AN ASSESSMENT OF LEARNER KNOWLEDGE OF CHILD DEVELOPMENT CONCEPTS CONTAINED IN THE PENNSYLVANIA ACADEMIC STANDARDS FOR FAMILY AND CONSUMER SCIENCES AS A RESULT OF PARTICIPATION IN A HIGH SCHOOL CHILD DEVELOPMENT COURSE

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Submitted to the Graduate Faculty of

Psychology in Education in partial fulfillment

of the requirements for the degree of
Doctor of Philosophy

University of Pittsburgh

2005

UNIVERSITY OF PITTSBURGH

FACULTY OF PSYCHOLOGY IN EDUCATION

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DEDICATION

This dissertation is dedicated to my two angels,
my heavenly angel,
my husband **David E. McCombie** (1952-1991)
and my earth angel,
my husband **John W. Nelson III**
whom I married on June 21, 2004.

ACKNOWLEDGEMENT

I wish to acknowledge the guidance and help of my academic advisor and dissertation director, Dr. Roger Klein. Without his persistent support this dissertation would not have been successfully completed. I don't think he realizes the difference he has made in my life.

My dissertation committee was tops! Without Dr. Louis Pingel, the stats guru, the statistical analysis would have floundered before it began. Dr. Karen Vander Ven's belief in the importance of child development education reinforced my passion for this topic. I can not talk about the fourth member of my committee without speaking in the plural. Dr. Linda Nelson and her other half, Dr. Alan Nelson have been supportive and loving since the day I met them. Special thanks to Linda for continuing her work on my committee even after her retirement. I can't forget to include my "other" committee member, Dr. Tom Short, from the Applied Research Lab at Indiana University of Pennsylvania. I was able to finish this dissertation in a timely manner because he conducted all of my statistical tests.

I also owe much to my Dean, Dr. Carleen Zoni. She is my role model. I love this woman! Thank you to my colleagues at Indiana University of Pa in the Department of Human Development and Environmental Studies.

Saying thanks to my family goes without saying; however, they will be reading this so I need to formally let them know I appreciate them. Thanks goes to my four kids, Jacie, John, Davey and Danny, my sisters and their families, and my momma and dad.

In closing, I refer to the dedication of this dissertation. I have been blessed with love from Jack and Dave.

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The purpose of this study was to investigate high school student achievement in child development concepts that are reflected in the Pennsylvania Family and Consumer Sciences Child Development Standards. A secondary goal of this research was to compare student achievement in child development concepts in child development courses that include a laboratory as an integral part of the course with achievement in child development courses that do not include a laboratory component. The design was a pretest-posttest experiment using an instrument which was developed for this study. The treatment was exposure to a high school semester-long family and consumer sciences course in child development. The subjects were 431 students from nine high schools in Pennsylvania. The experimental group consisted of two subgroups; one of the subgroups consisted of high school students enrolled in a semester-long child development course that was didactic in nature, without a child development laboratory experience. The second subgroup consisted of high school students enrolled in a semester-long child development course that was a combination of didactic instruction and experience in a child development laboratory. Students who were never enrolled in a child development course participated in the control group.

The findings from this study offer evidence that participation in a high school semester-long child development course has a positive effect on students' knowledge of child development concepts. After the experimental group participated in a child development course, they differed significantly in their knowledge compared to the comparison group who did not participate in a child development course. A high school child development semester course, as evaluated in this study, does appear to have a significant impact on students' knowledge of child development concepts. Students who took a child development course showed significant improvement on posttests compared to pretest scores.

Child development students who participated in a laboratory experience showed a significantly greater improvement on tests scores over child development students who took a didactic-style child development course with no laboratory experience.

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1. INTRODUCTION AND STATEMENT OF PROBLEM

1.1 Introduction

Standards-based education has become a national trend. The Goals 2000: Educate America Act officially set educational goals and sanctioned the development of national education standards to promote learning and assess student achievement. Standards provide a guide that helps to identify the specific competencies that further define what students should know and be able to do. In 1996, President Clinton assembled governors and chief executives for a national summit on education. Corporations insisted that the country's schools were producing an ill-equipped workforce, deficient in the basic skills of reading, writing and thinking. The results of this summit produced a nation-wide push for school reform. The Federal Government's latest reform to the Elementary and Secondary Education Act, known as the No Child Left Behind (NCLB) Act of 2001 requires the creation of standards in each state for what a child should know and learn in reading and mathematics. Though states remain free to choose their own standards and tests, they must report their reading and math tests results to the United States Department of Education. Schools must track their "adequate yearly progress" (AYP) and have numerous interventions in place if they fail to make AYP.

In January 2003, the Thomas B. Fordham Foundation and Accountability Works examined 30 states' academic standards, assessments, and accountability systems. This Foundation is a private organization that supports research, publications, and action projects in elementary/secondary reform at the national level. The findings from the 30 state study indicated that each state was lacking in several areas. Common areas of weakness include the lack of alignment of the states' academic tests to the respective state standards (Fordham Foundation, 2004). When the Foundation evaluated state standards and tests, they looked at six measures of a

good accountability system. The measures are: a). Standards for student knowledge and skills (in reading and math); b). Test content; c). Alignment between standards and tests; d). Rigor of the tests or how high the passing score was set; e). Scoring reliability; f). Comparison of accountability policies both before and after the NCLB.

Components of accountability policies include: incentives and consequences in response to student test scores, a plan of assistance is in place for students who have low test scores. Pennsylvania scored above the average in all of the six measures except "Rigor of the tests" (Cross, Rebarber, & Torres, 2004).

1.1.1. Standards-Based Education

In an effort to improve student achievement, the United States has implemented standards-based education. Forty-nine states have published standards for subject areas and many have established stringent testing procedures to assess what students "know and are able to do."

An unpublished study on the implementation of content standards in California elementary schools examined how curriculum and instructional strategies were affected. The study concluded that the implementation of content standards had significant effects on instructional programs. A portion of the instructional time was spent on standardized test preparation. Standards-based instruction focused on the core content areas of language arts and mathematics, the two areas tested in that state. Teachers spent more time on subject areas that are measured by standardized tests than on the other content areas not measured by the tests (Barranti, 2003). Robert Marzano, an education consultant, contended that a first step in the implementation of standards-based instruction is to cut the amount of content addressed within standards because of the vast and diverse amount of information. He referenced the work completed by the Mid-continent Research for Education and Learning (McREL) in which 130

standards that cover 14 different subject areas were gathered and synthesized. These standards are from across the nation. In addition to trimming the standards, he suggests a monitoring system that allows teachers to more easily and accurately track student progress on specific standards because state tests are given only once a year. Schools and teachers don't get results until months later (Marzano, Mayeski, & Dean, 2000).

Chester E. Finn, President of the Thomas B. Fordham Foundation, compares standards-based education reform to a "tripod," all three of whose legs must be sturdy if the entire structure is not to tumble down. The first leg is the standards themselves. Has the state done a good job explaining the skills and knowledge that schools need to teach? The second leg is the testing by which the school determines just how well a child is doing in relation to the standards. Do the tests align with the standards; specifically, do they really probe the essential skills and knowledge that the standards prescribe? The third leg is known as the "accountability system" or the "consequences." Because standards-based reform is inherently a behaviorist strategy for influencing people and institutions to attain pre-determined goals and produce certain results, it needs a well developed set of incentives, interventions, and rewards that apply at every level. Finn states that if all three legs of the tripod are sturdy and of equal length, the standards-based reform has a good chance of succeeding in its goal of increasing the achievement of American children (Cross, Rebarber, & Torres, 2004).

1.1.2. Standards-based Education in Pennsylvania

Academic standards are expectations for learning. In order to be useful, academic standards must be measurable so that students, teachers, administrators, and parents can determine academic strengths and weaknesses and react accordingly. Standards express what

students are expected to know and do when essential concepts and skills related to each academic discipline are acquired.

Students in Pennsylvania schools are currently assessed only on the Reading, Writing and Mathematics Academic Standards through the Pennsylvania System of School Assessment (PSSA) tests.

In accordance with Chapter 4 of the Pennsylvania Education Regulations, school districts must have, at a minimum, academic standards for students in eleven disciplines including Family and Consumer Sciences. The Academic Standards for Family and Consumer Sciences include content requirements in four areas including Child Development. These standards make it mandatory that all students take courses in child development content. The Family and Consumer Sciences Standards are not assessed by the state; therefore, there is currently no systematic means of determining whether students are meeting them (Pennsylvania Department of Education).

During a family and consumer sciences class at Indiana University of Pennsylvania on February 15, 2005, guest lecturer, Lydia Hess from the Pennsylvania Department of Education, addressed information of the state Academic Standards for Family and Consumer Sciences. She confirmed the fact that these standards are required in all schools; however, she added a disclaimer that there are currently no "standards police" patrolling the mandate.

1.1.3. Standards-based Education in Family and Consumer Sciences

Professionals in the discipline of Family and Consumer Sciences (FCS) created National Standards in 1998 (V-TECS, 1998) (see Appendix A). Nationally, there have been very few summative evaluations of secondary school, family and consumer sciences competencies

reported. Most evaluations of family and consumer sciences programs have been conducted at the state or local level and have tended to focus on specific content areas (White, 1997).

Recently, there have been a number of articles addressing standards-based education in the United States (Meier, 2002; O'Shea, 2002; Raywid, 2002; Schmoker & Marzano, 1999). Some studies have focused on the National Standards for Family and Consumer Sciences (Chen, 2002; Faircloth, Grogan, Smith, & Hall, 2001; Pullen, 2001; Reichelt, 2001; Smith, Hall, & Jones, 2001), but these studies only examined perceptions and concerns regarding the Standards. They did not assess student growth.

The FCS National Standards reflect the shift in FCS from the often negatively stereotyped technical homemaking skills to issues that are relevant to today's individuals and families (Wild, 2004, NASFACS-VTECS, 1998). A study conducted by Iowa State University and commissioned by the American Association of Family and Consumer Sciences revealed that 27 states currently have, and four states are currently developing, FCS Content Standards. Thirteen states require schools to address Family and Consumer Sciences standards; Pennsylvania is one of theses states (Iowa State University, 2004).

Since the 1980's, considerable changes have taken place in the family and consumer sciences secondary school curriculum. Many of these changes have occurred in order to respond to the current societal needs of students. The shift in emphasis has gone from technical homemaking skills, like cooking and sewing, to broader issues of family and society, for example, resource management, care for the growing elderly population, nutritional needs, and the nurturance of children (Baughner et al., 2000; Schneider, 2000). Family and consumer sciences teachers are faced with the challenge of redirecting curriculum to meet students' needs. Growing numbers of children are living in single parent or dual working families. These family

structures often require children to prepare meals and/or care for younger siblings (Glick, 1992). Studies indicate that these needs are best met through content that focuses on family life education topics including family relationships, child development and parenting (Erwin, Moran, & McInnis, 1996; Schultz, 1994).

Following the creation of these National Standards for Family and Consumer Sciences, Pennsylvania produced Academic Standards for Family and Consumer Sciences. Both the National Standards and the Pennsylvania Standards include Child Development Standards (see Appendix B).

High school parenting/child development curricula provide systematic approaches toward developing competencies. Parenting/child development courses in Pennsylvania public schools are offered in Family and Consumer Sciences programs. Family and Consumer Sciences is a field of study that has evolved from the field of home economics, a discipline with roots dating back to 1899 (Brown & Paolucci, 1979). The Smith-Hughes Act of 1917 provided federal funding for vocational education. Homemaking education, which included child care, was one of the vocational areas. Homemaking programs in public schools received federal monies to provide these courses. In 1926, the American Home Economics Association established a division that focused solely on child development and parent education (Brim, 1965). The name of the profession was changed in 1993 at a conference entitled "Positioning the Profession for the 21st Century" in Scottsdale, Arizona. The 100 representatives from more than 20 home economics organizations developed a conceptual framework for the profession and recommended the new name: *Family and Consumer Sciences*. Family and Consumer Sciences education uses an integrative approach to the relationships among individuals, families and communities and the environments in which they function. The profession advocates a holistic

approach in practice. The philosophy of child development concerns the development and well-being of the child in all areas. The National Council on Family Relations (NCFR) and the study of early child care and development share the same heritage as Family and Consumer Sciences (Parker, 1980; Kerckhoff, 1964; Frank, 1962; Baldwin, 1949; Bridgeman, 1930).

A person holding a Pennsylvania teaching certificate endorsed for Family and Consumer Sciences/Home Economics is qualified to plan, direct, and conduct study at all levels in a vocational or general education program in the following areas: Financial and Resource Management, Balancing Family, Work and Community Responsibilities, Food Science and Nutrition, and Child Development.

1.1.4. History of Child Development Courses in Secondary Schools

"Of all the responsibilities people are called to undertake in life, it is hard to imagine one more perplexing and more demanding – a rigorous test of wisdom and patience and judgment under fire- than that of being parent" (Kruger, 1972).

The current media are laden with reports of the many significant problems facing today's youth. In fact, parenting has become a national topic of discussion. Today's parents are inundated with advice on how to address, intervene and prevent various problems and how to intervene effectively, if necessary. Professionals in numerous fields including psychology, medicine and religion have proposed tips and strategies. Various human service agencies and educational institutions offer workshops and seminars on parenting topics. Parenting instruction, a responsibility that had previously rested in the home, has become part of educational curricula. Courses in parenting and child development are offered for high school students in Pennsylvania, as well as in other states. Parenting/child development programs consist of educational courses that provide students with the knowledge of the physical, emotional, social, and intellectual

development of children and the skills to effectively interact with them. Generally speaking, a primary motivation of parenting programs is to prepare individuals to raise caring, competent, and healthy children. These programs are intended to enhance knowledge in child development, change behavior when interacting with children, and influence attitudes toward child rearing. Development of parenting programs has had a long history that originally targeted an adult population.

In 1946, Benjamin Spock began to publish books on parenting. Titles include: The Common Sense Book of Baby and Child Care and Dr. Spock's Baby and Child Care. His books gave practical suggestions for hundreds of parenting concerns and answered questions on various topics including feeding children, choosing appropriate clothing, toilet training, and caring for a sick child. Spock's work contributed to the development of a wide range of parent training approaches.

In the 1960s, two widely varying approaches became popular: the behavior modification approach and Ginott's model of caring and communication. The behavior modification model draws upon principles of environmental learning and experimental psychology and emphasizes teaching parents to modify their children's behavior by manipulating environmental contingencies through the use of rewards and punishments (O'Dell, 1974). Psychologist Haim Ginott offered a model that emphasized teaching parents how to increase their awareness and acceptance of children's feelings. The model assisted parents in improving their communication and problem-solving skills (Ginnott, 1965). In the 1970s, Gordon's Parent Effectiveness Training (P.E.T.) program became popular. In P.E.T., Gordon discusses many topics, including active listening, changing behavior by changing the environment, and parent-child conflicts. Active listening is Gordon's term for what parents do when they reflect their children's feelings by

listening to the child's statements, paying attention to the feelings expressed, and then framing a response to the child's statement. The approach contends that when the child's behavior is a problem to the parent, the parent owns the problem. When a parent is angry or frustrated with the child, the parent should communicate his feelings constructively rather than yelling at or criticizing the child.

From Gordon's P.E.T. approach came the Systematic Training for Effective Parenting (STEP) method (Dinkmeyer & McKay, 1982). The STEP program guides parents to relate positively with their children. Both of these programs have a range of teaching materials such as leader handbooks, workbooks, audio cassettes, and video tapes. The programs tend to be offered at a range of settings including community centers and hospitals.

The limited time that parents get to spend with their children today is a cause of concern because of the growing awareness that parents play an eminent role in the development of their children. Julie Shields, author of How to Avoid the Mommy Trap: a Roadmap for Sharing Parenting and Making It Work focuses on the overwhelming job many women face with parenting and household obligations (Shields, 2002). The "Mommy Trap" catches women who take on too many responsibilities in the home, placing themselves on overload. Shields discusses negative outcomes for both the parents and their children when women try to do it all. She gives suggestions on how to share household and parenting responsibilities with mates and the benefits of doing so.

Prepare Tomorrow's Parents (formerly The Parenting Project) is a non-profit organization dedicated to addressing our nation's crises of child abuse, neglect and abandonment, teen pregnancy and overall violence by working to bring parenting, empathy and nurturing skills education to all school age children and teens.

Suzy Garfinkle Chevrier, Prepare Tomorrow's Parents' Founder, is a parent advocate and the mother of three young daughters. She describes her motivation for the project, "When I had my first child, I was nearly thirty; I had read all the books and had taken parenting and child development classes in college; I had been around the world alone and had worked in many fields, including child care, journalism and education. But nothing ever awed me as much as being responsible for my own infant. I have always wondered how parents who have had fewer opportunities to prepare and fewer resources can possibly manage" (Prepare Tomorrow's Parents, 2005).

In earlier years, parenting literature focused on mothering infants and young children in the context of a two-parent home. Now the literature encompasses parenting across the lifespan. It now includes not only fathers (Bulanda, 2004; Coltran, Parke & Adams, 2004; Fox & Bruce, 2001; Pasley, Futris, & Skinner, 2002) but also other caregivers. The literature also spans across adolescent development and into adulthood, in various contexts and cultures (Jacobson, 2004).

Findings over the last decade concerning brain development have provided a better understanding of conditions that enhance a child's development. Services that provide research-based curriculum delivered by well-trained teachers boost optimal development. Resources for parents are available through educational entities and human service agencies. One example is the University of Pittsburgh's Office of Child Development which provides an array of services for parents and professionals (University of Pittsburgh, 2005).

Other important findings have changed the viewpoint that parenting is not one-directional from parent to child, but rather bi-directional where parents and children both change through their interactions with each other (Kuczynski, 2003). Blueprints for good parenting have been

replaced by guidance to parents on ways to adjust what they do in response to the needs and characteristics of individual children and contexts of their lives (Shonkoff & Phillips, 2000).

Parenting programs for adolescents emerged in the 1970s in response to the increased number of teen pregnancies. Some of these programs were introduced in high schools with the purpose of educating young parents in rearing their children and decreasing child maltreatment, as well as serving as a preventative measure in reducing future pregnancies (Byles, 1975). The increasing teen parents, along with other societal changes, called for a need for a systematic approach to education that reached large numbers of people before they assumed parenting roles. High schools became the answer to this call. Adolescents make good candidates for child development/parenting education. Adolescence is a time for introspection and reflection (Simpson, 2001, Tomison, 1997).

In at least 150 public high schools in Pennsylvania, parenting education is offered in some form; these programs vary from one district to another. Currently, there are no set guidelines in Pennsylvania for teaching child development/parenting. The Academic Standards for Family and Consumer Sciences are broad and somewhat vague, opening the door to all types of interpretations.

The researcher visits high school programs across the state to supervise student teachers in family and consumer sciences. She has observed much diversity in the way child development programs are structured. Ninety Pennsylvania junior and senior high school child development teachers were surveyed in 2000 and 2001. The results of this survey indicated that there is a lot of diversity in the way child development content is delivered and how high school programs are structured. In 86% of the schools the course was offered as an elective. In these schools, not all students took child development. In 13 % of the schools, every student was required to take a

child development/parenting class. Many of the courses required students to plan and execute activities for young children. Of the 86 teachers reporting that child development/parenting classes were offered, 72% indicated that the course was delivered using a combination of didactic instruction and supervised interaction with preschool children in a child development laboratory. Forty-six (74%) of these laboratory experiences took place in the secondary classroom. The high school students study, design, and implement age-appropriate learning activities to explore and understand the development of preschool children (McCombie, 2003).

Some secondary schools provide a child development laboratory as a part of their Family and Consumer Sciences curriculum. The laboratory provides direct experience with young children for students in the child development or parenting classes. Most programs are part-day, and children are recruited from the community to participate. All family and consumer sciences teachers have taken courses in early childhood care and development as a part of their certification requirements. They are skilled in the use of developmentally appropriate practices and positive guidance in the preschool setting.

While there is some variation across school districts, the secondary students have typically received instruction in these concepts, as well as in basic child development theory and age/stage characteristics prior to participating in the laboratory. During their laboratory participation, the students have experiences that frequently include observing, interacting, and guiding the children as well as planning activities, preparing the classroom, and evaluating the day.

According to the newly created document *Pennsylvania Department of Education Child Development Laboratory Procedures Guidelines* (see Appendix C), the mission of a child development laboratory is to provide high school students with the opportunity to observe and

interact with preschool children in a model setting that utilizes exemplary practices. These experiences offer high school students a model from which they can learn and discuss real-life concepts related to child development. They work under the direction and guidance of the classroom teacher who models positive interactions with the preschool children. High school students learn in a manner similar to an apprenticeship where they become skilled at positive behaviors and also in the language of the skill. Furthermore, the high school students observe how the teacher thinks about a task or activity providing the opportunity for students to experience a cognitive apprenticeship (Rogoff, 1990). The teacher works with students individually or in small groups to plan activities, schedules and nutritious snacks for the preschoolers. After the preschoolers leave, the teacher and students discuss and reflect to determine what changes need to be made for the next session. As the semester proceeds, the high school students take on more responsibility for managing the preschool. From a Vygotskian perspective, this is an ideal way for high school students to gain entry into parenting roles. The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. A second aspect of Vygotsky's theory is the idea that the potential for cognitive development depends upon the "zone of proximal development" (ZPD): a level of development attained when children engage in social behavior. Full development of the ZPD depends upon full social interaction. The range of skill that can be developed with adult guidance or peer collaboration exceeds what can be attained alone (Vygotsky, 1978). Participation in the child development laboratory provides a forum for high school students to act in adult roles and tie acquired skills and thinking abilities to the specific context in which they will likely need them later on in life.

The researcher's survey included an open-ended question asking for the teachers to list strengths of the child development/parenting programs in their schools; the most common response referenced the advantages of hands-on laboratory experiences with preschool children. The high school child development laboratories help students experience what it means to work. The experience presents authentic problems to solve and opens the world of career options in child-related fields.

The *Pennsylvania Department of Education Child Development Laboratory Procedures Guidelines* were created because of a recent concern by some school districts concerning liability issues in the child development laboratories housed in the schools. The researcher provided input for and proofread the document before it was published. The Pennsylvania School Board Association insurance representatives reviewed the guidelines and indicated that they clarify teacher/student/parent expectations and meet insurance carrier requirements for child development programs in Pennsylvania schools. The document has been distributed to all school districts in Pennsylvania. This is a first step in guidance for consistency in procedures for the child development programs in the state.

The document outlines a rationale for high school child development laboratories. It states that, according to the state regulations, only certified teachers in family and consumer sciences may teach child development curriculum and child development laboratories in public schools. The document outlines preschool enrollment and stresses the importance that the classroom be of diverse gender, race, ethnicity, abilities and socio-economic statuses. All inclusive safety procedures are outlined. A section clearly defines appropriate discipline procedures. High school students should be trained in specific guidance techniques that are clear, age-appropriate and caring. All child development laboratory classes should have a written

policy adopted by the school district's board of education. This document clearly reflects the position that family and consumer sciences professionals take concerning child development education.

1.2. Research Questions

A primary goal of this research was to assess student achievement in child development concepts that are reflected in the Pennsylvania Family and Consumer Sciences Child Development Standards. This achievement was measured using a test of knowledge. A secondary goal of this research was to see if students who participated in a course in child development that included a laboratory as an integral part of the course scored at a higher proficiency level than students who participated in a child development non-laboratory course. The main question explored in this study was whether Pennsylvania high schools are providing courses that equip students with the knowledge specified in the Pennsylvania Academic Standards for Family and Consumer Sciences, exclusively the Child Development Standards. Accordingly, this study directed itself to the following research questions:

Research Question 1

Do high school students enrolled in a child development semester course differ from non-child development semester course students in terms of their knowledge of the specific child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

Research Question 2

Does the knowledge of high school students who complete a child development semester course that combines didactic instruction with supervised interaction with preschool children in a child development laboratory, differ from the knowledge of students who complete a non-laboratory, didactic instruction-only child development semester course in terms of child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

1.3. Significance of the Study

Although the current educational and political climates stress math and reading achievement, there is evidence of a societal need for parent education programs in school curricula. One suggested reason for this need is the large number of teenage pregnancies. According to the 2004 Kids Count Data book, in 2002 there were nearly 850,000 mothers under the age of 20. Despite the trend that national teen birth rates are declining, the reality is that these numbers are still well above comparable data from other industrialized countries (Annie E. Casey Foundation, 2004). There is considerable evidence that teen childbearing correlates with a host of long-term negative life outcomes. Teen parenthood greatly increases the risk of educational failure. Pregnancy is the main reason girls give for dropping out of school. Having a child before age 20 reduces academic attainment by almost three years (Quint, Bos, & Polit 1997). According to recent estimates, only about one-third of teen mothers go on to receive a high school diploma after having a child (U.S. Department of Health and Human Services, 2002). Young women who give birth as teens have a greater probability of living in poverty (Quint et al., 1997). Among young men who have fathered children, less than half complete high

school; and those who do are far less likely to obtain any additional education (Annie E. Casey Foundation, 2004).

Teen parenthood is a social problem. Children of adolescents are at a higher risk of developmental problems than children of older parents. Teen mothers are more likely to have unrealistic expectations regarding children's developmental capabilities and are less able to provide children with the verbal and cognitive stimulation they need (Quint et al., 1997). Babies of teen parents are more likely than other babies to have low birth weight (Tyree, 1991). Children born to adolescent mothers frequently suffer intellectual deficits, largely due to economic and social consequences of early childbearing (Hunt & Mann, 1988).

The risk factors for child maltreatment include unwanted pregnancies (Kempe, Silverman, Steele, Droegemuller & Silver, 1962), poor parent-child interactions (Egeland & Brunquell, 1979) and unrealistic expectations of child behavior (Wood-Shuman & Cone, 1986; Azar, Robinson, Hekimian, & Twentyman, 1984; Lynch, 1980; Steele & Pollock, 1968). These researchers suggest that future research address the issue of prevention, namely high school curricula focusing on accurate observation and appropriate interpretation of children's behavior.

Parent education for adolescents can be one measure taken in addressing this serious concern. Lee (1985) reported a significant decrease in adolescent pregnancies where parent education classes were offered. Britner and Repucci (1997) evaluated a parent education program for young, mostly African American mothers aimed at preventing child maltreatment. The program was effective in lessening child maltreatment (Westney, Cole, & Munford, 1986).

Generally speaking, a primary motivation of parenting programs is to prepare parents to raise caring, competent and healthy children. These programs are intended to enhance knowledge

in child development, change behavior when interacting with babies and children, and influence attitudes toward child rearing.

Strong human interactions are the basis for a fulfilling life. Constructive human relationships are essential for becoming contributing members of the family and the community. The family provides a base for establishing these relationships. Due to the nature of the family, however, there may be challenges (Montegomery & Davis, 2004). For example, in 2003, 32% of children under the age of 18 did not live with two parents; more than 60% of children under the age of 6-years-old receive regular childcare from someone other than their parents (ChildStats, 2004). Although these situations may not always be negative, they can present challenges. For example, in 2000 about 879,000 children were victims of some form of maltreatment (U.S. Department of Health and Human Services, 2002). It is therefore important to tackle the challenges of developing positive human relationships. Child development instruction can be one means of meeting this need.

Some studies have reviewed curriculum topics in family and consumer sciences secondary high school programs. Based on student, parent and teacher feedback, researchers recommend an emphasis on family relations, child development, and parenting (Erwin, Moran & McInnis, 1996; Pauley, 1996; Smith, Hall, & Jones, 2001; Wendland & Torrie, 1993). The Pennsylvania Department of Education identifies the importance of child development programs in its mandated state standards; however, there have been no studies conducted in Pennsylvania to see if students graduate with sufficient content knowledge from these standards.

As mentioned earlier, the document, Pennsylvania Department of Education Child Development Laboratory Procedures Guidelines, was created because of a recent concern by some school districts concerning liability issues in the child development laboratories housed in

schools. In April 2004, two family and consumer sciences teachers from schools in Pennsylvania spoke to the Future Directions Committee appealing for help (this committee was established in January 2003 by the Pennsylvania Department of Education to focus on the state of Family and Consumer Sciences in Pennsylvania). The child development laboratories in both of the schools were in jeopardy of closing because a Pennsylvania School Board Association insurance representative suggested that there were liability concerns. In order to keep the laboratories open, the Future Directions Committee, along with the two teachers, created the Pennsylvania Department of Education Child Development Laboratory Procedures Guideline.

This threat of closure in the two schools raised concerns. Child Development laboratories are an added expense to school districts. This concern raised the issue of what value laboratories have in the child development curricula. For this reason the current study, which compares laboratory and non-laboratory child development courses, is of great interested to the Pennsylvania Department of Education, particularly to the Future Directions Committee members.

2. LITERATURE REVIEW

The purpose of this study was to determine the effectiveness of child development courses in high schools as measured by student knowledge of concepts outlined in the Pennsylvania Academic Standards for Child Development. This review of literature covers studies that pertain to the evaluation of the effectiveness of high school courses in child development/parenting. Literature dealing specifically with evaluation of knowledge in child development is limited; therefore, the review will also look at attitudinal and behavioral changes. There is an even greater paucity of studies that compare child development courses with a laboratory component to courses that are non-laboratory, didactic instruction-only.

2.1. Evaluation of High School Child Development Courses

In a survey of 510 junior and senior high schools in America (Shultz, 1989), teenagers identified issues relating to money, health, career choice, marriage, combining work and family responsibilities as things that worry them most. Further, teenagers reported that the schools are doing only an adequate job of teaching them the skills necessary for a responsible and productive adult life. Teenagers reported that they were least prepared by schools in matters relating to family life, i.e., parenting, choosing a marital partner and dealing with family crisis least prepare them. The results of this survey suggest that, it is the opinion of high school students, family life education, which includes instruction in parenting/child development, is urgently needed.

There have been very few recent studies conducted to measure the effectiveness of high school parenting courses. Studies to determine the effectiveness of high school child development courses have been conducted in Louisiana (Hunt & Mann, 1998), Michigan (Luster & Youatt, 1989), Maryland (Kuhn, 1987), Iowa, Minnesota, New Mexico, Wisconsin and Ohio

(Gritzmacher et al., 1981, Zeolla, 1980). One study carried out in Pennsylvania (Richett & Towns, 1980) examined the effects of a parenthood education program on the childrearing attitudes of eighth grade students. Two eighth grade classes were randomly selected from five sections at a middle school. One of the classes was randomly assigned as the experimental group and the class other as the control group. For nine weeks, students in the control group attended their regularly scheduled health class while students in the experimental group participated in the parenthood education class. A pretest and posttest was used to measure childrearing attitudes. Results indicated that participation in the parenthood education program changed the experimental students' attitudes in the direction of greater sensitivity to a child's age appropriate behavior and increased their tolerance of misbehavior.

A quasi-experimental design was used to assess the effects of parent education classes in 8 Michigan high schools. There were 130 participants, 26 of whom were not enrolled in a parenting course, and thus served as a control group. In both groups, students' knowledge of child development, and beliefs about appropriate child rearing practices and the extent to which parents influence the development of their children, were assessed at the beginning of the semester, and, again, when coursework was completed. Analysis of covariance revealed significant differences that favored students in the parenting course (Luster & Youatt, 1989). The study placed emphasis on the method of reality-based experience, such as students interacting with children, choosing age-appropriate toys at a store, and observing patterns of parent-child interaction in natural settings.

The Hunt and Mann (1998) study determined the effectiveness of a state-mandated parenthood education curriculum for high schools in Louisiana. An instrument was developed that contained 27 items to measure knowledge of child development. Data were collected from

563 high school students in 16 randomly selected schools through their family and consumer sciences teachers, using pretests and posttests. One-way and two-way analyses of variance of data from the posttest found no significant differences. Recommendations were made to provide training sessions for teachers who teach the parenthood education course.

Another study that investigated the effects of parent education on high school students' knowledge of child rearing revealed that participation in a child development course had a positive effect on knowledge of child rearing. Kuhn conducted a pretest/posttest experiment during a one-semester child development course, which combined lecture with a supervised laboratory experience with preschool children. A criterion-referenced test was developed for the study. It was a 50-item test based upon selected competencies outlined in the curriculum used at participating schools. The findings from this study suggest that participation in pre-parent education at the high school level has a positive effect on adolescents' attitudes towards both parenting and knowledge of child rearing (Kuhn, 1987).

A pretest/posttest design was also used in a study that assessed learner knowledge of child development as a result of participation in high school courses in Ohio (Zeolla, 1980). Four instruments were used to collect data from students: (1) Child Development Knowledge Test (CDKT) (2) Child Care Giving Competency Scale (3) Personal Data Questionnaire, and (4) Attitudes Toward Parenting Index. The CDKT, which measures high school student knowledge of child development/parent education concepts, was developed by the American Vocational Association (now the Association for Career and Technical Education). The general conclusion from the study was that there was no significant impact on students' knowledge of child development concepts after completing a high school course. However, participation in the

course did bring about a significant improvement in attitude toward children according to results from the other instruments used.

A similar study, comparing the knowledge of child development concepts of students who completed a Child Development course with students who had not enrolled in such a course, reported data from Ohio, Minnesota, Iowa, South Carolina, Wisconsin and New Mexico (Gritzmacher et al., 1981). The CDKT was used. All experimental groups scored higher on the posttest than on the pretest. There was also a gain from pretest to posttest for the comparison groups in three of the states, but these gains were smaller than the gains experienced by the experimental groups.

A three state study (Dittman & Anderson,1987), examining parenting education in South Dakota, North Dakota and Minnesota high schools, evaluated the effects of parenting education programs on students' knowledge, confidence in their abilities to work with young children, problem-solving abilities related to problems associated with child rearing, attitudes toward parenthood and participation based on their gender. There were significant differences from pretesting to posttesting on knowledge scales. There were no significant differences found in the other assessed areas. Female participants gained more than male participants in their knowledge of child development.

Larsen and Juhasz (1986) investigated the relationship between the combined effects of knowledge of child development and level of socio-emotional maturity, and the extent to which this relationship affects adolescents' attitudes toward parenting. The subjects were 434 females from junior colleges, a university, and a junior high school. Subjects completed the Knowledge of Child Development Inventory, the California Psychological Inventory, and the Adult/Adolescent Parenting Inventory. The analysis of the data suggested that there were

significant relationships between the variables being examined. The relationships indicated that subjects' negative attitudes toward parenting were associated with lack of knowledge about child development and with low levels of social-emotional maturity. Subjects' positive attitudes toward parenting were associated with knowledge of child development and high levels of social-emotional maturity.

One study was conducted using younger students. The study was designed to determine whether children's knowledge and ability to solve problems about parenting could be promoted by means of a school-based curriculum. The study took place over two years and involved 138 fifth and sixth graders. Results indicated that students who attended the parenting classes were significantly more knowledgeable about child development than those who did not attend. The students who attended the parenting class also produced significantly more solutions to common parent-child problems. The study concluded that school-based parenting classes may serve as an effective means to promote parental competence and prevent maltreatment of children (Masterpasqua, 1992).

A study (Eugrin, 1996) was conducted to measure the effectiveness of an instructional module on parenting within the curriculum of the family and consumer sciences course of study for high schools in reducing the potential for child abuse of high school students. A pre-treatment/post-treatment quasi-experimental design was used. Thirty-seven experimental students were recruited from one-semester parenting classes being taught at two area high schools; 41 control students were recruited from other classes in the same high schools. Treatment consisted of successful completion of the parenting class. A multiple-choice quiz was used to measure pre- to post-treatment changes in knowledge of parenting, and Milner's Child

Abuse Potential Inventory was used to measure pre- to post-treatment changes in child abuse potential. No significant effects were found at post-treatment on either measure.

A study (Tullcoh & Omvig, 1989) was conducted in Kentucky high schools to see if attitudes and opinions changed following parenthood education courses. Control (non-parenthood education students in other family and consumer sciences classes) and treatment (parenthood education students) groups were pretested and posttested using a questionnaire that contained attitudinal and demographic items. Significant differences were found for 12 of the attitudinal items in the posttest. Students who participated in the parenting curriculum became less authoritarian between pretesting and posttesting whereas the control group became more authoritarian.

Moore and Robin (1981) evaluated a 9-week parenting training program conducted with high school seniors. Ten students completed the program, and 11 matched students on a waiting list to get into the program served as the control group. The class included lectures, videotapes, class discussion and role-playing exercises. The pre-post assessment measures included a written test on the concepts presented in class, a written assessment of students' ability to utilize parenting skills in test vignettes, a behavioral observation of students' interactions with child actors trained to present problem parenting situations, and the completion of the Hereford Parent Attitude Survey. A significant interaction occurred with the first three measures which had been developed for the study. There were no changes in attitude toward parenting according to the results of the Hereford Parent Attitude Survey.

2.2 Evaluation of Teaching Methods

There are few studies that compare courses in child development taught by the lecture method with courses that offer laboratory experiences with preschool children. Greenspan (1974) studied the effects of preschool laboratory experience on cognitive development and identity formation of 16 high school students. The program studied had no lecture component but only discussions after interactions with the preschoolers. The researcher concluded from analysis of videotapes and a written test that knowledge increased. Since there was no control group for comparison, the study is inconclusive. Another study conducted by Essman (1979) did compare students who participated in a class that included a preschool laboratory, to students who participated in a lecture format. The group of students who had the opportunity to participate in the laboratory, showed an increase in positive communication skills, but the study did not equate the treatment group with the comparison group. Recent studies that compare laboratory experience to traditional classroom format for child development education are scarce.

In an open-ended question, the researcher asked Pennsylvania Family and Consumer Sciences teachers to list the strengths of the child development/parenting programs in their schools. The most common response referenced the advantages of hands-on laboratory experiences with preschool children (McCombie, 2003). Providing such laboratory experiences in the schools can be costly, and can only accommodate a limited number of high school students. If all students must meet the state standard, it would be worthwhile to investigate this comparison.

Lack of hands-on practice may affect an individual's ability to internalize lessons. Some studies have reported the importance of hands-on practice in knowledge and attitudinal changes (Donnelly, 1991; Helfer, 1982; Williams, 1983; Malony, 1978). White (1988) as a result of his

experience directing the Harvard Preschool Project came to the conclusion that the best time to train individuals in parenting was during the first year of their child's life because gained skills and knowledge can be immediately utilized. Calvert and Stanton (1991) have stressed the importance of providing students in child development classes with the opportunity to work directly with small children in laboratory environments. Even DeLissovoy, an opponent of parent education for high school students, found that the most effective parenting classes integrated lectures with opportunities to apply child development concepts in the field. Eugrin (1996) conducted a study on high school parenting classes to measure their effectiveness in reducing the potential for child abuse. Thirty-seven experimental students were recruited from one-semester parenting classes being taught at two high schools; 41 control students were recruited from other family and consumer sciences classes in the same high schools. Treatment consisted of exposure to the parenting class. Differences in teachers' styles and topic emphasis were also measured. A multiple-choice quiz was used to measure pre- to post-treatment changes in knowledge of parenting, and the Milner's Child Abuse Potential Inventory was used to measure pre- to post-treatment changes in child abuse potential. No significant main effects were found at post-treatment on either measure. Eugrin suggested some reasons why results of her study were not favorable. One reason offered was that both teachers in the study relied on class lecture and workbooks for their teaching.

Another study designed to determine if the presence or absence of observation and participation activities in child development classes influence the attitudes and knowledge of high school students. The treatment group participated in a semester-long course that included 5 weeks of observation-related activities. The control group completed a semester-long course

without observation activities. Although the results showed growth in knowledge, there was no significant difference between the control group and the experimental group (Losen, 1987).

In child development laboratories, high school students practice effective communication as they interact with the preschoolers and document reflective reports. Students have the opportunity to develop critical skills as they observe the development of children and to use this information to organize appropriate activities. They must employ the process of problem solving to make needed changes (Card, 2004).

Taking a broader look into the effectiveness of classroom laboratories, numerous studies have been conducted in the areas of science. The importance of real-life investigations is recognized by the National Academy of Science, which has contended that the central strategy for teaching science is one that provides students with laboratory or outdoor settings (National Academy of Science, 1996).

Up until the 1960s, science instruction was mainly textbook and lecture-based. Subsequent educational reforms pointed to the importance of hands-on activities that require problem-solving, reasoning and creative skills (Collette & Chiappetta, 1989; Glynn, Yeany & Britton, 1991). Numerous studies have compared student cognitive growth and attitudinal changes when they received traditional textbook, lectured-based instruction versus laboratory techniques. The later received significantly more support (Glasson, 1989; Lott, 1983; Ramsey & Howe, 1969; Tamir, 1983;Tyler-Wood, Cass, & Potter, 1997).

The benefits of hands-on or applied learning were recognized in America as early as the late 19th century when John Dewey referenced the importance of "learning by doing" in his philosophy of education. Dewey placed great emphasis on connecting to students' "capacities, interests and habits" by providing interactive, student-centered "learning communities" within

the classroom (Dewey, 1934). Jean Piaget strongly reinforced the argument that learners need concrete experiences and real life contexts in order to build their own knowledge on the basis of prior knowledge. Piaget articulated a developmental perspective as he investigated the influence of experience on how children learn (Piaget, 1954).

The traditional classroom does not provide opulence for learning and may limit what the brain can do (Hart, 1983). Conventional school learning, unlike real-life learning, asks very little of students. In a high school child development laboratory, students can form emotional attachments to the preschoolers as they apply the concepts learned in class. The laboratory is "learner- centered", not only for the high school students, but for the preschoolers as well. In Texas, family and consumer sciences teachers provide high school students who are interested in teaching an opportunity to investigate it further through an internship. Students who apply must have been enrolled in a child development/parenting course. Local elementary schools function as a laboratory. A Family and Consumer Sciences teacher and a mentor teacher at the elementary school support the students as they develop skills to work with children. Although this program is too new to have empirical evidence of its success, the course has received positive reviews from the students, teachers and community members (Kamin, 2004).

3. METHODOLOGY

The specific research questions presented in Chapter I are:

Research Question 1

Do high school students enrolled in a child development semester course differ from non-child development semester course students in terms of their knowledge of the specific child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

Research Question 2

Does the knowledge of high school students who complete a child development semester course that combines didactic instruction with supervised interaction with preschool children in a child development laboratory, differ from the knowledge of students who complete a non-laboratory, didactic instruction-only child development semester course in terms of child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

The focus of this research centered on the comparison of students' scores on an instrument administered both as a pretest and posttest. The following descriptive information about the research design is outlined in this chapter: basic design of the study, the sampling procedure, the treatment, the instrument, and the statistical analysis.

3.1. Basic Layout of the Study

A quasi-experimental design was used to assess knowledge of child development concepts. The treatment was exposure to a high school semester-long family and consumer sciences course in child development. In this study, there were two subgroups within the experimental group. One of the subgroups consisted of high school students enrolled in a semester-long child development course that is didactic in nature; there was no child development laboratory experience. The second subgroup consisted of high school students enrolled in a semester-long child development course that was a combination of didactic instruction and experience in a child development laboratory. The control group consisted of students who were not enrolled in a child development course and who had not taken a child development course. For the control group, participating teachers were asked to choose students from other family and consumer sciences courses who were similar to those students in the experimental groups, in terms of age and academic ability levels.

Teachers administered the Pennsylvania Child Development Knowledge Test (PCDKT), which was developed for this study (see Appendix D). The instrument is aligned with the Pennsylvania Academic Standards for Child Development (see Appendix E). It was created as a result of the cooperative effort of the Bureau of Career and Technical Education **(**BCTE) of the Pennsylvania Department of Education and the Family and Consumer Sciences Education Program at Indiana University of Pennsylvania.

The test was administered early in the fall 2004 semester and again at the end of the semester. The test included a computer bubble sheet for recording answers. The answer sheets were returned to the researcher and scored by the Indiana University of Pennsylvania Test

Scoring Service. Individual test results are confidential. Each student was assigned a code number that was used for both the pretest and posttest. Teachers reported that it took students approximately 40 minutes to complete the test.

3.2. Sampling Procedure

Nine high schools from across Pennsylvania participated in the study. A mass email list of family and consumer sciences teachers was obtained from the Pennsylvania Department of Education. This list was used to find teachers willing to participate in the study. An email was sent out that explained the study and the three types of groups needed.

After the teachers agreed to participate in the study, respective administrators were sent letters so that permission could be granted for the teachers to give the test (see Appendix F). After permission was granted in writing, tests were sent to the teachers along with student directions, teacher instructions and a key to the test (see Appendices G, H and I).

Originally 14 teachers agreed to participate in the study; however, four of the teachers withdrew from the study before the pretests were sent to the schools. None of these teachers communicated reasons. There were 540 students who took the pretest and 431 students took both the pretest and the posttest. The reasons for this discrepancy are: The teacher from one school administered the pretests but misunderstood that a post-test was also necessary. When she was contacted about the posttests, she relayed that it was impossible to administer because the students had moved on to other courses. Therefore, results from that school (N=18) were not included in the analysis. This left nine schools for the study. Another school did not produce posttest scores for that control group. The teacher reported that student numbers were misplaced

and therefore unavailable (N=21). There were students from each school absent on the days the pretest was administered (N=70). Those tests were not included in the analysis.

Locations of the nine schools spread across Pennsylvania in five different counties. One of the schools is located in the southeast (Delaware County), one is located in Lancaster county, two are located in the central part of the state (Cambria County) and the remaining five schools surround the city of Pittsburgh (Westmoreland and Allegheny Counties) but are not located within the Pittsburgh City School District. Four of the schools are rural and five are urban/suburban.

After all posttests were returned, each teacher was sent a thank you note and a surprise $50.00 gift certificate. The gift certificates were purchased from NASCO, a leading supplier of family and consumer sciences education materials. Teachers were able to order any teaching materials to augment their classroom curriculum. The money was provided by a research award presented to the researcher by the College of Health and Human Services at Indiana University of Pennsylvania.

3.3. Treatment

In accordance with Chapter 4 of the Pennsylvania Education Regulations, school districts must have, at a minimum, academic standards for students in eleven disciplines including Family and Consumer Sciences. The Academic Standards for Family and Consumer Sciences include content requirements in four areas including Child Development. These standards make it mandatory that all students take courses in child development content. Details of the course offerings are left up to the local districts.

Courses are offered in a variety of ways. Courses may last only the length of one grading period or they may be semester-long or year-long. Some courses include a laboratory component while others are a didactic instruction-only format. Course content includes instruction on basic child development theory and age/stage characteristics of children.

Only semester-long courses were used as treatment for this study. The courses began at the beginning of the school year in the fall and were complete at the end of December or early January. The control group did not take a child development course. These students were enrolled in other family and consumer science courses.

3.4. Instrument

The PCDKT is a 50-item multiple-choice test. Each item has four choices of answers, the correct answer and three alternate answers. The content was based on the Pennsylvania Academic Standards for Child Development which includes topics relating to: characteristics in each stage of child development, health and safety needs, developmental appropriate practices, child care considerations, literacy development, and child development theories. The test includes questions that reflect the content of the 20 Standards. There are at least two questions that reflect each standard. For this study, PCDKT was administered to high school students for the first time.

The test was created by the researcher. The first draft, which contained seventy-five items, was sent to the Family and Consumer Sciences program Specialist at the Bureau of Career and Technical Education **(**BCTE) of the Pennsylvania Department of Education. The test was concurrently sent to two child development experts at Indiana University of Pennsylvania.

Suggestions were made to revise or delete questions. The final draft was formed from a consensus of the involved parties.

3.5. Statistical Analysis

A one-way ANOVA on the pretest was conducted to test the equivalency of the three groups' pretest scores. This was carried out because the three groups, the two experimental (laboratory and non-laboratory) groups and the control group, were not from a simple random sample and the students were not randomly assigned to the three groups.

In addressing the two research questions**,** the statistical procedure in this research was planned comparisons on gain scores. To answer Research Question 1, the mean of the control group was compared to the mean of the experimental group (laboratory and non-laboratory groups combined). To answer Research Question 2, the mean of the laboratory group was compared with the mean of the non-laboratory group. Two *a priori* orthogonal tests were performed.

4. FINDINGS AND DISCUSSION

This chapter presents an analysis and summary of data obtained for the study. Data were collected during the fall of 2004 from nine high schools in Pennsylvania. Family and consumer sciences teachers at these schools administered the Pennsylvania Child Development Knowledge Test during September 2004 as a pretest measure. The same instrument was administered at the end of that semester as a posttest measure. The dates of administration of the posttest varied depending on each school's calendar. However, all post-tests were completed by mid-January, 2005. Using the post-test results of the experimental group, all 50 items were subjected to item analysis and Kuder Richardson procedures for internal consistency (see Appendix J).

The focus of this research centered on two research questions:

Research Question 1

Do high school students enrolled in a child development semester course differ from non-child development semester course students in terms of their knowledge of the specific child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

Research Question 2

Does the knowledge of high school students who complete a child development semester course that combines didactic instruction with supervised interaction with preschool children in a child development laboratory, differ from the knowledge of students who complete a non-laboratory, didactic instruction-only child development

semester course in terms of child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

The nine high schools that participated in this study were selected from a list of family and consumer sciences teachers obtained from the Pennsylvania Department of Education. This list was used to find teachers willing to participate in the study. Respective administrators gave approval for the teachers and students to participate.

4.1. Data Analysis Results

A one-way ANOVA on the pretest was conducted to test the equivalency of the three groups, the two experimental (laboratory and non-laboratory) groups and the control group, with regard to their pretest scores. This was carried out because the three groups were not obtained through a random sampling procedure and the students were not randomly assigned to the three groups. Only the pretest scores for the 431 students who had both pretest scores and posttest scores (referred to as the "completer" group) were used. The F-ratio from the ANOVA (see Table 1) was not significant ($p > .05$). This is consistent with the three means themselves (see Table 2) as they are similar in size. Thus, it may be concluded that the three groups of students with complete data were equivalent on the pretest.

Table 1

ANOVA Table for Completer Pretest Scores

ANOVA

Pretest

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.868	2	11.434	.256	.775
Within Groups	19141.044	428	44.722		
Total	19163.912	430			

Table 2

Descriptive Statistics for Completer Pretest Scores (N = 431)

Pretest

Group	Mean	N	Std. Deviation
Control	25.24	75	5.966
Lab	25.33	138	7.194
Non-Lab	24.84	218	6.587
Total	25.07	431	6.676

As mentioned in Chapter III, there was a difference in the number of students who took the pretest (N=540) (see Table 3) and the number of students who took both the pretest and the posttest (N=431) (see Table 2), because of student absences or teacher error. The laboratory group retained the largest number of students. From pretest to posttest, the non-laboratory group lost 48 students and the control group lost 45. However, the laboratory group only lost 16. The researcher offers possible reasons why the laboratory group retained a higher number. In her 2000-2001 survey of high school child development courses, one question required teachers to list the strengths of the child development programs. The most common response referenced the advantages of hands-on laboratory experiences with preschool children. One of the outcomes was an increase in student attendance. The high school students have responsibilities in the laboratory. The classroom teacher, the preschoolers and fellow classmates depend on the high school student to be there to fulfill required duties. The students know that their attendance is valued and essential. Some teachers require that the high school student assign a classmate to complete the tasks if they are absent, much like classroom teachers must do in the event that they do not come to school (McCombie, 2003). Lesson plans, instructions and teaching materials must be available for the substitute teacher.

Another reason for the greater attendance in the laboratory class may simply be that students enjoy the hands-on experience that a laboratory provides. Students look forward to the class because it is something that makes sense to them, a place where they see results because of their hard work and dedication. A rise in self-esteem and a feeling of purpose were other advantages teachers listed in the 2000-2001.

Table 3

Descriptive Statistics for All Pretest Scores (N = 540)

Pretest

Group	Mean	N	Std. Deviation
Control	24.96	120	6.312
Lab	25.64	154	7.315
Non-Lab	25.42	266	6.533
Total	25.38	540	6.710

Comparing the means of the pretest scores of all students (N=540) who took the pretest (see Table 3) to the means of the pretest scores of the students who took both tests (N=431), for the control group there is a .28 difference in the means, the N=431 group having the higher number; for the laboratory group there is a .31 difference in means, the N=431 having the lower number. For the non-laboratory group there is a .58 difference in means, the N=431 having the

lower number. Practically speaking, those numbers are not large. Combined with the fact that there seems to be no pattern as to which group had the higher mean, it is fair to say that the attrition from the three groups appears to be random as far as the pretest results are concerned.

The standard deviations also back this appearance of random attrition. For the control group the standard deviation is 6.312 for the N=540 group which is larger than the N=431 control group (5.966). For the N=540 laboratory group the standard deviation (7.315) is larger than the standard deviation for the N=431 laboratory group (7.194). The standard deviation for the N=540 non-laboratory group is smaller than the N=431 non-laboratory group (6.533 and 6.587 respectively). Once again, there is no systematic discrepancy.

Table 4

Descriptive Statistics for Gain Scores

	N	Mean	Std. Deviation	Std. Error
Control	75	-1.9467	7.79968	.90063
Laboratory	138	2.4928	7.27584	.61936
Non-laboratory	218	.7202	7.57571	.51309
Total	431	.8237	7.65090	.36853

Research Question 1 and 2 were answered by testing two hypotheses with planned comparisons, specifically with *a priori* orthogonal tests.

Research Question 1

Do high school students enrolled in a child development semester course differ from non-child development semester course students in terms of their knowledge of the

specific child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

The hypothesis tested for Research Question 1 was

$$H_0: \mu_E - \mu_C = 0$$

where μ_E is the mean gain score of the two experimental groups and μ_C is the mean gain score of the control group. The hypothesis states that there will be no difference in the mean gain score for all students participating in the study. This hypothesis was rejected, $t(428) = 3.70$, $p < .001$ (two-tailed).

The rejection of the hypothesis for Research Question 1 indicates a statistically significant difference between the mean gain score of the combined Laboratory and Non-Laboratory groups, 1.6065, and that of the Control group, -1.9467. This indicates a statistically significant difference between the mean gain score of the combined laboratory and non-laboratory groups and that of the control group.

Research Question 2

Does the knowledge of high school students who complete a child development semester course that combines didactic instruction with supervised interaction with preschool children in a child development laboratory, differ from the knowledge of students who complete a non-laboratory, didactic instruction-only child development semester course in terms of child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

The hypothesis tested for Research Question 2 was

$$H_0: \mu_{lab} - \mu_{Non\text{-}Lab} = 0$$

where μ_{Lab} is the mean gain score of the laboratory group and $\mu_{Non\text{-}Lab}$ is the mean gain score of the non-laboratory group. The hypothesis states that there will be no difference in the mean gain score for students who participated in a child development course, with or without a laboratory experience. This hypothesis was rejected, $t(428) = 2.16$, $p = .031$ (two-tailed).

The rejection of the hypothesis for Research Question 2 indicates a statistically significant difference between the mean gain score of the Laboratory group, 2.4928, and that of the Non-Laboratory group, .7202.

The mean gain score for the control group is negative, reflecting the fact that the students scored lower on the posttest. Conversely, both groups of the experimental group had a positive mean gain. This supports the efficiency of the treatment. Furthermore, the mean gain of the laboratory group is larger than the mean gain of the non-laboratory group, lending support to the importance of hands-on practice.

One must be cautiously optimistic about the results. Even though the tests produced statistical significance, it was probably due to the large samples. For the control group, the mean gain is -1.94 (i.e., the control group on average answered two fewer questions correctly on the posttest than on the pretest); for the non-laboratory group, the mean gain is .72 (i.e., the non-laboratory group on average answered nearly one more question correctly on the posttest than on the pretest); and, for the laboratory group, the mean gain is 2.49 (i.e., the laboratory group on average answered two and one-half more questions correctly on the posttest than on the pretest). Referring to the gains for the laboratory and non-laboratory groups, considering that the total number of items on the test was 50, gains of .72 and 2.49 are not very large.

Another result that must be acknowledged is the overall low test scores. After completing a non-laboratory child development course, students gave correct answers for 25.42 (mean score)

questions out of 50. Students who took a child development course with a laboratory gave correct answers for 25.64 (mean score) questions out of 50. Percentage-wise, these numbers reflect failing grades.

The small gain in actual number of correct answers may reflect a mismatch between what goes on in the classroom and what the test is assessing. Although the test was aligned with the Pennsylvania Academic Standards in Child Development, it was not correlated with school curricula. Another factor that may play a part in the relatively low test scores is that the difficulty level may be above high school student ability and knowledge levels.

4.2. Item Analysis Results

Posttest scores of the experimental group were subjected to item analysis and Kuder Richardson procedures for internal consistency. The Kuder Richardson-20 was .85. This is a desirable index since exams with 50 items should have minimum coefficient values in the low .80s or high .70s (Dungan, 1996). For future use of this instrument, no items will be discarded because none of the discrimination indices for the correct responses were negative. However, some items will be modified. The ideal pattern of discrimination indices for a given item is that the discrimination index for the correct option is positive, and the discrimination indices for the three incorrect options are negative. There should be modifications made for the items that did not have this pattern.

An example of an item that should be modified is number 49. In this item, in which option 3 is the correct answer, 31 respondents from the upper quartile selected option 3 while 21 respondents from the lower quartile selected option 3. This means that more respondents with high scores on the entire test selected the correct option than respondents with low scores. This would be a positive result however, 58 respondents from the upper quartile selected an incorrect

response of option 2 and 30 respondents from the lower quartile selected option 2. This result is not desirable. A good item would produce more respondents with low scores on the entire test (lower quartile) to select an incorrect option than respondents with high scores on the entire test (upper quartile).

Conversely, an example of a good item would be number 43. In that item 88 respondents from the upper quartile chose the correct response, option 4. Only 23 respondents in the lower quartile chose the correct response. More of them chose option 3, an incorrect response.

4.3. General Discussion

Although the results are encouraging and will may serve as useful evidence for family and consumer sciences teachers who acknowledge the importance of child development courses, more research is needed. This is the first study conducted in Pennsylvania since the Family and Consumer Sciences Standards were passed. If this study is not used as a catalyst for more research, much will be lost in terms of value. The evidence from one study alone is not summative; however, it could be the boost needed to secure grant monies for future research.

The completion of this study is very timely. The No Child Left Behind (NCLB) Act of 2001 requires the creation of standards in each state for what a child should know and learn in reading and mathematics. However, proficiency in academics alone will not insure life-long success. Courses in child development go beyond preparing children to score well on written tests. The skills and knowledge gained from child development courses help prepare students for success in adult roles and to reach beyond that into the next generation.

5. SUMMARY AND CONCLUSIONS

This study found that participation in a high school semester-long child development course has a positive effect on students' knowledge of child development concepts. The findings resulted after investigating high school student achievement in child development knowledge that is reflected in the Pennsylvania Family and Consumer Sciences Child Development Standards.

The design was a pretest/posttest experiment using an instrument which was developed for this study. The treatment was exposure to a high school semester-long family and consumer sciences course in child development. The subjects were 431 students from nine high schools in Pennsylvania. The experimental group consisted of two subgroups. One of the subgroups consisted of high school students enrolled in a semester-long child development course that was didactic in nature. The second subgroup consisted of high school students enrolled in a semester-long child development course that was a combination of didactic instruction and experience in a child development laboratory. Students who were not enrolled in a child development course participated in the control group. Participating teachers were asked to choose students from other family and consumer sciences courses who were similar to those students in the experimental groups, in terms of age and academic ability levels.

This research was driven by two questions:

Research Question 1

Do high school students enrolled in a child development semester course differ from non-child development semester course students in terms of their knowledge of the specific child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

Participating students did not differ statistically in their knowledge of child development concepts contained in the Pennsylvania Academic Standards for Family and Consumer Sciences before participation in a high school child development course. After the experimental group participated in a child development course, they differed significantly in their knowledge, compared to the comparison group who had not participated in a child development course. A high school child development semester course, as evaluated in this study, does appear to have a significant impact on students' knowledge of child development concepts. Students who took a child development course showed significant improvement on posttests compared to pretest scores. However, practical significance was not impressive.

This finding is supported by other studies that assessed the effectiveness of high school child development/parent education courses (Luster & Youatt, 1989; Kuhn, 1987; Gritzmacher et al., 1981). In the Luster and Youatt (1989) found significant differences that favored students in the parenting course. These students were more knowledgeable about child development than were control students. Compared to the control group, students who took the parenting course

were less likely to believe that infants are spoiled by responsive and affectionate care, and more likely to emphasize the importance of talking and reading to children. Students who took the course were also more likely to believe that infants should be given considerable latitude in exploring the home environment, and less likely to be authoritarian in their views on discipline. Finally, students who took the course were more likely to believe that parents exert considerable influence on the developing child. It was concluded that these differences are positive outcomes.

Kuhn (1987) investigated the effect of parent education on adolescents' attitudes and knowledge. The treatment in this study consisted of participation in a child development course that combined didactic instruction and a laboratory experience with preschool children. Using a pretest/posttest experiment with random assignment of 101 students in one high school, analyses of covariance showed that the difference in the means between the treatment groups to be significant at the .05 level in favor of the experimental group. Significance was only reached in the area of increased knowledge in the area of disciplining a child. Significance was not reached in the knowledge areas of child development concepts.

Gritzmacher, Schultz, Shannon and Watts (1981) looked at studies dealing with the impact of secondary home economics programs in five states on child development and parenting. The states involved were Ohio, Minnesota, New Mexico, Wisconsin, and Iowa. The assessment of child development and parenting programs in the five states used a pretest-posttest design involving child development/parenting students and a comparison group. This study found that students in child development/parenting semester-length courses start and end these courses with greater knowledge than comparison groups.

Research Question 2

Does the knowledge of high school students who complete a child development semester course that combines didactic instruction with supervised interaction with preschool children in a child development laboratory, differ from the knowledge of students who complete a non-laboratory, didactic instruction-only child development semester course in terms of child development concepts compiled in the Pennsylvania Academic Standards for Family and Consumer Sciences?

Child development students who participated in a laboratory experience showed a significantly greater improvement on tests scores over child development students who took a didactic-style child development course with no laboratory experience. But, again, the practical findings were not notable when actual tests scores are compared.

Other researchers have investigated the value of laboratory and hands-on experiences. Kuhn (1987) concluded that parenting skills cannot be taught as a solely academic exercise if students are to learn the skills and understandings necessary to nurture young children. Following their studies, White (1988) and Calvert and Stanton (1991) also stressed the importance of providing students in child development and parenting courses with the opportunity to work directly with small children.

These findings lend credence to the belief of Pennsylvania Family and Consumer Sciences professionals in the efficacy of child development education as a positive change agent in knowledge of child development. This belief is also reflected in the missions and goals of the

American Association of Family and Consumer Sciences (AAFCS). Jim Moran, 2004-2005 President of AAFCS, poses the question, "As our population becomes more educated, will we see better parenting?" His answer is clear and strong. Positive parenting requires intentional learning (Moran, 2004).

Karen S. Tucker, Executive Director of AAFCS echoes Moran's statement, "Parenting is probably the most challenging and rewarding role any of us play in life. And, generally, most of us are ill-prepared for the ramifications and often find ourselves looking for the 'how to' directions, only to find conflicting advice from various sources." She goes on to stress the important role that Family and Consumer Sciences educators play in preparing the next generation of parents (Tucker, 2004).

Speaking statistically, the results of this study are encouraging for Family and Consumer Sciences educators who continue to suggest that they need more evidence to support the importance of their work. This plea has been stated to the researcher as she visits classrooms and conducts professional development sessions for Family and Consumer Sciences educators. In the current school context, where basic academic subject test scores are the focus, Family and Consumer Sciences educators often find themselves in a position where they must defend the discipline's importance. In 1990, O' Connor wrote, "Education for parenthood has for many years been a neglected, low status area of school curricula, despite a professed belief in the family as a stabilizing influence on society". There is still a feeling among Family and Consumer Sciences teacher that child development courses are placed low on the list of importance in the schools even though there are studies that support the benefits of child development courses. Some of the positive outcomes, as documented in this report, include a decreased level of teen pregnancies and a decrease in the number of children who are maltreated

(Wekerle & Wolfe, 1993). In the past decade there has been an increasing call from child abuse and neglect interventionists for parent education before a person becomes a parent (McDermott 2002). High school child development courses can be a model for prevention (Bartz, 1980).

Practically speaking, the results did not produce impressive gain in knowledge as a result of participation in a high school child development semester course. Family and consumer sciences teachers should be aware of this if they plan to use this study, by itself, to defend programs and courses.

The answer to Research Question 2 is relevant to Family and Consumer Sciences teachers across the nation who are either facing the threat of existing laboratory closures or who want to establish laboratories in their departments. The value of hands-on learning was identified as early as the 1930's when John Dewey placed great emphasis on student-centered activities. With regard to Research Question 2, we can relate the findings of this study to the Chinese proverb: "I hear and I forget. I see and I remember. I do and I understand."

High school child development curricula should include a laboratory experience where the high school students can apply the theories and concepts studied in the course. Interacting with preschoolers and planning activities is authentic learning. It is learning that is relevant and useful. Didactic-only instruction is inappropriate for high school students and does not promote skill mastery in dealing with small children (Prout & Prendergast, 1985, Rickert et al, 1988). Cooke (1990) affirms that if knowledge of child development and parenting is to be translated into action it must be taught through methods involving direct experience with children. For high schools that have budgetary and/or space limitations, articulations should be established with community preschools or daycare facilities. High school teachers could work with daycare staff

members to coordinate a program that would give students the opportunity to work in an authentic setting.

The Pennsylvania Department of Education identifies the importance of child development programs in its mandated state standards. However, there have been no studies conducted in Pennsylvania to see if students graduate with sufficient content knowledge from these standards.

An added bonus of this study was the production of a good child development content test, the PCDKT. Just recently, the researcher had a conversation with two family and consumer sciences high school teachers. They felt that the creation of the Pennsylvania Academic Standards in Family and Consumer Sciences was a monumental step toward recognizing the value of the discipline but the "ball was dropped" when no test was created to assess student knowledge of the Standards. Although the PCDKT will only assess knowledge from the Child Development Standards, it is a first step in creating a state-wide Family and Consumer Sciences test.

Presently, schools are not monitored closely to insure compliance in meeting the Academic Standards for Family and Consumer Sciences. Administering the PCDKT to high school students with a required passing score would be a sensible start.

Future research recommendations would include:

Sample size

- Replication of this study using fewer schools, perhaps using just one school. This would enable the researcher to monitor the testing procedures, observe the treatment on several occasions and perhaps interview the students. A smaller sample would enable the researcher to gain insights into the classroom situation that were not available in this study. A smaller sample would also be more conducive to conducting a longitudinal study to see if child development knowledge gained in high school would be retained in the future.

Instrument improvement

- Replication of this study using the same schools and teachers to further test reliably of the instrument, the Pennsylvania Child Development Knowledge Test. If reliable, this test could serve as a state-wide assessment for the Academic Standards for Child Development.
- Replication of this study using a portfolio assessment as the instrument. Examples of portfolio artifacts would be: lesson plans, observation reports, case studies. Portfolio artifacts created by the high school students would assess knowledge plus other competencies required to work with children.

- Survey the teachers who participated in this study to get their suggestions concerning test items, to determine if the items align with the concepts taught in the courses. Such input might enhance the validity of the instrument.
- Create tests that align with the other three areas of the Pennsylvania Academic Standards for Family and Consumer Sciences (Balancing Family, Work and Community Responsibility; Financial and Resource Management; Food Science and Nutrition). Pilot these tests in a sample of high schools.

Curriculum issues

- Survey the teachers who participated in this study to see if they altered their child development curriculum to better align it with the items on the Pennsylvania Child Development Knowledge Test.

Attitudinal and behavior changes

- Conduct a similar study using an instrument that measures students' attitudes toward children to see if there are also attitudinal changes as a result of participation in a high school child development course.
- Compare school attendance rates of child development students to students not enrolled in a child development courses and/ or attendance rates of students before, during and after the child development semester course.

APPENDIXES

Appendix A: National Standards for

Family and Consumer Sciences

COMPREHENSIVE STANDARDS AND CONTENT STANDARDS:

1. CAREER, COMMUNITY, AND FAMILY CONNECTIONS

1.0 Integrate multiple life roles and responsibilities in family, career, and community roles and responsibilities.

1.1 Analyze strategies to manage multiple individual, family, career, and community roles and responsibilities.

1.2 Demonstrate transferable and employability skills in community and workplace settings.

1.3 Analyze the reciprocal impact of individual and family participation in community activities.

2. CONSUMER AND FAMILY RESOURCES

2.0 Evaluate management practices related to the human, economic, and environmental recourses.

2.1 Demonstrate management of individual and family resources, including food, clothing, shelter, health care,
recreation, and transportation.

2.2 Analyze the relationship of the environment to family and consumer resources.

2.3 Analyze policies that support consumer rights and responsibilities.

2.4 Evaluate the impact of technology on individual and family resources.

2.5 Analyze interrelationship between the economic system and consumer actions.

2.6 Demonstrate management of financial resources to meet the goals of individuals and families across the life
span.

3. CONSUMER SERVICES

3.0 Integrate knowledge, skills, and practices required for careers in consumer services.

3.1 Analyze career paths within consumer service industries.

3.2 Analyze factors that impact consumer advocacy.

3.3 Analyze factors in developing a long-term financial management plan.

3.4 Analyze resource consumption for conservation and waste management practices.

3.5 Demonstrate skills need for product development, testing, and presentation.

4. EARLY CHILDHOOD, EDUCATION, AND SERVICES

4.0 Integrate knowledge, skills, and practices required for careers in early childhood, education, and services.

4.1 Analyze career paths within early childhood, education and services.

4.2 Utilize developmentally appropriate practices and other child development theories

when planning for early
childhood, education, and services.

4.3 Demonstrate integration of curriculum and instruction to meet children's developmental needs and interests.

4.4 Demonstrate a safe and healthy learning environment for children.

4.5 Demonstrate techniques for positive collaborative relationships with children.

4.6 Demonstrate professional practices and standards related to working with children.

5. FACILITIES MANAGEMENT AND MAINTENANCE

5.0 Integrate knowledge, skills, and practices required for careers in facilities management and maintenance.

5.1 Analyze career paths within facilities management and maintenance areas.

5.2 Demonstrate planning, organizing, and maintaining an efficient housekeeping operation.

5.3 Demonstrate sanitation procedures for a clean and safe environment.

5.4 Apply hazardous materials and waste management procedures.

5.5 Demonstrate a work environment that provides safety and security.

5.6 Demonstrate appropriate laundering processes.

5.7 Demonstrate facilities management functions.

6. FAMILY

6.0 Evaluate the significance of family and its impact on the well-being of individuals and society.

6.1 Analyze the impact of family as a system on individuals and society.

6.2 Demonstrate appreciation for diverse perspectives, needs, and characteristics of individuals and families.

7. FAMILY AND COMMUNITY SERVICES

7.0 Integrate knowledge, skills, and practices required for careers in family and community services.

7.1 Analyze career paths within family and community services.

7.2 Analyze factors related to providing family and community services.

7.3 Demonstrate professional behaviors, skills, and knowledge in providing family and community services.

7.4 Evaluate conditions affecting individuals and families with a variety of disadvantaging conditions.

7.5 Identify services for individuals and families with a variety of disadvantaging conditions.

8. FOOD PRODUCTION AND SERVICES

8.0 Integrate knowledge, skills, and practices required for careers in food production and services.

8.1 Analyze career paths within the food production and food services industries.
8.2 Demonstrate food safety and sanitation procedures.
8.3 Demonstrate selecting, using, and maintaining food production equipment.
8.4 Demonstrate planning menu items based on standardized recipes to meet customer needs.
8.5 Demonstrate commercial preparation for all menu categories to produce a variety of food products.
8.6 Demonstrate implementation of food service management functions.
8.7 Demonstrate the concept of internal and external customer service.

9. FOOD SCIENCE, DIETETICS, AND NUTRITION

9.0 Integrate knowledge, skills, and practices required for careers in food science, dietetics, and nutrition.

9.1 Analyze career paths within the food science, dietetics, and nutrition industries.
9.2 Apply risk management procedures to food safety, food testing, and sanitation.
9.3 Evaluate nutrition principles, food plans, preparation techniques, and specialized dietary plans.
9.4 Demonstrate basic concepts of nutritional therapy.
9.5 Demonstrate use of current technology in food product development and marketing.
9.6 Demonstrate food science, dietetic, and nutrition management principles and practices.

10. HOSPITALITY, TOURISM, AND RECREATION

10.0 Integrate knowledge, skills, and practices required for careers in hospitality, tourism, and recreation.

10.1 Analyze career paths within the hospitality, tourism, and recreation industries.
10.2 Demonstrate procedures applied to safety, security, and environmental issues.
10.3 Apply concepts of service to meet customer expectations.
10.4 Demonstrate practices and skills involved in lodging occupations.
10.5 Demonstrate practices and skills for travel related services.
10.6 Demonstrate management of recreation, leisure, and other programs and events.

11. HOUSING, INTERIORS AND FURNISHINGS

11.0 Integrate knowledge, skills, and practices required for careers in housing, interiors, and furnishings.

11.1 Analyze career paths within the housing, interiors, and furnishings industry.
11.2 Evaluate housing decisions in relation to available resources and options.
11.3 Evaluate the use of housing and interior furnishing and products in meeting specific design needs.
11.4 Demonstrate computer-aided drafting design, blueprint reading, and space planning skills required for
the housing, interiors, and furnishings industry.
11.5 Analyze influences on architectural and furniture design and development.
11.6 Evaluate client's needs, goals, and resources in creating design plans for housing,

interiors, and
furnishings.
11.7 Demonstrate design ideas through visual presentation.
11.8 Demonstrate general procedures for business profitability and career success.

12. HUMAN DEVELOPMENT
12.0 Analyze factors that impact human growth and development.

12.1 Analyze principles of human growth and development across the life span.
12.2 Analyze conditions that influence human growth and development
12.3 Analyze strategies that promote growth and development across the life span.

13. INTERPERSONAL RELATIONSHIPS
13.0 Demonstrate respectful and caring relationships in the family, workplace, and community.

13.1 Analyze functions and expectations of various types of relationships.
13.2 Analyze personal needs and characteristics and their impact on interpersonal relationships.
13.3 Demonstrate communication skills that contribute to positive relationships.
13.4 Evaluate effective conflict prevention and management techniques.
13.5 Demonstrate teamwork and leadership skills in the family, workplace, and community.
13.6 Demonstrate standards that guide behavior in interpersonal relationships.

14. NUTRITION AND WELLNESS
14.0 Demonstrate nutrition and wellness practices that enhance individual and family well-being.

14.1 Analyze factors that influence nutrition and wellness practices across the life span.
14.2 Evaluate the nutritional needs of individuals and families in relation to health and wellness across the life
span.
14.3 Demonstrate ability to acquire, handle, and use foods to meet nutrition and wellness needs of individuals and
families across the life span.
14.4 Evaluate factors that affect food safety, from production through consumption.
14.5 Evaluate the impact of science and technology on food composition, safety, and other issues.

15. PARENTING
15.0 Evaluate the impact of parenting roles and responsibilities on strengthening the well-being of individuals and families.

15.1 Analyze roles and responsibilities of parenting.
15.2 Evaluate parenting practices that maximize human growth and development.

15.3 Evaluate external support systems that provide services for parents.
15.4 Analyze physical and emotional factors related to beginning the parenting process.

16. TEXTILES AND APPAREL

16.0 Integrate knowledge, skills, and practices required for careers in textiles and apparel.

16.1 Analyze career paths within the textiles and apparel design industry.
16.2 Evaluate fiber and textiles materials.
16.3 Demonstrate apparel and textiles design skills.
16.4 Demonstrate skills needed to produce, alter, or repair textiles products and apparel.
16.5 Evaluate elements of textiles and apparel merchandising.
16.6 Evaluate the components of customer service.
16.7 Demonstrate general operational procedures required for business profitability and career success.

Appendix B: PA Academic Standards for Child Development

11.3. Child Development			
11.4.3. **GRADE 3**	*11.4.6.* ***GRADE 6***	11.4.9. **GRADE 9**	11.4.12. **GRADE 12**
Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to. . .			
A. Identify characteristics in each stage of child development. • Infancy/BIRTH TO 1 YEAR • Early childhood/1 TO 6 YEARS • Middle childhood/6 TO 9 YEARS • Late childhood/NINE – 13 YEARS • Adolescence/13 – 18 YEARS B. Identify health and safety needs for children at each stage of child development. C. Identify the characteristics of a learning environment. D. Identify community resources provided for children. E. Explain how the home and community help a person learn to read, write and compute.	A. Compare and contrast child development guided practices according to the stage of child development. B. Identify ways to keep children healthy and safe at each stage of child development. C. Identify the role of the caregiver in providing a learning environment (e.g., babysitting, daycare, preschool). D. Identify child-care provider considerations. E. Identify characteristics of quality literature for children and other literacy enhancing activities.	A. Analyze physical, intellectual and social/emotional development in relation to theories of child development. B. Evaluate health and safety hazards relating to children at each stage of child development. C. Evaluate various environments to determine if they provide the characteristics of a proper learning environment. D. Analyze the roles, responsibilities and opportunity for family involvement in schools. E. Explain how storytelling, story reading and writing enhance literacy development in children.	A. Analyze current research on existing theories in child development and its impact on parenting (e.g., Piaget, Erikson and prior findings versus new brain development research). B. Analyze current issues in health and safety affecting children at each stage of child development. C. Analyze practices that optimize child development (e.g., stimulation, safe environment, nurturing caregivers, reading to children). D. Analyze plans and methods to blend work and family responsibilities to meet the needs of children. E. Identify practices that develop the child's imagination, creativity and reading and writing skills through literature.

Appendix C: Pennsylvania Department of Education

Child Development Laboratory Procedures Guidelines

Pennsylvania Department of Education

Family and Consumer Sciences

CHILD DEVELOPMENT LABORATORY PROCEDURES GUIDELINES

Commonwealth of Pennsylvania

Edward G. Rendell, Governor

Pennsylvania Department of Education

Dr. Gerald L. Zahorchak, Acting Secretary of Education

Bureau of Career and Technical Education

Dr. Lee Burket, Acting Director

EQUAL OPPORTUNITY STATEMENT

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Acknowledgement

Appreciation is expressed to the many Family and Consumer Sciences teachers who contributed greatly to the content of these guidelines.

Introduction

The information in this document is to be used as a guideline for establishing operating procedures in Family and Consumer Sciences (FCS) child development laboratory classes. All child development laboratory classes should have written policy and procedures adopted by the school district's board of directors and approved by the district's insurance carrier so as to eliminate liability issues that could occur due to the absence of such a document.

Rationale

Child development laboratories exist to support child development curricular concepts. Child development curriculum and child development laboratories are to be taught by Family and Consumer Sciences certified teachers (CSPG #53, part 3). Under the supervision of FCS teachers, students enrolled in Child Development classes study, design, and implement age-appropriate learning activities to explore and understand the development of pre-school children. These experiences provide opportunities for high school students to develop skills in behavior management, to identify developmental milestones, and to practice negotiation, cooperation, and leadership through teamwork. These laboratory programs provide educational experiences necessary for teaching and assessing the state and national curriculum standards for child development.

By design, these programs are exempt from licensure by both the Department of Welfare (Title 55. Public Welfare Federal Regs., Section 3270.4 and 1978 DPW Fed. Regs. Section 259) and the Pennsylvania Department of Education (Act 1988-11, Laws of Pennsylvania, Section 5).

MISSION STATEMENT

The mission of a child development laboratory is to provide high school students with the opportunity to observe and interact with pre-school children in a model setting that utilizes exemplary practices. In addition, these experiences offer high school students a model from which they can learn and discuss real -life concepts related to child development.

ENROLLMENT

The goal of enrollment is a well-rounded, diverse group of children that is representative of the local population. In order to affect a high quality learning environment, diversity of gender, age, race, ethnicity, special needs, and family income is recommended.

Enrollment of each child must satisfy the following requirements:

1. **Medical History Form:**

Immunization record

Food or other allergies

Special medical conditions or concerns

Daily medications taken

2. **Physician's report** of child's physical examination within 12 months of attending the lab school.

3. **Emergency Contact Card:** This card must be on file with the FCS teacher, school nurse, and pupil services office.

Parent/Guardian Name

Address

Phone Number

Work Hours

Work Phone Number

Child's Physician

Physician Phone Number

Health Insurance Carrier and Policy Number

Emergency Contact if Parent/Guardian Unavailable

Relationship to Parent/Guardian

Phone Number of Emergency Contact

It is a parent's responsibility to update the family's emergency contact numbers as needed.

4. **Custody:** Any document issued by the court, such as a "no contact order" or "joint custody order," should be on file with the FCS teacher.

5. **Parental consent** is given through a signed statement accepting philosophy and procedures of the child development laboratory. This consent also applies to photographing, videotaping, and assessment of children for educational and program planning purposes (see section on Child Assessment).

LABORATORY FEES AND TAX INFORMATION

A laboratory fee may be charged to defray costs of materials, supplies, and equipment. This fee qualifies as a childcare tax credit. FCS teachers will provide parents with a receipt for payments made and the local school district's tax identification number.

PICK-UP AND DROP OFF PROCEDURES

Children must be closely attended to upon arrival and departure. They shall hold the hand of a caregiver as they exit a vehicle until they arrive at a protected play space. They shall also hold the hand of a caregiver until seated in the departing vehicle.

All children shall be properly restrained in the vehicle upon arrival and before departure.

All children shall only be delivered by and released to the child's parent or an individual designated in writing by the parents.

In an emergency, a child may be released to an individual upon the oral designation of the parent, only if the identity of the individual can be verified by FCS staff.

FIELD TRIPS

Field trips are arranged with parental involvement.

Field trip participants must be transported according to Department of Transportation requirements, including necessary safety seats or seat belt restraints.

Field trips should only be taken to locations where adequate supervision can be provided and pre-school safety has been taken into consideration.

Each child must have a signed parental permission form. These forms, along with emergency cards and a first aid kit, must be available at all times during the field trip.

HIGH SCHOOL STUDENT SUPERVISION

Only students enrolled in the child development courses will be permitted to interact with the children in the child development laboratory.

These enrolled students will receive training and relevant information before being permitted to interact with preschool children.

High school students will be carefully supervised by FCS staff during all interactions with pre-school children.

DISCIPLINE

High school students shall be trained in specific guidance techniques including:

- Providing clear and simple limits
- Maintaining age-appropriate expectations for young children
- Creating a caring atmosphere
- Keeping children productively involved
- Modeling appropriate behaviors
- Positively redirecting inappropriate behaviors toward desired outcomes
- Giving children choices between two acceptable alternatives
- Encouraging children to work together to solve problems and make cooperative decisions
- Encouraging children to use their words to solve problems
- Providing logical and appropriate consequences for children's actions
- Removing children from a situation until they are calm and able to discuss the problem

FCS teachers will monitor interactions between high school students and pre-school children to reinforce appropriate guidance techniques. Corrective intervention shall be employed as needed. A FCS staff person will intervene in any unusual circumstance.

HYGIENE

A toilet and sink will be accessible to pre-school children, high school students, and teachers. Children will be assisted during toileting by the FCS staff.

Hands must be washed with soap after toileting and before eating.

Paper towels will be used as towels and washcloths and discarded after one use.

Tables and food preparation surfaces will be sanitized before and after snack time.

Paper cups, plates, and napkins will be used for eating and drinking and discarded after one use.

ILLNESS

A child should not attend school if the following symptoms have occurred within the last 24 hours…

Temperature over 100 degrees

Vomiting or diarrhea

Severe coughing

Yellowish skin or eyes

Pink eye

Chicken pox that are not scabbed

Head lice, including visible nits

Visible impetigo

Open and/or weeping sores

Any other communicable disease

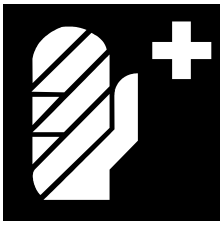
If a child becomes ill after arriving at school, a parent/guardian or emergency contact person will be called to pick up the child immediately. The child should be isolated from other children until picked up.

Families must be notified in writing or by telephone when children have been exposed to a communicable disease. Families should immediately notify the FCS teacher if the child becomes ill with a communicable disease.

ACCIDENTAL INJURY

If a child is injured at school, a parent/guardian will be called, and first aid will be administered either by the FCS teacher or when available, the school nurse.

If a child needs immediate medical attention, the FCS teacher will call 911. Then the parent/guardian or the child's physician will be called. If the parent cannot be reached, the emergency contact will be phoned. The FCS teacher will accompany the child to the hospital, bringing records and parent permission forms.



CHILD ABUSE

Lab school staff members are mandatory reporters of child abuse to the Pennsylvania Department of Public Welfare. Public school reporting procedures must be followed, and strict confidentiality will be maintained.

The safety of pre-school children is insured through supervision of enrolled high school students by FCS teachers or adult teacher's assistants/aides.

GENERAL SAFETY

A first-aid kit shall be readily accessible to FCS staff at all times and shall contain the following:

Anti-bacterial hand sanitizer

Adhesive bandages

Sterile gauze pads

Tweezers

Tape

Scissors

Syrup of Ipecac

Disposable gloves

It is recommended that child development laboratories have easy access to telephone service in order to facilitate direct contact between parents and the child development lab.

Bodily fluid clean-up kits containing disposable gloves and sterile gauze in a disposable bag shall be readily available in each area where children are present at all times.

INDOOR SAFETY

Play equipment used by children shall be clean, in good repair, and free from rough edges, sharp corners, pinch and crush points, splinters and exposed bolts.

Play equipment shall be age appropriate.

Indoor climbing equipment shall be used over a protective surface that does not interfere with the stability of the equipment.

Protective receptacle covers shall be placed in electrical outlets accessible to pre-school children.

Cleaning materials and other toxic materials shall be kept in a container or area that is locked or inaccessible to children and away from food, food preparation areas, and childcare spaces.

OUTDOOR SAFETY

Outdoor play space shall be protected from unsafe areas or conditions. If unsafe areas or conditions exist, a physical barrier must be employed. Barriers may be permanent or portable, but must be in use when children are present.

Outdoor space shall be safe for large muscle activity, including riding, climbing, jumping, and running.

Bike riding shall take place in a designated area, separate from other play activities. Bike riders will wear age-appropriate protective helmets.

Outdoor play equipment shall be age appropriate. It shall be clean and in good repair free from rough edges, sharp corners, pinch and crush points, splinter, and exposed bolts.

Outdoor climbing equipment shall be stable and used over a protective surface of impact-absorbing materials.

A water play table or a container used for water play that contains unfiltered water shall be emptied and cleaned daily.

FIRE, BOMB THREAT, or OTHER EMERGENCY PROCEDURES… in accordance with local district policy

Evacuation procedures are posted in each classroom. In the event of real emergency or drill, these procedures are to be followed.

SHELTER-IN-PLACE PROCEDURES

In the event of a chemical, biological, or national emergency, "Shelter-in-Place" guidelines would be followed. In the event of such an emergency, children outdoors would be brought inside the building without delay. Windows would be shut, and entry doors to the school would be locked to get a better seal. FCS teachers would immediately take attendance to be certain all children are present.

For the safety of everyone, the school would be kept in "lock-down" status. This condition would mean that staff and children would not be permitted to leave the facility until an official "all-clear" message is given. While being separated from a child in an emergency can be extremely unsettling, having parents come to the school to pick up their child could expose themselves, their child, and others in the lab school to hazardous conditions. It is expected that parents cooperate with these guidelines.

Appendix D: Pennsylvania Child Development Knowledge Test (PCDKT)

1. Becky's mother cuddles her a lot and feeds her every time she cries with hunger. Becky feels that the world is comfortable. Becky is in which of Erikson's stages?

    A. Autonomy versus shame and doubt
    B. Industry versus inferiority
    C. Initiative versus guilt
    D. Trust versus mistrust

2. Danny knows that all doggies have four legs, so when he sees a cow he says "doggie." This is an example of

    A. accomodation.
    B. equilibrium.
    C. assimilation.
    D. circular reaction.

3. At the fireworks show, Michael was afraid when his newborn sister suddenly flung her arms and legs out from her body, then pulled them in tightly. He thought his sister might be sick. Michael's mom, however, was not concerned because she knew this was just the baby's

    A. Moro reflex.
    B. Rooting reflex.
    C. Grasping reflex.
    D. Tonic neck reflex.

4. The new dad was very concerned. "Sammy has lost 5 ounces since he was born a week ago! I think we need to give him some bottles of formula in addition to breast milk." This dad is

    A. over reacting, since most infants lose some weight after birth.
    B. Correct in being concerned about his son's weight loss.
    C. Correct in being concerned, but should not start bottle feeding.
    D. Not reacting quickly enough since any weight loss during infancy indicates serious problems.

5. By the age of 3 or 4 moths, the infant develops the ability to hold the chest up while in a face-down position. Also, usually displayed by this time in development is the ability to

    A. crawl.
    B. Sit up with support.
    C. Stand with support.
    D. Reach for an item in the visual field.

6. Swimming classes for infants are

    A. useful for helping children learn to swim.
    B. useful in helping children develop physical coordination.
    C. Potentially dangerous if the baby swallows too much water.
    D. Recommend by most pediatricians.

7. Object permanence is important because it means that infants are able to
    A. Mentally represent objects.
    B. Coordinate sensory stimuli with physical actions.
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    A. in pain.
    B. Very tired.
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11. When parents notice their child using the left hand, the parents should

    A. allow it.
    B. Persuade the child to use their right hand instead.
    C. Allow it until children become school aged, and then persuade them to use their right hand.
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12. A good strategy for putting a young child to sleep is to

    A. wait until she is tired, which should occur at a regular time each evening.
    B. Play vigorously with her to tire her out about an hour before bedtime.
    C. Put her to bed just after supper, because she will be sleepy after eating.
    D. Establish a quiet regular activity to do together each evening before bedtime.

13. Every evening before bedtime, B.J. hunts for her teddy bear and insists that she cannot sleep without him. Should her parents be concerned?

    A. Yes, because this is mainly an excuse to avoid going to bed.
    B. No, because the toy will help her to sleep by herself.
    C. Yes, because this is a sign of some unknown emotional disturbance.
    D. Maybe, because she will be playing with the toy instead of sleeping.

14. Lucille leads the typical life. Her parents are very busy with work and getting everything done at home. They eat at fast food restaurants frequently, and even when they make dinner at home, they tend to eat a lot of pizza, burgers, and other foods that are quick to fix. With this lifestyle, developmentalists would be especially concerned that Lucille is consuming too much

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    B. Salt.
    C. Fiber.
    D. Protein.

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    D. Direct large groups of students using paper-and-pencil activities.

20. Vygotsky DIFFERS from Piaget in the relative importance of _____ for cognitive development.

    A. biology.
    B. Language.
    C. Other people.
    D. The environment.

21. Which of the following activities is one most likely to observe children engaging in if one visited a Montessori school?

    A. working together on a group project
    B. spending most of their time in free play
    C. working alone on various curriculum materials
    D. talking a lot to teachers

22. Lonnie attends a community preschool that is academically focused. The children are required to do several paper-and-pencil activities each day and are formally tested every Friday on their knowledge of simple math facts, letter recognition, and simple reading skills. His friend Ronnie attends a preschool that is not academically focused. According to research on developmentally appropriate practices, what is the likely outcome of Lonnie and Ronnie?

    A. Lonnie will be more creative that Ronnie.
    B. Lonnie will be less positive toward school that Ronnie.
    C. Lonnie will show better mastery of basic skills than Ronnie.
    D. Lonnie will show greater confidence during test taking than Ronnie.

23. The National Association of the Education of Young Children emphasizes that the main cause of failure in the school setting is

    A. inadequate health and emotional care before entering school.
    B. Schools expect too much from children.
    C. Contemporary society has harmed cognitive development
    D. Few school readiness standards have been established.

24. Adolescents' difficulties may be magnified by society because adolescents are often

    A. expected to behave and feel like adults.
    B. Not given adult rights and responsibilities.
    C. Not held responsible for their negative behaviors.
    D. Expected to behave like adults but are treated like children.

25. A business with on-site child care

    A. allows parents the opportunity to bring children to work.
    B. Allows parents to spend lunch breaks with their children
    C. Both of the above
    D. Neither of the above

26. Most studies have found that children from dual-career families

A. Experience few harmful effects.
B. Experience many long-term negative outcomes.
C. Are not achievement oriented.
D. Are anti-social.

27. One type of help for parents is a support group. A support group is

A. The same as a crisis center.
B. A service provided for single parents only.
C. An expensive service available for upper-income parents.
D. A group of people who share similar problems.

28. Which of the following statements is NOT true concerning community resources for parents and children?

A. Seeking services indicates a sign of weakness.
B. Seeking services indicates a sign of strength.
C. Even the most stable family may need to ask for help from community resources.
D. One of life's realities is that problems will occur.

29. Storytelling can help children develop creativity by

A. Illustrating the story with art.
B. Watching the movie about the story.
C. Writing their numbers and letters as they listen to the story.
D. None of the above.

30. Which of the following is a desirable adult-child ratio for child care?

A. One caregiver for every 5 infants
B. One caregiver for every 2 or 3 infants
C. One caregiver for every 15 preschoolers
D. One caregiver for every 10 toddlers

31. All of the following are types of child care EXCEPT

A. Cooperative child care
B. Au pair
C. Play groups
D. Child Find

32. Concerning family involvement in schools, which statement is false?

A. Parents can explain to their children how they can apply the lessons they learn in school to real-life situations.
B. Parents should buy many educational toys to help their children learn.
C. Children are greatly influenced by their parents' attitudes toward education.
D. Parents should become involved with and informed about their children's learning.

33. Reading and writing is important throughout childhood and adolescence because

A. These skills are needed for success in the adult world.
B. These skills promote cognitive development.
C. These skills facilitate critical thinking.
D. All of the above.

34. "Reading and Writing Across the Curriculum" means

A. Focusing on reading and writing instead of curriculum areas.
B. Dropping other curriculum areas including family and consumer sciences
C. Building a bridge between the two skills
D. Providing reading and writing activities in all areas of the curriculum.

35. Which of the following scenarios demonstrates emergent literacy?

A. An adult working on a crossword puzzle
B. A preschooler pretending to read a book by speaking in a "storytelling fashion"
C. A college student studying for a chemistry test
D. All of the above

36. Which of the following scenarios demonstrates emergent literacy?

A. A preschooler throwing a tantrum
B. An infant rolling over for the first time
C. A preschooler using a paper and crayon to scribble
D. None of the above

37. Researchers have found that young children who are read to frequently during the preschool years

A. Have more advanced language development
B. Are less interested in reading
C. Have difficulty learning to read in school

D. Hate story hour

38. Parents can do many things at home to help their child succeed in school. Which of the following would be a good example?

A. Engaging in daily conversations with the child
B. Showing affectionate concern for the child's progress
C. Providing books, supplies and a special place for studying
D. All of the above

39. What are characteristics of good books for nursery school and kindergarten?

A. Interesting and challenging themes like Harry Potter books
B. Slightly complex texts with good rhythm and effective word repetition
C. Brightly colored pictures with no words
D. Strong story lines and character development

40. Which of the following is NOT characteristic of a good toy for preschoolers?

A. Stimulates mental growth
B. Encourages competition
C. Is safely constructed
D. Is reasonably priced

41. What is "attention span"?

A. The amount of time a child is put into "time out"
B. The amount of time a child is interested in one activity
C. The amount of time a child can wait for a parent to pick him up
D. The amount of time an infant can cry

42. A toddler learns best by

A. Exploring his environment
B. Watching television
C. Watching his favorite video over and over again.
D. Playing safely in a playpen.

43. In dual-career families

A. The husband should make decisions concerning yard work and auto care.
B. The wife should do the grocery shopping since she plans the menus.
C. Few conflicts arise because finances are not an issue.
D. Tension will probably occur no matter how dedicated couples are to making it work.

44. Miranda is placing her 6-month-old son Pierce in a home day-care center. Which of the following activities would indicate that the day-care provider is providing an appropriate level of cognitive stimulation for a 6-month-old child?

    A. The provider has a variety of water toys, encourages the baby to play with water, and encourages pretending.
    B. The provider has objects of varying texture and designs, allows the child to act out conflicts with toys and encourages pretending
    C. The provider has tricycles and other riding toys.
    D. The provider has toys with contrasting colors, places toys near the baby so he can reach them, initiates action, and encourages interaction.

45. Which of the following statements is FALSE concerning infant care?

    A. Provide objects for the baby to grasp, bang, or mouth.
    B. Display calm and stable emotions in response to the baby
    C. Play peek-a-boo with the baby.
    D. Don't respond immediately when the baby cries, you will spoil him.

46. Why do educators believe that literacy begins in infancy?

    A. Research demonstrates that very young children can read and write.
    B. Reading and writing are extensions of language development
    C. Reading and writing are very important skills for children to have.
    D. Reading and writing promote good behavior.

47. "Sit down, shut up, and respect your brother!" Mom shouted to Timmy, "Learn to talk instead of fighting!" Timmy is likely to

    A. Sit down, shut up, and learn to respect his brother.
    B. Learn to yell to solve his problems.
    C. Keep on talking and not respecting his brother.
    D. Sit down and shut up, but never respect his brother.

48. At the airport, four-year-old Kelly cried, "Let ME get the suitcases, Mommy!" Her mom let her drag the bags off the luggage carousel, even though it took much longer than it otherwise would have the suitcases were dripped several times. Kelly's mom is helping Kelly develop

    A. Trust
    B. Her identity
    C. A sense of initiative
    D. A sense of generativity

49. Jenna is 14 months old. She sits without support but does not stand even with support. She does not seem interested in crawling. A developmental psychologist would say that Jenna

    A. Is about average in terms of her physical development.
    B. Is a slow developer, but not at risk for any serious delays.
    C. Should be carefully evaluated and monitored because her development is delayed.
    D. Will probably never be able to walk independently due to her delayed development.

50. Parents who wish to help their children do well in and enjoy school can help by

    A. Becoming involved with and informed about their children's learning.
    B. Maintaining a strong authority-based system of discipline for their children.
    C. Requiring students to attend summer school.
    D. Limit their involvement in school functions to keep their children focused on academics.

Appendix E: Test and Standards Alignment

Standard	3A	3B	3C	3D	3E	6A	6B	6C	6D	6E	9A	9B	9C	9D	9E	12A	12B	12C	12D
Item #1																●			
Item #2											●								
Item #3											●								
Item #4																	●		
Item #5	●																		
Item #6												●							
Item #7											●								
Item #8																		●	
Item #9																		●	
Item #10							●												
Item #11							●												
Item #12		●																	
Item #13		●																	
Item #14							●												
Item #15								●											
Item #16								●											
Item #17												●							
Item #18	●																		
Item #19											●								
Item #20																●			
Item #21													●						
Item #22					●														
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Item #24																	●		
Item #25																			●
Item #26																			●
Item #27				●															
Item #28				●															
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Standard	3A	3B	3C	3D	3E	6A	6B	6C	6D	6E	9A	9B	9C	9D	9E	12A	12B	12C	12D
Item #30									●										
Item #31									●										
Item #32														●					
Item #33					●														
Item #34																			
Item #35										●									
Item #36										●									
Item #37															●				
Item #38															●				
Item #39																			
Item #40			●																
Item #41						●													
Item #42			●																
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Item #44																		●	
Item #45						●													
Item #46															●				
Item #47						●													
Item #48						●													
Item #49	●																		
Item #50														●					
Total	3	2	2	2	2	4	3	2	2	2	4	2	2	2	4	2	2	3	3

Appendix F: Letter to Administrators

Letter to High School Principals

Dear :

I am a doctoral student in the Applied Developmental Psychology Program at the University of Pittsburgh. Your family and consumer sciences teacher, NAME, has agreed to assist me in collecting data for my research problem.

The research problem I have selected for my dissertation is an assessment of the child development programs that are a part of family and consumer sciences programs in secondary schools in Pennsylvania. As you know, there are PA Academic Standards for Family and Consumer Sciences. Those standards include child development. My research involves a knowledge test that I created. It is aligned with the child development standards. The test will be given as a pre and posttest. The results will help to determine if the courses offered in Pennsylvania high schools reflect the knowledge addressed in the standards.

I would like your permission to collect data for this study at (HIGH SCHOOL NAME). Collection of the data will require (TEACHER NAME) to administer the instrument as a pretest and posttest to the students in her child development course and one other class in the school that will serve as a comparison group. The students will not be tested by name, it will be anonymous. Also, my report will not indicate how individual schools scored. That is not the purpose of the study.

Please feel free to call or email (smccomb@iup.edu) me. I have enclosed a copy of a letter from the Pennsylvania Department of Education indicating their interest in my study.

Sincerely,

Sally M. McCombie
Coordinator of Family and Consumer Sciences Education

Appendix G: Student Directions for taking the PCDKT

Child Development Knowledge Test
Student Directions

Directions for completion of answer sheet:

You will need a #2 pencil to use on the answer sheet. DO NOT put your name on the sheet. Your teacher will assign you a number. Place that number under the section entitled "Student ID Number". Darken in the corresponding bubbles. In the space entitled "Last Name", write number 14. Darken in the corresponding bubbles. Do not complete the space entitled "Seat Number".

Directions for completion of test:

This test consists of 50 multiple choice items. For each question, select the best answer. After choosing your answer, mark the answer sheet by filling in the correct bubble with a #2 pencil. Be sure that you darken the space completely. If you erase, be sure the incorrect space is completely clean.

Appendix H: Teacher Directions

for Administering the PCDKT

This package contains the materials for administering the child development test. The test questions align with the Pennsylvania Academic Standards for Child Development. I have enclosed a test that has the correct answers circled. The addressed standard is indicated next to each item.

Please ask your students not to write on the test. You will keep those exact tests to use again at the end of your course for the posttest.

Student names should not be placed on the answer sheet. Individual test results are anonymous. Please assign each student a code number. It is critical that the student uses the same code number for the posttest. Students should place that number under the section entitled "Student ID Number". Have them darken in the corresponding bubbles. In the space entitled "Last Name", instruct them to write this number (01) that I have assigned to your school. Have them darken in the corresponding bubbles. I estimate that the test will take about 40 minutes to complete; however, this is not a timed test. I want you to use your own judgment as far as the time allotment.

I need these 3 groups:

1. Students who take child development in a class that does not include a lab

2. Students who take child development in a lab class

3. Students who did not take child development (This is the control group.)

Many of you will not be able to test all three groups. It is important that you try to supply a control group. You may use students in other FCS courses other than child development. I have enclosed envelopes for answer sheets. They are labeled for each of the groups.

I have enclosed a self-address stamped envelope that is to be used to return materials to me. I would appreciate having the answer sheets returned as soon as possible after the students have completed the test.

If you have any questions, please contact me at 724-357-4412 or email me at smccomb@iup.edu.

Appendix I: Test Key

1. Becky's mother cuddles her a lot and feeds her every time she cries with hunger. Becky feels that the world is comfortable. Becky is in which of Erikson's stages?

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    c. Initiative versus guilt
    d. Trust versus mistrust **(CORRECT ANSWER D)**

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    b. No, because the toy will help her to sleep by herself. **(CORRECT ANSWER B)**
    c. Yes, because this is a sign of some unknown emotional disturbance.
    d. Maybe, because she will be playing with the toy instead of sleeping.

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    b. spending most of their time in free play
    c. working alone on various curriculum materials **(CORRECT ANSWER C)**
    d. talking a lot to teachers

22. Lonnie attends a community preschool that is academically focused. The children are required to do several paper-and-pencil activities each day and are formally tested every Friday on their knowledge of simple math facts, letter recognition, and simple reading skills. His friend Ronnie attends a preschool that is not academically focused. According to research on developmentally appropriate practices, what is the likely outcome of Lonnie and Ronnie?

    a. Lonnie will be more creative that Ronnie.
    b. Lonnie will be less positive toward school that Ronnie. **(CORRECT ANSWER B)**
    c. Lonnie will show better mastery of basic skills than Ronnie.
    d. Lonnie will show greater confidence during test taking than Ronnie.

23. The National Association of the Education of Young Children emphasizes that the main cause of failure in the school setting is

    a. inadequate health and emotional care before entering school. **(CORRECT ANSWER A)**
    b. Schools expect too much from children.
    c. Contemporary society has harmed cognitive development
    d. Few school readiness standards have been established.

24. Adolescents' difficulties may be magnified by society because adolescents are often

    a. expected to behave and feel like adults.
    b. Not given adult rights and responsibilities.
    c. Not held responsible for their negative behaviors.
    d. Expected to behave like adults but are treated like children. **(CORRECT ANSWER D)**

25. A business with on-site child care

a. allows parents the opportunity to bring children to work.
b. Allows parents to spend lunch breaks with their children
c. Both of the above **(CORRECT ANSWER C)**
d. Neither of the above

26. Most studies have found that children from dual-career families

a. Experience few harmful effects. **(CORRECT ANSWER A)**
b. Experience many long-term negative outcomes.
c. Are not achievement oriented.
d. Are anti-social.

27. One type of help for parents is a support group. A support group is

a. The same as a crisis center.
b. A service provided for single parents only.
c. An expensive service available for upper-income parents.
d. A group of people who share similar problems. **(CORRECT ANSWER D)**

28. Which of the following statements is NOT true concerning community resources for parents and children?

a. Seeking services indicates a sign of weakness. **(CORRECT ANSWER A)**
b. Seeking services indicates a sign of strength.
c. Even the most stable family may need to ask for help from community resources.
d. One of life's realities is that problems will occur.

29. Storytelling can help children develop creativity by

a. Illustrating the story with art. **(CORRECT ANSWER A)**
b. Watching the movie about the story.
c. Writing their numbers and letters as they listen to the story.
d. None of the above.

30. Which of the following is a desirable adult-child ratio for child care?

a. One caregiver for every 5 infants
b. One caregiver for every 2 or 3 infants **(CORRECT ANSWER B)**
c. One caregiver for every 15 preschoolers
d. One caregiver for every 10 toddlers

31. All of the following are types of child care EXCEPT

a. Cooperative child care
b. Au pair
c. Play groups
d. Child Find **(CORRECT ANSWER D)**

32. Concerning family involvement in schools, which statement is false?

a. Parents can explain to their children how they can apply the lessons they learn in school to real-life situations.
b. Parents should buy many educational toys to help their children learn. **(CORRECT ANSWER B)**
c. Children are greatly influenced by their parents' attitudes toward education.
d. Parents should become involved with and informed about their children's learning.

33. Reading and writing is important throughout childhood and adolescence because

a. These skills are needed for success in the adult world.
b. These skills promote cognitive development.
c. These skills facilitate critical thinking.
d. All of the above. **(CORRECT ANSWER D)**

34. "Reading and Writing Across the Curriculum" means

a. Focusing on reading and writing instead of curriculum areas.
b. Dropping other curriculum areas including family and consumer sciences
c. Building a bridge between the two skills
d. Providing reading and writing activities in all areas of the curriculum. **(CORRECT ANSWER D)**

35. Which of the following scenarios demonstrates emergent literacy?

a. An adult working on a crossword puzzle
b. A preschooler pretending to read a book by speaking in a "storytelling fashion" **(CORRECT ANSWER B)**
c. A college student studying for a chemistry test
d. All of the above

36. Which of the following scenarios demonstrates emergent literacy?

    a. A preschooler throwing a tantrum
    b. An infant rolling over for the first time
    c. A preschooler using a paper and crayon to scribble **(CORRECT ANSWER C)**
    d. None of the above

37. Researchers have found that young children who are read to frequently during the preschool years

    a. Have more advanced language development **(CORRECT ANSWER A)**
    b. Are less interested in reading
    c. Have difficulty learning to read in school
    d. Hate story hour

38. Parents can do many things at home to help their child succeed in school. Which of the following would be a good example?

    a. Engaging in daily conversations with the child
    b. Showing affectionate concern for the child's progress
    c. Providing books, supplies and a special place for studying
    d. All of the above **(CORRECT ANSWER D)**

39. What are characteristics of good books for nursery school and kindergarten?

    a. Interesting and challenging themes like Harry Potter books
    b. Slightly complex texts with good rhythm and effective word repetition **(CORRECT ANSWER B)**
    c. Brightly colored pictures with no words
    d. Strong story lines and character development

40. Which of the following is NOT characteristic of a good toy for preschoolers?

    a. Stimulates mental growth
    b. Encourages competition **(CORRECT ANSWER B)**
    c. Is safely constructed
    d. Is reasonably priced

41. What is "attention span"?

    a. The amount of time a child is put into "time out"
    b. The amount of time a child is interested in one activity **(CORRECT ANSWER B)**
    c. The amount of time a child can wait for a parent to pick him up
    d. The amount of time an infant can cry

42. A toddler learns best by

    a. Exploring his environment **(CORRECT ANSWER A)**
    b. Watching television
    c. Watching his favorite video over and over again.
    d. Playing safely in a playpen.

43. In dual-career families

    a. The husband should make decisions concerning yard work and auto care.
    b. The wife should do the grocery shopping since she plans the menus.
    c. Few conflicts arise because finances are not an issue.
    d. Tension will probably occur no matter how dedicated couples are to making it work. **(CORRECT ANSWER D)**

44. Miranda is placing her 6-month-old son Pierce in a home day-care center. Which of the following activities would indicate that the day-care provider is providing an appropriate level of cognitive stimulation for a 6-month-old child?

    a. The provider has a variety of water toys, encourages the baby to play with water, and encourages pretending.
    b. The provider has objects of varying texture and designs, allows the child to act out conflicts with toys and encourages pretending
    c. The provider has tricycles and other riding toys.
    d. The provider has toys with contrasting colors, places toys near the baby so he can reach them, initiates action, and encourages interaction. **(CORRECT ANSWER D)**

45. Which of the following statements is FALSE concerning infant care?

    a. Provide objects for the baby to grasp, bang, or mouth.
    b. Display calm and stable emotions in response to the baby
    c. Play peek-a-boo with the baby.
    d. Don't respond immediately when the baby cries, you will spoil him. **(CORRECT ANSWER D)**

46. Why do educators believe that literacy begins in infancy?

    a. Research demonstrates that very young children can read and write.
    b. Reading and writing are extensions of language development **(CORRECT ANSWER B)**
    c. Reading and writing are very important skills for children to have.
    d. Reading and writing promote good behavior.

47. “Sit down, shut up, and respect your brother!” Mom shouted to Timmy, “Learn to talk instead of fighting!” Timmy is likely to

    a. Sit down, shut up, and learn to respect his brother.
    b. Learn to yell to solve his problems. **(CORRECT ANSWER B)**
    c. Keep on talking and not respecting his brother.
    d. Sit down and shut up, but never respect his brother.

48. At the airport, four-year-old Kelly cried, “Let ME get the suitcases, Mommy!” Her mom let her drag the bags off the luggage carousel, even though it took much longer than it otherwise would have the suitcases were dripped several times. Kelly’s mom is helping Kelly develop

    a. Trust
    b. Her identity
    c. A sense of initiative **(CORRECT ANSWER C)**
    d. A sense of generativity

49. Jenna is 14 months old. She sits without support but does not stand even with support. She does not seem interested in crawling. A developmental psychologist would say that Jenna

    a. Is about average in terms of her physical development.
    b. Is a slow developer, but not at risk for any serious delays.
    c. Should be carefully evaluated and monitored because her development is delayed. **(CORRECT ANSWER C)**
    d. Will probably never be able to walk independently due to her delayed development.

50. Parents who wish to help their children do well in and enjoy school can help by

    a. Becoming involved with and informed about their children’s learning. **(CORRECT ANSWER A)**
    b. Maintaining a strong authority-based system of discipline for their children.
    c. Requiring students to attend summer school.
    d. Limit their involvement in school functions to keep their children focused on academics.

Appendix J: Item Analysis

Item Analysis

examSYSTEM® II

Date Run: 03/14/2005 Test Date:

Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
1	1	4	11	32	8	-0.1	0.582	1
	2	8	32	63	16	-0.2		
	3	6	28	64	16	-0.2		
	4*	79	25	226	58	0.6		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	3	1	0.0		
2	1	5	14	52	13	-0.1	0.657	1
	2	4	17	40	10	-0.1		
	3*	84	48	255	66	0.4		
	4	4	17	38	10	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	3	1	0.0		
3	1*	66	23	160	41	0.4	0.412	1
	2	15	24	92	24	-0.1		
	3	10	43	112	29	-0.3		
	4	6	5	21	5	0.0		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	2	1	0.0		
4	1*	68	30	199	51	0.4	0.513	1
	2	14	24	68	18	-0.1		
	3	12	26	95	24	-0.1		
	4	3	16	25	6	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		

Number of Respondents: 388
Total in Upper Quartile: 97
Total in Lower Quartile: 97

Number of Test Items: 50
Kuder Richardson 20: 0.85
Kuder Richardson 21: 0.83

Item Analysis

examSYSTEM® II

Date Run: 03/14/2005 Test Date:

Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
5	1	6	20	68	18	-0.1	0.425	1
	2	34	40	141	36	-0.1		
	3	0	6	11	3	-0.1		
	4*	57	28	165	43	0.3		
	5	0	2	2	1	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
6	1	7	14	50	13	-0.1	0.273	1
	2	39	49	206	53	-0.1		
	3*	44	28	106	27	0.2		
	4	7	4	24	6	0.0		
	5	0	0	0	0	0.0		
	6	0	1	1	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
7	1*	54	29	142	37	0.3	0.366	1
	2	8	14	50	13	-0.1		
	3	12	25	75	19	-0.1		
	4	21	27	117	30	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	2	1	3	1	0.0		
8	1	8	23	63	16	-0.2	0.441	1
	2	19	27	93	24	-0.1		
	3*	57	31	171	44	0.3		
	4	13	14	59	15	0.0		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		

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Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
9	1	14	21	82	21	-0.1	0.209	1
	2	28	31	136	35	0.0		
	3*	32	20	81	21	0.1		
	4	22	23	86	22	0.0		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	1	1	2	1	0.0		
10	1*	54	32	167	43	0.2	0.430	1
	2	11	28	56	14	-0.2		
	3	29	21	118	30	0.1		
	4	3	15	46	12	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
11	1*	80	46	261	67	0.4	0.673	1
	2	2	19	28	7	-0.2		
	3	0	5	7	2	-0.1		
	4	15	25	90	23	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
12	1	3	14	37	10	-0.1	0.740	1
	2	0	18	30	8	-0.2		
	3	2	18	33	9	-0.2		
	4*	92	46	287	74	0.5		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		

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Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
13	1	1	11	19	5	-0.1	0.786	1
	2*	88	47	305	79	0.4		
	3	5	22	37	10	-0.2		
	4	3	15	25	6	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	0	1	1	0	0.0		
14	1*	94	51	319	82	0.4	0.822	1
	2	3	18	37	10	-0.2		
	3	0	17	21	5	-0.2		
	4	0	9	9	2	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
15	1	0	16	23	6	-0.2	0.554	1
	2	21	27	108	28	-0.1		
	3	1	15	40	10	-0.1		
	4*	75	37	215	55	0.4		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
16	1*	50	29	158	41	0.2	0.407	1
	2	39	34	145	37	0.1		
	3	4	23	52	13	-0.2		
	4	4	9	31	8	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		

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examSYSTEM® II

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Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
17	1	5	21	52	13	-0.2	0.688	1
	2*	90	36	267	69	0.6		
	3	1	16	32	8	-0.2		
	4	1	22	35	9	-0.2		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	0	1	1	0	0.0		
18	1	8	20	45	12	-0.1	0.291	1
	2*	43	18	113	29	0.3		
	3	32	36	147	38	0.0		
	4	14	21	81	21	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
19	1	6	14	50	13	-0.1	0.513	1
	2*	71	30	199	51	0.4		
	3	18	38	115	30	-0.2		
	4	2	12	20	5	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	0	1	2	1	0.0		
20	1	3	22	51	13	-0.2	0.206	1
	2	24	40	110	28	-0.2		
	3*	24	15	80	21	0.1		
	4	46	18	145	37	0.3		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		

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Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
21	1	29	36	141	36	-0.1	0.340	1
	2	17	22	81	21	-0.1		
	3*	47	21	132	34	0.3		
	4	3	17	32	8	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	1	1	2	1	0.0		
22	1	3	26	46	12	-0.2	0.224	1
	2*	23	22	87	22	0.0		
	3	40	33	164	42	0.1		
	4	31	13	88	23	0.2		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	3	3	1	0.0		
23	1*	30	19	99	26	0.1	0.255	1
	2	16	28	103	27	-0.1		
	3	22	25	84	22	0.0		
	4	29	23	100	26	0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	0	1	1	0	0.0		
24	1	13	28	82	21	-0.2	0.526	1
	2	4	31	53	14	-0.3		
	3	5	14	47	12	-0.1		
	4*	75	22	204	53	0.5		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		

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Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
25	1	5	21	45	12	-0.2	0.693	1
	2	3	18	33	9	-0.2		
	3*	89	37	269	69	0.5		
	4	0	20	38	10	-0.2		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	3	1	0.0		
26	1*	58	28	140	36	0.3	0.361	1
	2	21	30	106	27	-0.1		
	3	9	23	67	17	-0.1		
	4	9	15	73	19	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	2	1	0.0		
27	1	0	17	27	7	-0.2	0.737	1
	2	0	28	40	10	-0.3		
	3	1	26	33	9	-0.3		
	4*	96	24	286	74	0.7		
	5	0	0	0	0	0.0		
	6	0	1	1	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
28	1*	84	26	216	56	0.6	0.557	1
	2	2	24	55	14	-0.2		
	3	9	27	80	21	-0.2		
	4	2	19	36	9	-0.2		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		

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Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
29	1*	77	28	227	59	0.5	0.585	1
	2	0	26	36	9	-0.3		
	3	1	16	26	7	-0.2		
	4	19	24	96	25	-0.1		
	5	0	2	2	1	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
30	1	10	22	59	15	-0.1	0.595	1
	2*	70	36	231	60	0.4		
	3	11	23	64	16	-0.1		
	4	6	14	32	8	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
31	1	0	24	33	9	-0.2	0.544	1
	2	13	24	88	23	-0.1		
	3	10	21	55	14	-0.1		
	4*	74	27	211	54	0.5		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	1	0	0.0		
32	1	7	21	53	14	-0.1	0.557	1
	2*	80	27	216	56	0.5		
	3	7	35	86	22	-0.3		
	4	2	13	31	8	-0.1		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	1	1	2	1	0.0		

Number of Respondents: 388
Total in Upper Quartile: 97
Total in Lower Quartile: 97

Number of Test Items: 50
Kuder Richardson 20: 0.85
Kuder Richardson 21: 0.83

Item Analysis

examSYSTEM® II

Date Run: 03/14/2005 Test Date:

Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
33	1	1	22	47	12	-0.2	0.670	1
	2	1	32	46	12	-0.3		
	3	0	19	30	8	-0.2		
	4*	95	21	260	67	0.8		
	5	0	1	3	1	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	0	1	1	0	0.0		
34	1	0	26	45	12	-0.3	0.613	1
	2	0	18	30	8	-0.2		
	3	9	22	72	19	-0.1		
	4*	88	30	238	61	0.6		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	3	1	0.0		
35	1	3	30	48	12	-0.3	0.376	1
	2*	54	24	146	38	0.3		
	3	4	20	39	10	-0.2		
	4	35	21	151	39	0.1		
	5	0	1	2	1	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	1	1	2	1	0.0		
36	1	2	23	49	13	-0.2	0.418	1
	2	6	26	52	13	-0.2		
	3*	50	23	162	42	0.3		
	4	39	22	121	31	0.2		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	0	1	2	1	0.0		

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Date Run: 03/14/2005 Test Date:

Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
37	1*	94	24	272	70	0.7	0.701	1
	2	2	23	42	11	-0.2		
	3	0	29	41	11	-0.3		
	4	1	19	30	8	-0.2		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	1	2	1	0.0		
38	1	2	18	34	9	-0.2	0.652	1
	2	0	29	42	11	-0.3		
	3	4	31	56	14	-0.3		
	4*	91	17	253	65	0.8		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	3	1	0.0		
39	1	1	16	26	7	-0.2	0.497	1
	2*	64	34	193	50	0.3		
	3	26	21	118	30	0.1		
	4	6	22	45	12	-0.2		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	3	5	1	0.0		
40	1	1	25	41	11	-0.2	0.495	1
	2*	72	21	192	49	0.5		
	3	0	25	35	9	-0.3		
	4	24	23	116	30	0.0		
	5	0	0	0	0	0.0		
	6	0	1	1	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	3	1	0.0		

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Item Analysis

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Date Run: 03/14/2005 Test Date:

Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
41	1	0	21	26	7	-0.2	0.791	1
	2*	97	38	307	79	0.6		
	3	0	21	33	9	-0.2		
	4	0	14	18	5	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	3	1	0.0		
42	1*	94	38	302	78	0.6	0.778	1
	2	1	22	28	7	-0.2		
	3	0	23	33	9	-0.2		
	4	2	11	20	5	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	4	1	0.0		
43	1	0	22	32	8	-0.2	0.649	1
	2	0	19	24	6	-0.2		
	3	9	31	77	20	-0.2		
	4*	88	23	252	65	0.7		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	3	1	0.0		
44	1	1	16	28	7	-0.2	0.567	1
	2	10	29	83	21	-0.2		
	3	3	29	50	13	-0.3		
	4*	83	17	220	57	0.7		
	5	0	2	2	1	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	4	5	1	0.0		

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Item Analysis

examSYSTEM II

Date Run: 03/14/2005 Test Date:

Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
45	1	7	18	77	20	-0.1	0.546	1
	2	5	26	47	12	-0.2		
	3	4	29	49	13	-0.3		
	4*	81	22	212	55	0.6		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	3	1	0.0		
46	1	9	27	61	16	-0.2	0.521	1
	2*	74	22	202	52	0.5		
	3	13	28	94	24	-0.2		
	4	1	17	26	7	-0.2		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	4	1	0.0		
47	1	1	25	43	11	-0.2	0.634	1
	2*	86	25	246	63	0.6		
	3	9	23	52	13	-0.1		
	4	1	22	44	11	-0.2		
	5	0	0	0	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	3	1	0.0		
48	1	5	20	51	13	-0.2	0.554	1
	2	8	22	63	16	-0.1		
	3*	76	31	215	55	0.5		
	4	8	20	54	14	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	1	1	0	0.0		
	Oth	0	2	3	1	0.0		

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Item Analysis

examSYSTEM® II

Date Run: 03/14/2005 Test Date:

Test Name: POST TEST ITEMS Test ID: 104948 Class: All
Instructor: MCCOMBIE Grade: All
Scoring: Raw Score

Question		Upper Quartile	Lower Quartile	Total Count	Total %	Discrimination Index	Difficulty Factor	Weight
49	1	7	31	62	16	-0.2	0.242	1
	2	58	30	199	51	0.3		
	3*	31	21	94	24	0.1		
	4	1	12	28	7	-0.1		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	4	1	0.0		
50	1*	86	37	270	70	0.5	0.696	1
	2	5	25	51	13	-0.2		
	3	5	14	31	8	-0.1		
	4	1	18	32	8	-0.2		
	5	0	1	1	0	0.0		
	6	0	0	0	0	0.0		
	7	0	0	0	0	0.0		
	Oth	0	2	3	1	0.0		

Total Weight: 50

Number of Respondents: 388
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