their understanding of mathematic concepts using real-life experiences?

CANDIDATE #3: I gave them the change for their pockets, and I gave them jars. I purposely gave certain groups certain ones because there are a couple special needs in there, so I gave them some easier ones that I felt they could get. I was surprised how many could fit inside the jar, and could fit in there. A lot of it was candy, because Halloween is coming up, so we went over the whole “if you have a bucket full of Halloween candy and you’re going to trade your friend, you should probably know how many you have before you agree to trade it because you could loose on the deal, that wouldn’t be good.

INTERVIEWER: That would really be relating to real life.

CANDIDATE #3: Yeah, and there ears perked up and they were like “whatever you say, if we’re gonna talk about how to get more Halloween candy!” “We’ll listen to you how ever you want!”

INTERVIEWER: That’s what’s important to them right now.

CANDIDATE #3: They got it, and that was okay. It was just a variety of things. When each pair made their own guess and I Rote it up on the board and then they held it up, and then two other kids in the class made a guess, and then we went through all of them. Then we went back to see who was the closest. One girl was dead-on. She was right at 192.

INTERVIEWER: She got it right?

CANDIDATE #3: Yeah, 192 was her guess. I was laughing when she said it cuz I knew she was right.
INTERVIEWER: Well, that was good reinforcement for her and that was good for the kids to see that you can get it right, too.

CANDIDATE #3: Yeah, and they kept asking me, “Mrs. ____, did you stay up all night counting this?” – because I had thirteen other jars of stuff. I said, “I only stayed up counting some of them.” I said, “What’s on the back of the bag of candy corn?” The instructions, the ingredients. I asked, “Isn’t there a little thing on the bag that shows you how many calories are in it?” They said, “Yeah.” And I actually brought in the bag with me and showed them that it shows you how many servings there are. So, if there are five servings, and it’s 50 pieces to a serving, all I had to do is add 50, five times and I didn’t have to sit there and count all of them. That’s how I knew how many candy corns were in the jar and that’s how I knew how many tootsie rolls there were. I had to sit down and count all the marbles, but all the food ones I could just add it all together from the back of the bag.

INTERVIEWER: So you were teaching them an approach on how they could do it in a real-life situation?

CANDIDATE: Right. Because they thought I stayed up all night counting these that would have added up to like thousands if things. I was like, “No, we’re not quite there guys, but I did do it the easier way.” And then they thought about it for a little bit and then they figured out that they could figure out then how many suckers are in a bag at the Dollar Store, because there are different brands, which one has more in it.

INTERVIEWER: Well, that’s really applying it to your real-life situation and helping them apply what they’re learning in school to that.

INTERVIEWER: Question 9: How do your lesson plans provide activities to help students reinforce learned mathematical concepts and skills? Did I ask you that question already?

CANDIDATE #3: I think you did.

INTERVIEWER: Question 10: Describe how materials and manipulatives are used in the math Centers of the classroom where you are currently doing your field placement. What are they doing in Centers in your classroom?

CANDIDATE #3: There are no Centers. There’s nothing. There’s a reading corner, and that’s it.

199
INTERVIEWER: So there’s nothing for mathemattics?
CANDIDATE #3: Nothing; Science, Math, Art, nothing.
INTERVIEWER: No Centers? So in other words, there are no areas where they can interact and problem-solve on their own?
CANDIDATE #3: No. Not unless they did it on their own during inside recess and they created their own thing, there is not anything that is set up for them.
INTERVIEWER: Do they do that? Do you seem them creating their own thing?
CANDIDATE #3: No. They play with the action figures that the boys play with and the girls color and draw. My CT is big in scrap booking, and she brings in all her old supplies and they use that. And then I’d like to say that at least she measuring to figure it out, but they don’t. They just go, “I guess this’ll fit, oh, no it didn’t so I guess we’ll just rip it off and cut a new one and we’ll slap it on again.” They don’t even understand that they could measure the square to make it fit the certain spot. They don’t do that.
INTERVIEWER: And it could be a good learning experience.
CANDIDATE #3: Yeah, and it doesn’t sink in. She’s not there during their recess either, if it’s indoors. She’s out eating lunch.
INTERVIEWER: Well, you’re giving some valuable insights here.
INTERVIEWER: Question 11: What evidence do you have that your Cooperating Teacher is using DAP?
CANDIDATE #3: Other than knowing what the content standards are and looking at them, and knowing this is the age where they learn estimation, there’s nothing.
INTERVIEWER: So, she’s going strictly by the standards as opposed to looking at children at their age and saying this is what they should be doing?
CANDIDATE #3: She says, “Here is my third grade book for math, we’re going to open it up and start on page one.” “And then we’ll go through this Chapter and then on Monday, we’re going to go to Chapter 2 and we’re gonna start here and work our way through it and then Chapter 3 is the third week.”
INTERVIEWER: Do you feel that she’s being pressured to do it that way, or is that her method?

CANDIDATE #3: I don’t feel that she is being pressured. I don’t get that impression from other teachers. They don’t talk about the curriculum a whole lot when they’re at lunch or they have a free period. They’re all a very close bunch, so they talk about more of a personal life, if they’re all going out to a movie afterwards or something like that. They don’t discuss the curriculum. This is the first year she taught third grade. She taught second grade last year so I don’t know if she was kinda thrown into this, and this is just her way of floating, instead of sinking for the time being, but I get the impression that this is just how she teaches. You do it from the book and that’s it.

INTERVIEWER: Okay, then that answers our question about the Developmentally Appropriate Practice. She goes by the standards, but doesn’t enhance it in any way.

INTERVIEWER: Question 12: In what ways do you perceive the mathematic content to be developmentally appropriate? We’re talking about the content they’re using in their math program.

CANDIDATE #3: They have a textbook. They need that. But anything else, they’re lacking. They don’t know the problem-solving skills, they don’t know how to interact with someone else and figure out a problem together. There’s no reinforcing or teaching of that. There’s no hands-on, there’s no manipulatives. There’s nothing, other than their textbook, so anything else that they’ve learned has come from outside the house, in another grade, or anything that I would bring in for them. They don’t have any hands-on; they have no partner. They sit next to someone, but they don’t work together. They even go so far as to put up folders at the corner of the desk so the other person can’t see what they’re doing, which I think is kinda funny. But on the other hand, if you’re having a problem, ask. It’s okay. But in the situation they’re in, it’s not.

INTERVIEWER: So there really isn’t a way then, as I’m hearing it, that they work on problems and are able to solve their problems, other than perhaps by Rote Memory? Is there a lot of Rote Memorization?
CANDIDATE #3: There’s a lot of Rote and there’s a lot of “Here’s my example, I’ll leave it on the board.” “If there’s a story problem, do it on your own.” And then if she realizes everybody’s having a problem with it, she’ll get up and she’ll show them how to do it. But if half the class has it, that’s good enough for her.

INTERVIEWER: That’s been very interesting. You’ve given us some valuable insights and I will be looking at this as I write this up for my dissertation. This kind of information helps us be better educators as we teach our students. It gives us insight as to what is going on out in the fields so your insights have been very valuable and I thank you for them.

CANDIDATE #3: Thank you.
INTERVIEWER: **Question 1:** Describe the mathematic content used in the school where you are doing your field experience.

CANDIDATE #4: It’s a mathematics program that deals with a lot of hands on manipulatives and creativity that we use in the classroom on our own, versus following a script.

INTERVIEWER: Now, you say the intent for the mathematics program is to give kids real life experiences and applications within the mathematic content each of the lessons.

CANDIDATE #4: It incorporates a lot with using the calendar everyday; counting upwards, counting backwards; the weather; that’s all based on everyday experiences that they encounter.

INTERVIEWER: **Question #2:** How closely does the school administration require adherence to the selected mathematic content? Now, I’m talking about the superintendent, the principal. Do they monitor that, or do they give you some leeway?

CANDIDATE #4: There’s leeway. He reviews the lessons of what’s being taught; but just a general overview of what’s covered. They go by themes each month, or even weekly, of what their math theme is and then the teacher has a lot of leeway of what she wants to teach or encounter.

INTERVIEWER: So the school administrator does take note? Do you have to turn in your lesson plans to the principal?

CANDIDATE #4: I’m unaware of that.

INTERVIEWER: Okay. You’re not there permanently. I just thought maybe you’d seen that.

INTERVIEWER: **Question #3:** How closely does your Cooperating Teacher adhere to the selected mathematic content of the curriculum?

CANDIDATE #4: She uses it everyday. She incorporates math whether she has star weekly students and they’ll bring in candy or an item and they estimate. Every week it’s a new student that does that. They do the calendar everyday. They do their math booklet of writing their numbers.
INTERVIEWER: So you’re saying she follows the curriculum very closely, but she’s able to be creative with it at the same time?

CANDIDATE #4: Yes.

INTERVIEWER: Question 4: To what extent do your lesson plans include the use of technology to enrich the mathematic content?

CANDIDATE #4: We use a lot of the smart board right now. So with the smart board we bring up games on the computer and it shows up on the smart board and they can go up and manipulate and move around objects for when they’re counting or sorting.

INTERVIEWER: So they’re actually able to interact with the technology?

CANDIDATE #4: Yes.

INTERVIEWER: Do you have computers in the classroom?

CANDIDATE #4: Yes. Our Centers, we have two of them.

INTERVIEWER: That’s good to hear. Do the teachers use those pretty regularly, or on occasion?

CANDIDATE #4: About three to four days a week.

INTERVIEWER: Well, that’s very good. So technology is kind of a big piece of what you’re doing as you teach. That’s good to hear; enrichment taking place there.

INTERVIEWER: Question #5: To what extent do your lesson plans permit young students to construct mathematical knowledge through interacting with their physical and social environment? Now that means the things in their classroom, the materials, and also with each other, in the social setting.

CANDIDATE #4: With estimating, the kids bring in their own items and they walk around with the jar and they students have their wipe-off boards on their laps and they would write down the numbers of what they would think and we’d set a limit and say that because there’s less than 30 students in here, the number is less than thirty, but obviously looks more than one. We do this to give them a little structure, but then they come up with it on their own.
INTERVIEWER: So you’re bringing in the teaching practical aspects too and the kids are allowed to interact with each other in a social way as they learn?

CANDIDATE #4: Yes.

INTERVIEWER: Do you have a lot of hands-on materials or is it mostly worksheets?

CANDIDATE #4: No, it’s a lot of hands-on, whether it’s using dry erase markers and wipe-off boards when they do the calendar. They do the groupings of how many days they’ve been in school by using sticks for the tens and ones place values.

INTERVIEWER: So they actually able to interact then with the materials too. That’s good to hear.

INTERVIEWER: **Question 6:** Describe how the mathematic content helps young students to practice their mathematical skills?

CANDIDATE #4: They could use at their homes. A lot of it is incorporated in their homes, their everyday life. They can use things around their house. Their always thinking they can go home and find five red items, when we’re dealing with colors, or go see how many patterns you can find in your kitchen whether it’s on the floor or the wallboard.

INTERVIEWER: So they’re actually able to do that then in their everyday lives? They’re applying what they’re learning in the classroom to what they’re doing at home and other places.

CANDIDATE #4: Yes.

INTERVIEWER: **Question 7:** Describe how your lesson plans provide an opportunity for exploration and problem solving in order to solve math problems. Now I know you’ve covered this a little bit, but would you expand on that?

CANDIDATE #4: By using a lot of the hands-on items, they can see realistically of how to come up with an answer. Ya know, if there are five black squares and they see that two more black squares are added together, they can count the whole picture together and see that there are seven black squares right in front of them.
INTERVIEWER: That kind of helps them with problem solving, which is a big emphasis in Mathematics, according to our standards.

CANDIDATE #4: Just like when they do the estimation, okay, there’s less than thirty children in there, let’s see if we have enough for all the children after we find out how many are in this container, and everyone can have one.

INTERVIEWER: So that’s everyday problem solving. They can apply those skills to what they’re doing all the time.

INTERVIEWER: Question 8: How do your lesson plans provide an opportunity for students to apply their understanding of mathematic concepts using real-life experiences? I think you’ve already answered that so why don’t we just go on to Question 9? I think you incorporated that into Question 7 and Question 6 probably too.

INTERVIEWER: Question 9: How do your lesson plans provide activities to help students reinforce learned mathematical concepts and skills?

CANDIDATE #4: Well, with having the hands-on materials, an example is the standard for counting up from 0 to 10, and counting down. We use frogs and having them correspond with when counting up, they leap up, and when counting down, the frogs leap down. We do this just to get the concept of counting up and down.

INTERVIEWER: That’s very clever. Do the kids have fun with that?

CANDIDATE #4: They do. They enjoy it because they get to move around in the classroom and they’re not focusing on it just being math at the time that they’re using hands-on, using a song, using something to just get them moving and motivated.

INTERVIEWER: So you’re really integrating more than just math? You’re bringing music in, movement in, they get to have a little enjoyment out of that, and probably some social contacts through that too, right?

CANDIDATE #4: A lot of the subjects in their classroom, they’re all integrated into others so they’re compound lessons. We did telephones and they did their house telephone number and that’s Social Studies because they’re providing information off that standard, but as well as recalling numbers, so that’s Math.

INTERVIEWER: Do they write with that, too, in some instances?
INTERVIEWER: So that then would be Literacy also.

CANDIDATE #4: Yes.

INTERVIEWER: That’s good. Children are more able to learn holistically when you approach the curriculum from that perspective.

INTERVIEWER: Question 10: Describe how materials and manipulatives are used in the Mathematic Centers of the classroom where you are currently doing your field placement.

CANDIDATE #4: We have Dixie Cups at our Math Centers and they will sort them from smallest to largest. They would build with them and see how many they can stack on top of each other before they would fall over for the Math. They would do patterns in the Lego area of building/constructing and they also do the Math on the computers. There are different computer games for them to do the Math.

INTERVIEWER: Do you do that everyday?

CANDIDATE #4: During free play, their Free Centers.

INTERVIEWER: Okay. So they have these materials that they interact in Centers? Is only Mathematic Centers, or do you have a Writing, a Science Center?

CANDIDATE #4: We have all the Centers there for them to interact. At the end of the day it’s Free Center, so they can go to whatever Center they would like to. But during the day, every single day after they finish their work, they’ll set up the table and they’ll get out the pattern blocks. If it’s a picture of a flower, or a house, they’re manipulating the patterns together to fit on the page.

INTERVIEWER: Well, that certainly sounds more fun than doing a worksheet! What grade level did you say you were teaching at again?

CANDIDATE #4: This is Kindergarten.

INTERVIEWER: Okay, Kindergarten. I don’t think I asked you that earlier. That’s good because it kind of helps us understand where we’re going with all of this.
INTERVIEWER: **Question 11:** What evidence do you have that your Cooperating Teacher is using DAP?

CANDIDATE #4: She takes all her lessons straight from the Kindergarten Standard Book itself and she will point them out to me when we’re doing an activity that’s creative, if it’s an Art project. As long as it’s covering all the bases, she does not have a problem with going beyond what the standards say, going beyond just a worksheet. She wants it to be hands-on experience so it can be something they can relate to.

INTERVIEWER: And it sounds like with the use of Centers, that’s also a big piece of it. The DAP does encourage that, I know it does, by the NAEYC Standards and Principles, so that type of movement around the room, interacting, making choices, all of those things which you’ve described previously, along with integrated curriculum, is certainly considered Developmentally Appropriate Practice.

INTERVIEWER: Okay, I have one more question. You’ve done a good job here and I’m sure you’re a very good teacher candidate, okay.

INTERVIEWER: **Question 12:** In what ways do you perceive the math content to be developmentally appropriate? Now I’m talking about the curriculum content, as opposed to what the teacher does.

CANDIDATE #4: Well, it’s developmentally appropriate because they need to know the skills for using the calendar. They need to know the skills of counting. They need to recognize numbers in their everyday life when they’re going on the bus, of how to get home. They need to know their telephone number. Everything’s incorporated in their personal world, because it’s Kindergarten.

INTERVIEWER: Right.

CANDIDATE #4: They’re very self-Centered that their whole word revolves around them and in ways we’re able to show that to them, but expand from it. Expand to see a calendar. A calendar is not just numbers; a calendar has patterns to it. So one square is a pumpkin right now and then the next two squares are leaves, and then after the leaves will come another pumpkin. So it’s incorporating a lot of the standards all into one lesson but it’s
incorporated throughout the day, throughout the month, throughout the school year.

INTERVIEWER: So there’s a lot of integration and practical knowledge skills that these kids are getting within this curriculum content where they can really and truly understand the patterning, the days of the month, all of the things that you encounter in real-life is relevant for them and helps them to learn.

INTERVIEWER: Do you have anything else you’d like to expand on?

CANDIDATE #4: No.

INTERVIEWER: You’ve done a very good job. I’m pleased to hear that there is such a good curriculum out there and that you’re having a good experience with your field placement. Thank you very much.