

Curriculum Development Standard for Family and Consumer Sciences Teachers

Bettye P. Smith
The University of Georgia

This paper reviews Standard 5, Curriculum Development, of the National Standards for Teachers of Family and Consumer Sciences (National Association of Teacher Educators for Family and Consumer Sciences [NATEFACS], 2004). This paper explains the need to develop curriculum based on the three major considerations for curriculum planning: content, context, and learner. The technical (scientific) and non-technical (non-scientific/practical) approaches to curriculum planning are highlighted. Assessment strategies for the Standard are reviewed, and a brief annotated list of suggested resources is included.

The national standard for beginning teachers concerning curriculum development supports the overall mission of the Family and Consumer Sciences Education Association (FCSEA). That is, FCSEA, the professional organization for administrators, teacher educators, and teachers works to improve the quality of family and consumer sciences instruction and to broaden the scope of the curriculum (Family and Consumer Sciences Education, 2005) by developing, integrating, and providing practical knowledge about everyday life that can be used to make sound decisions.

Standard 5 of the *National Standards for Teachers of Family and Consumer Sciences* (National Association of Teacher Educators for Family and Consumer Sciences [NATEFACS], 2004) provides a model of excellence for the beginning FCS teacher and states, “Develop, justify, and implement curricula that address perennial and evolving family, career, and community issues; reflect the integrative nature of family and consumer sciences; and integrate core academic areas.” The *Standards* are written and presented in a succinct format and consensus-oriented approach. Therefore, a set of “Expectation Statements” that described key knowledge, skills, attitudes, and/or behaviors related to each Standard was developed to help teacher educators and others in assessing candidates’ progress toward and attainment of them (Fox & Klemme, 2009). The four Expectation Statements for beginning teachers for Standard 5 are 1) develop and justify curricular choices that meet the needs of all learners; 2) implement curricula that address recurring concerns and evolving family, consumer, career, and community issues; 3) design curricula that reflect the integrative nature of family and consumer sciences content; and 4) integrate family and consumer sciences content and grade level core academic standards (Klemme & Fox, 2009). The first expectation, develop and justify curricular choices that meet the needs of all learners, is the focus of this paper.

There is a plethora of professional literature on curriculum; according to Ornstein and Hunkins (2007), many of the publications use the terms “development” and “plan” in the title. Although differences exist between curriculum development and curriculum planning, for the purpose of this paper and the beginning teacher, the author will use curriculum planning more extensively than curriculum development. An examination of curriculum and planning will follow. Since the Standards were written for beginning teachers, curriculum planning was used as it indicates fundamental knowledge that is received in initial classes.

Posner and Rudnitsky (2001) stated that curriculum refers to what is taught in school or what is intended to be learned. For Posner and Rudnitsky, curriculum represented a set of intentions, a set of intended learning outcomes. Finch and Crunkilton (1999) defined curriculum as the sum of the learning activities and experiences that a student has under the auspices or direction of the school. Sowell (2004) gleaned from different sources and presented several definitions of curriculum which included: the cumulative tradition of organized knowledge; a planned learning environment; an instructional plan; instructional ends or outcomes; and all of the courses, collectively, offered in a school, college, or in a particular subject. Ultimately, Sowell defined curriculum as what is taught including both intended and unintended information, skills, and attitudes that are communicated to students in schools. Although both Posner and Rudnitsky and Sowell's thoughts on the meaning of curriculum are similar (what is taught), curriculum as defined by Sowell is chosen for this paper in the context of the expectation statement for Standard 5, develop and justify curricular choices that meet the needs of all learners.

Planning is a highly complex process (Posner & Rudnitsky, 2001); however, it is important, especially to beginning teachers. Freiberg and Driscoll (2005) viewed planning as a four-step process that included visualizing, guiding, managing, and decision making. For the purpose of this paper, the author defines planning as a process of determining and outlining events (concepts, objective, learning activities, and evaluation) for a designated time period (minutes and/or daily, weekly, unit, or yearly).

Some authorities (Hass & Parkay, 1993; Posner & Rudnitsky, 2001) have combined the two concepts, curriculum and planning, and achieved the phrase/concept curriculum planning. Curriculum planning is the process of gathering, sorting, selecting, balancing, and synthesizing relevant information from many sources in order to design experiences that help learners in attaining the goals of the curriculum (Hass & Parkay, 1993). Furthermore, curriculum planning entails selection and organization of a set of intended learning outcomes. In curriculum planning, the selection of intended learning outcomes is made more rational when they are based on educational goals (Posner & Rudnitsky, 2001). Educational goals are established based on learners and their needs and interest.

Curriculum Planning and Justification of Choices

Decisions for planning the curriculum to meet the needs of all learners are made based on three considerations: the students' previous learning experiences (learners), the content received from curriculum guides and textbooks (content), and the context or conditions in which the instruction will take place (context). It is recommended that teachers consider the *learners* to be taught, the *content* of their teaching, and the *context* of their teaching when planning the curriculum (Chamberlain & Cummings, 2003; Freiberg & Driscoll, 2005; Hitch & Youatt, 2002; Posner & Rudnitsky, 2001). Each of the three considerations will be briefly highlighted in the following paragraphs.

Learners

The students today are tomorrow's adults; they are the human capital upon which America must build its future. However, teaching in the 21st century is challenging (Ornstein & Hunkins, 2007). Students today are distracted by their world of video and violence; they have television and technology (Freiberg & Driscoll, 2005) to entertain them and accompany their time. Therefore, it is necessary to consider carefully the maturity, needs, interests, abilities, and

knowledge of students (Posner & Rudnitsky, 2001). Furthermore, today's students come from varied family backgrounds, structures, cultures, and bring to classrooms a myriad of experiences. Based on the last U.S. Census, it has been noted that if current trends continue, students of color will comprise about 48% of the student population in the year 2020 (Banks, 2008). This statistic is significant and sometimes alarming for beginning teachers as they enter American's classrooms. Yet, 58% of family and consumer sciences teacher education programs do not offer a course in multicultural education (Alexander, West, & Ebelhar, 2007). Students' enrollment and participation are important to the success of any program, especially so in programs such as family and consumer sciences education that often are not required for graduation. Students must see relevance of the program to their lives; this is often the principal challenge for beginning family and consumer sciences teachers.

Beginning family and consumer sciences teachers have a plethora of theories and concepts from professional education classes to draw from while managing the dynamics of the classroom. However, the challenge is being able to connect theory to practice. Therefore, it is necessary to pay special attention to the three major considerations for making curricular choices. The three considerations are learners (Freiberg & Driscoll, 2005; Hitch & Youatt, 2002), content, and context (Freiberg & Driscoll, 2005; Posner & Rudnitsky, 2001). Beginning teachers are encouraged to apply educational theories and models to actual classroom practice to help them justify curricular choices and meet the needs of learners.

Content

The content is the pool of information, skills, and values that students are expected to learn, which is often referred to as subject matter. The content can be structured with specific goals and objectives, teaching and learning activities, and materials found in curriculum frameworks developed by states and/or school districts. The structured content parallels Sowell's definition of intended information, skills, and attitudes communicated to students. However, the content can also be unstructured based on the individuality of teachers and needs of learners which is consistent with Sowell's definition of unintended information communicated to students. A committee for the national standards for students identified 16 subject matter (discipline content) standard areas for family and consumer sciences (NASAFACS, 2008).

Previously, the family and consumer sciences curriculum was organized around family-oriented or career-oriented programs (Vail, 1998). Currently, family and consumer sciences curriculum at the secondary level is organized and delivered around programs of study also known as career pathways (Scott & Sarkees-Wircenski, 2008). A career pathway is a coherent, articulated sequence of rigorous academic and career/technical courses, commencing in the ninth grade and leading to an associate degree, baccalaureate degree and beyond, an industry recognized certificate, and/or licensure (Center for Occupational Research and Development [CORD], 2010). The concept of career pathways is rooted in strengthening the education of all students and the career planning process; the desired outcomes are greater student achievement and preparation for the workforce (ranging from entry level to professional) or postsecondary education. Career pathways in family and consumer sciences are designed to allow students to mold their learning toward a specific career focus (Georgia Department of Education, 2006a). Career pathways can be found in Arizona, California, Georgia and Indiana (Kelly & Filbeck, 2009) as well as many other states. However, curriculum frameworks and content standards continue to be developed based on the *National Standards in Family and Consumer Sciences* and published on the state department's website. These state curriculum frameworks and content

standards are an excellent resource for a pool of information for beginning teachers and usually can be accessed via the state's department of education website.

Context

Context deals with the setting or environment. The context for teaching may include physical environments such as the state, school district, school, or classroom. Not only does the context for teaching include the physical environment, but it emphasizes the general environment such as school reform and school accountability as seen in *No Child Left Behind Act of 2001* (NCLB). Efforts responding to educational reform are currently focused around state-mandated standards of student achievement as well as proposed national standards (Freiberg & Driscoll, 2005). The National Association of State Administrators of Family and Consumer Sciences (NASAFACS, 1998) responded to educational reforms such as *National Education Goals: Building a Nation of Learners* and developed a set of discipline content standards for 16 areas of study in family and consumer sciences (Hetherly, 2000). Additionally, there are some factors that influence a school's efforts to improve outcomes that are embedded in the context of the classroom itself including the number of students and the experience of the teacher. Therefore, beginning teachers in family and consumer sciences have curriculum standards (state, and local depending on the district) to consider as well as the physical setting of the community (rural, suburban, or urban area), school (size, program/course offerings), and classroom features (such as size, location, arrangement, and available resources).

Types of Curricular Approaches, Technical and Non-technical

A teacher must have a familiarity with current approaches to the subject matter to effectively plan a course (Posner & Rudnitsky, 2001). A curriculum approach reflects a holistic position. It expresses a viewpoint about the development and design of curriculum, the role of the learner, teachers, and curriculum specialist in planning curriculum, the goals and objectives of the curriculum, and the important issues that need to be examined (Ornstein & Hunkins, 2007). Two basic approaches to curricular development have been identified, technical and non-technical. An explanation of each curricular approach follows.

Technical Approach

The technical approach is objective and processes are expected to be rational and systematic. In the technical approach, teachers decide what the intended outcomes of learning should be. Thereby, in family and consumer sciences, the traditional technical approach involves teaching students expert ways to perform household tasks such as food preparation and clothing construction. The technical approach curriculum is applicable in a variety of classroom situations. It (technical approach) focuses on a product in a teacher-centered classroom, where students listen to lectures, memorize facts, master skills, and take tests.

Historically, the technical approach to curriculum development has been used in family and consumer sciences when implementing what is known as the concept-based curriculum and the competency-based curriculum (American Home Economics Association, 1989). The concept-based curriculum was popular in family and consumer sciences during the 1960s and 1970s. The concept-based curriculum is the development of units of instruction around concepts. A concept is an idea that is timeless, abstract, broad, and can be shown through a variety of examples (Erickson, 2002). On the other hand, the competency-based approach places emphases on learner outcomes. The competency-based approach curriculum measures what learners have

learned as opposed to what instructors think they have taught. Establishing course objectives, and selecting learning experience and resources are the criteria for evaluating learning (Blankenship & Moerchen, 1979). Therefore, the emphasis of competency-based education in FCS programs is placed on analyzing what persons actually do in particular job roles, specifically the use of task analysis. The competency-based curriculum became popular in family and consumer sciences after the passing of the 1963 Vocational Education Act that promoted occupational education.

Non-technical Approach

A non-technical approach is often used when the major source of curriculum content is the needs and interests of students or needs of society and culture; intended learning outcomes are not stated at the outset. The non-technical approach is favored by educators with a subjective interpretation of reality because it allows them to interact with students and content to develop their own realities (Ornstein & Hunkins, 2007). This approach relies heavily on teachers as the major source of curriculum knowledge because they know their students and teaching contexts. During the last two decades, the family and consumer sciences curriculum has been moving away from the traditional technical approach toward the adoption of the non-technical approach due in part to the series of publications by Marjorie Brown and those she coauthored with Beatrice Paolucci (1978, 1979, 1980). The non-technical approach to curriculum development is seen in family and consumer sciences in the critical science curriculum (practical problem-based).

The critical science approach (practical problem-based) is the process of asking questions and finding answers; it helps students learn to think, reason, reflect and take action through the study of recurring, practical problems. Perennial practical problems are the recurring concerns of families throughout each generation, but changing contextual factors require rethinking what would be best to do (Laster, 2008). For example, what should I do to nourish myself and my family and what should be done to discipline my children are perennial practical problems. However, the changing developmental stages of children and other situational factors require parents to think differently about actions to take for both of the questions posed. The process of asking such questions and finding their answers requires an approach that is process oriented, which means that for students, the process of studying questions and finding answers is as important as the answers. The uniqueness of this approach comes from the questions asked. For this perspective, content develops in response to the questions asked. The non-technical approach (critical science) is very different from the traditional technical (how-to) perspective. The critical science perspective is problem-based and focused on practical perennial problems that families encounter. On the other hand, the traditional technical perspective shared expert ways of completing tasks. The non-technical approach has promoted changes in the way family and consumer sciences educators view, conceptualize, and deliver the subject matter.

Curriculum Development in FCS

The process for curriculum planning and development should be carefully considered. Consequently, guidelines for developing curriculum in family and consumer sciences are highlighted in several documents sponsored by professional organizations. More than two decades ago (1986), the former *Journal of Vocational Home Economics Education* (currently the *Journal of Family and Consumer Sciences Education*) published an issue on curriculum development. Three years later, 1989, the American Association of Family and Consumer

Sciences (formerly American Home Economics Association) published *Home Economics Concepts: A Base for Curriculum Development*. Each publication includes articles and information on the technical approach (concept-based, competency-based) and non-technical approach (practical problem-based/critical science) to curriculum development. Several years later, a chapter in the ASCD Curriculum Handbook entitled *Family and Consumer Sciences Curriculum Guidelines* was published and focused strictly on the non-technical approach (critical science perspective) to curriculum development (Redick, Vail, Smith, Thomas, Copa, Mileham, Laster, Fedje, Johnson, & Alexander, 1998). Whatever approach to curriculum development a teacher chooses to use based on content, learner, and context (educational setting), there are some suggested guidelines to consider.

It is clear that the profession has been very active in proposing guidelines and providing information on curriculum development. There are four factors included in the suggested curriculum development process as outlined by Chamberlain and Cummings (2003). These factors include drawing implications from data gathered, planning, implementing the plan, and assessing. These four factors are consistent with the three specific actions delineated by Freiberg and Driscoll (2005) that all teachers perform, which are plan, deliver, and evaluate. The following paragraphs will describe in detail each of the four factors as stated by Chamberlain and Cummings (2003).

Drawing Implications

Implications for the curriculum are drawn from data gathered about and from the learners, subject-matter trends, and context (community characteristics). Gathering data can take place in a variety of ways (Chamberlain & Cummings, 2003; Finch & Crunkilton, 1999). However, after data are gathered, the teacher will make decisions about teaching based on that data. As the characteristics of the learners, subject matter, and context change – the teacher needs to be aware and make different decisions based on the changes.

Planning

The actual planning process is crucial for teachers. Based on data gathered, a program of study is determined. For purposes of this paper, a program of study is the overall plan for instruction in a program. Also, for this paper, a program is a career pathway in family and consumer sciences. A program of study is likened to a detailed blueprint which a builder follows to construct a building; a comprehensive plan is devised by the instructor and followed to keep the entire program operating as planned. There are a number of acceptable components that can be included in the program of study. In this paper, the program outline (see Table 1) and course outline (see Table 2) will be described. The program outline is a list of and description of each course in a program (career pathway) that a teacher is responsible for teaching. The course outline is a list of suggested units of instruction for the courses taught in the career pathway.

Table 1

Program of Study for Nutrition and Food Science Career Pathway

Courses in the Pathway	Description of Course
Food, Nutrition, and Wellness	An essential course in understanding nutritional needs and food choices for optimal health of individuals across the lifespan.

	Interrelationships with wellness are explored. Leads to the advanced nutrition pathway and develops a knowledge base and the skills necessary to select among alternatives in the marketplace, with an emphasis on nutrient content, development of chronic diseases, and food safety.
Food and Nutrition Through the Lifespan	An advanced course in food and nutrition that addresses the variation in nutritional needs at specific stages of the human life cycle: lactation, infancy, childhood, adolescence, and adulthood including old age. The most common nutritional concerns, their relationship to food choices and health status and strategies to enhance well-being at each stage of the lifecycle are emphasized. Provides knowledge for real life and offers students a pathway into dietetics, consumer foods, and nutrition science careers with additional education at the post-secondary level.
Food and Science	Integrates many branches of science and relies on the application of the rapid advances in technology to expand and improve the food supply. Students will evaluate the effects of processing, preparation, and storage on the quality, safety, wholesomeness, and nutritive value of foods. Building on information learned in Nutrition and Wellness and Chemistry, this course illustrates scientific principles in an applied context, exposing students to the wonders of the scientific world. Careers will be explored.

Note: Description obtained from Georgia Department of Education.

The establishment of career pathways facilitated the planning and development of curriculum for beginning teachers; usually schools or family and consumer sciences departments have selected a career pathway to implement. In this paper, a career pathway in Foods and Nutrition will be used to illustrate the planning process. In Georgia, the Foods and Nutrition pathway is entitled *Nutrition and Food Science*. Career pathways in Foods and Nutrition can be found on family and consumer sciences websites in several states; sometimes the name is stated differently, but the concept is the same. A description of each course in the Georgia *Nutrition and Food Science* career pathway can be found in Table 1.

For beginning teachers to plan the program of study, one should start with listing all courses in the career pathway taught. Next, provide a detailed description of each course (see Table 1). At this point, a beginning teacher should be able to visualize the family and consumer sciences program (career pathway) for implementation. A course outline contains the titles for the units of instruction in a given course, any course in the career pathway. To create the course outline as in Table 2, select a course in the career pathway and then list the content, grouping like content into units of instruction. A unit of instruction is one major concept within a content area or given course such as nutrients, food guide, meal planning, and/or purchasing. A unit of instruction allows the teacher to teach with a sense of direction. A unit of instruction can include the title of unit, goal/s, specific objectives, scope (topics to be taught) and sequence (estimated time allotment), learning activities (for teacher and student), assessment/evaluation (traditional and alternative). The unit of instruction is not intended to be absolute, but rather a guide for

teachers to use. In fact, a unit of instruction can be used as a model for teachers to further develop a given course (with several units of instruction) or courses (program of study) in family and consumer sciences. Therefore, teachers may elect to modify the unit of instruction based on the needs and interest of their students and the context of the school and community, which is a strong justification for curricular choices.

Table 2

Course Outline for Food, Nutrition and Wellness offered in Nutrition and Food Career Pathway at Anywhere High School, Anywhere, USA

Units of Instruction (Subject Matter Topics)	Proposed Time (Number of Weeks)
Introduction	1 week/5 days
Nutrition	3 weeks
Lifestyle Decisions	3 weeks
Food Safety	3 weeks
Equipment	2 weeks
Skills	4 weeks
Careers in Food and Nutrition	2 weeks

Note: This course outline is developed for an 18 week period.

The course outline (units of instruction) in Table 2 is for a *Nutrition and Wellness* course. Table 3 is a further analysis of the units of instruction with subject matter topics and subtopics. The content in a course outline is developed for the entire time that students will be in the course whether it is a year on a 60 minute schedule (36 weeks), or a semester on a 90 minute block schedule (18 weeks), or a quarter on either a 60 or 90 minute schedule (9 weeks).

Table 3

Units of Instruction for Nutrition and Wellness offered in Nutrition and Food Career Pathway at Anywhere High School, Anywhere, USA

Units/Subject Matter Topics and Sub Topics	Proposed Time/Number of Weeks
Introduction FCCLA	1 week
Nutrition Nutrients* MyPyramid.com Planning Food Choices Weight management/Obesity Food and Fitness	3 weeks
Lifestyle Decisions Drugs Alcohol Smoking	3 weeks

Food Safety Food Safety and Sanitation Food Temperatures Food Borne Illnesses Food Handling and Storage	3 weeks
Equipment Kitchen Equipment, Types and Cost Kitchen Equipment Usage Kitchen Design and Function	2 weeks
Skills Knife Skills Measurement Skills Cooking Techniques Recipe Skills	4 weeks
Careers in Food and Nutrition	2 weeks

Table 4 shows a suggested scope and sequence for the unit of instruction on nutrients in the *Nutrition and Wellness* course. This unit of instruction could be used in almost any Foods and Nutrition course (i.e., Nutrition and Wellness, Food Science) and the technical or non-technical approach curriculum as nutrients are germane to the content area. Three different texts were used to gather the information in Tables 3 and 4. The main text used was *Nutrition and Wellness* (Duffy, 2006). The two secondary texts were *Guide to Good Food* (Largen & Bence, 2006) and *Adventures in Food and Nutrition* (Byrd-Bredbenner, 2007). However, a different textbook with the same basic information may be used to replace any of the three books listed above. Teachers may also vary on the topics included and the amount of time devoted to each.

Table 4

Unit of Instruction on Nutrients for Nutrition and Wellness offered in Nutrition and Food Career Pathway at Anywhere High School, Anywhere, USA

Scope	Sequence
Proteins Amino acids Complete proteins Incomplete proteins	1 day (90 minutes)
Carbohydrates Sugars Starches Fiber Glycogen	1 day (90 minutes)
Fats Saturated fats Unsaturated fats	1 day (90 minutes)

Hydrogenation Cholesterol	
Vitamins Fat-soluble Vitamin A Vitamin D Vitamin E Vitamin K Water-soluble B-Complex Thiamin Riboflavin Niacin Vitamin C	1 day (90 minutes)
Minerals Calcium Phosphorus Iron Iodine Fluorine Other trace minerals	1 day (90 minutes)
Water Transporter Blood and tissue fluid Body temperature	1 day (90 minutes)

Implementing the plan

A well-developed plan is not effective unless implemented. The specific objectives and learning activities (for teacher and student) that are included in each unit of instruction must now be implemented. A well-developed lesson plan is necessary in order to implement the subject-matter. Teachers may elect to use one of the three models of instructional design (lesson plan format) authored by Robert Gagne, Madeline Hunter, or Barak Rosenshine and published in *Universal Teaching Strategies* (Freiberg & Driscoll, 2004). The three aforementioned lesson plan formats include almost the same events: introduction of lesson, review of previous lesson, presentation of new content, application of new information, assessing new learning, and closure. Regardless of the lesson plan format that is used, the six events above are basic to effective teaching.

In creating a lesson plan, instructional strategies must be considered. Through different publication outlets, family and consumer sciences educators (Chamberlain & Cummings, 2003; Hitch & Youatt, 2002; Love, Nelson, Gloeckner, Mallette, & Yahnke, 1994; Reichelt & Pickard, 2008; Smith & Katz, 2006; Smith, 2007) have provided strategies for enabling student learning. Strategies provided in the aforementioned resources will also help build a teacher's repertoire and further the development of skills. In family and consumer sciences classes, some instructional strategies encourage problem solving and higher order thinking skills (Shamsid-Deen & Smith, 2006). The varied and repeated use of many of these strategies will help provide a creative and dynamic classroom.

Implementing the technical approach. Implementing each of the curricular approaches (technical or non-technical) is complex, especially for a novice teacher. A teacher could implement the technical approach curriculum using the unit of instruction on nutrients provided above and in Table 3 and 4. An example of a general goal for the unit of instruction is “understand nutrition, lifestyle decisions, and the difference between healthy weight and obesity.” Numerous specific and/or behavioral objectives can be written from the general goal provided above. An example of a specific objective is “identify the six nutrient groups.” Basic concepts and questions such as the following can be explored: What foods are high in protein? What food is the highest in almost every nutrient? What is the almost perfect food?

Implementing the non-technical approach. On the other hand, a teacher could implement the non-technical approach (practical problem-based curriculum) using the sample unit of instruction on nutrients provided above and in Table 3 and 4. A general goal is “learn to select good food choices that lead to a healthy lifestyle.” Some sample questions are: How many grams of protein do I need daily? How many grams of protein does a younger family member need? How many grams of protein does a female parent need? What is the difference between grams of protein needed for each family member? These and similar questions would help students learn the information in a practical problem-based situation when it is connected to everyday living. The difference in implementing the two approaches lies in the desired outcomes for the information.

According to Posner and Rudnitsky (2001), it is too much to expect a single approach of curriculum development to work always and for everyone. This is especially true when such factors as learner, context, and content position their own particular constraints on teachers. Therefore, it is suggested that teachers are familiar with both approaches to curriculum development, technical and non-technical. Additionally, beginning teachers will probably need to re-visit the approaches often during the developmental stages of their career.

Assessing

Assessment is a strategy for measuring knowledge, behavior or performance, or attitude (Freiberg & Driscoll, 2005). Furthermore, assessment attempts to determine students’ status with respect to an educational variable of interest (Popham, 2005) and includes a full range of procedures used to gain information about student learning and the formation of value judgments concerning learning progress (Linn & Gronlund, 2000). Assessment is a data gathering strategy that can be used to diagnose students’ strengths and weaknesses, monitor students’ progress, assign grades, and determine instructional effectiveness.

Assessment strategies can include both traditional and non-traditional techniques. Traditional assessment may include paper and pencil tests whereas nontraditional assessment may include portfolios, journal entries, self-evaluations, and rubrics in addition to objective-type questions (Freiberg & Driscoll, 2005; Posner & Putnisky, 2001; Linn & Gronlund, 2000; Popham, 2005). This is consistent with the standard established by Interstate New Teacher Assessment and Support Consortium ([INTASC], 2007) and also shown in Georgia Systemic Teacher Education Program ([GSTEP], 2003) framework. The standard states that “the teacher understands and uses formal and informal assessments strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.” An array or varied assessment strategies should be used. However, for beginning teachers it is recommended to review and adapt teachers’ manuals and resource books that include test banks and other forms of ready-made assessments.

Summary

Standard 5, Curriculum Development, is an important part of the *National Standards for Teachers of Family and Consumer Sciences* (NATEFACS, 2004) as it gives directions for the family and consumer sciences teacher. The *Standard* also supports the overall mission of the Family and Consumer Sciences Education (FCSE) Association. That is, family and consumer sciences educators work to improve the quality of family and consumer sciences instruction and to broaden the scope of the curriculum.

Producing educators who can effectively perform the three specific actions of all teachers, which are plan, deliver, and evaluate to meet the needs of today's learners is challenging. However, as teacher educators provide learning experiences for preservice teachers, the *Standards* offer a benchmark. Planning is a key element in preparing to become competent in the family and consumer sciences classroom.

Annotated List of Suggested Resources

Books

- American Home Economics Association. (1989). *Home economics concepts: A base for curriculum development*. Alexandria, VA: American Home Economics Association. This publication is written in two major parts, concepts in family and consumer sciences education and curriculum applications. In part I, the knowledge base is recommended. In this publication, the knowledge base is organized around the knowledge needed for action by family members and consumers as they resolve practical questions of the family in the following area: Consumer and resource management; Housing and living environments; Individual, child, and family development; Nutrition and food; and Textiles and clothing. In part II, a general summary of each approach to curriculum development. Specifically, a sub-chapter is provided on concept-based, competency-based, and practical problem-based curricular.
- Chamberlain, V. M., & Cummings, M. N. (2003). *Creative instructional methods for family and consumer sciences, nutrition and wellness*. New York: McGraw-Hill. This book is divided into four parts and has 26 chapters. Part I explores the educational process and includes seven chapters. Chapters 3 (Curriculum Development and Concept Organization), 4 (Objectives and Competencies), 5 (Designing Learning Experiences), 6 (Teaching Plans), and 7 (Assessment) are recommended to help satisfy the requirements of curriculum development.
- Duenk, L. G. (1993). *Improving vocational curriculum*. South Holland, IL: Goodheart-Willcox Company Inc. This book provides guidelines for those responsible for the development of contemporary curriculum for instruction in career and technical education. It consists of 12 chapters, each aimed at specific tasks in curriculum development or at a particular method of instruction.
- Freiberg, H. J., & Driscoll, A. (2004). *Universal teaching strategies* (4th ed.). Boston: Allyn & Bacon. This book has 14 chapters and is presented in three parts; plan, deliver, and evaluate. Part I is focused on the planning process and contains six chapters, whereas, Part II deals with delivering the content and has six chapters. Part III highlights evaluating the learners with

two chapters. Although this book is useful for a curriculum class, Part I would be especially helpful for teacher educators as they teach the content and novice teachers in understanding and planning.

Hitch, E. J., & Youatt, J. P. (2002). *Communicating family and consumer sciences: A guidebook for professionals* (2nd ed.). Tinley Park, IL: Goodheart-Willcox Co. Inc.

This book is presented in 15 chapters. However, chapter 6 (Deciding What to Communicate) would be helpful to teachers developing a curriculum that is concept-based.

Linn, R. L., & Gronlund, N. E. (2000). *Measurement and assessment in teaching* (8th ed.). Upper Saddle River, NJ: Prentice Hall.

This book focuses on the importance of assessment in the instructional practices of teachers. The ability to construct, select and evaluate assessments provides effective measures for student learning. This literature introduces the teacher to various processes of educational measurements.

Miller, P. W., & Erickson, H. E. (1985). *Teacher-written student tests: A guide for planning, creating, administering, and assessing*. West Haven, CT: National Education of Education Professional Library.

This publication offers guidelines, practical suggestions, and examples for developing better teacher-made tests. It is divided into five chapters: (1) Planning Classroom Tests, (2) Guidelines for Developing Classroom Tests, (3) Assembling and Administering Classroom Tests, (4) Assessing Test Items, and (5) Desirable Characteristics of Tests. Instructional objectives are included in planning appropriate test items; general and specific guidelines are given for developing classroom tests. An item response profile and discussion of item discrimination are necessary for assessing test items. Descriptions of validity and reliability are included as desirable characteristics of tests.

Popham, W. J. (2005). *Classroom assessment: What teachers need to know* (4th ed.). Boston: Allyn & Bacon.

This book distributes knowledge of assessment concerns faced by today's classroom teacher. Assessments are to assist with the educational choices of teachers. These are not to be deemed trivial or standardized in anyway. The mainline concepts of measurement desired by classroom teachers are examined and expanded upon in this manuscript.

Posner, G. J., & Rudnitsky, A. N. (2001). *Course design: A guide to curriculum development for teachers*. (6th ed.). New York: Longman.

This book was created for teachers in training and current teachers to help them make the connection between the application and theory of curriculum development. It presented courses of action concerning the development of an intriguing, flexible curriculum for students.

Redick, S. S., Vail, A., Smith, B. P., Thomas, R. G., Copa, P., Mileham, C., Laster, J. F., Fedje, C., Johnson, J., & Alexander, K. (1998). Family and consumer sciences curriculum guidelines. *In Association for Supervision and Curriculum Development Curriculum Handbook* (pp. 1-120). Alexandria, VA: Association for Supervision and Curriculum Development Curriculum.

This chapter in the ASCD Curriculum Handbook is an overview of the practical problem-based curriculum. The chapter contains nine essays including an executive summary;

status of family and consumer sciences curriculum; initiatives, standards, and curriculum guidelines; family and consumer sciences process-oriented curriculum: an essay; implementing family and consumer sciences curriculum; principles of teaching practice in family and consumer sciences education; what every curriculum administrator wants to know about FCSE: part I; what every curriculum administrator wants to know about FCSE: part II; and using a process-oriented approach in teaching FCSE: a scenario.

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About the Author

Bettye P. Smith is a professor in Workforce Education, Leadership, and Social Foundations at The University of Georgia, Athens, Georgia.

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Secondary Family and Consumer Sciences Students Teaching Young Children: Importance of Using Developmentally Appropriate Lessons

Valerie A. Williams
Southeast Guilford High School

Sharon Ballard
Cheryl A. Johnson
Archana V. Hegde
East Carolina University

The purpose of this action research study was to help family and consumer sciences (FCS) high school students in Early Childhood Education create more developmentally appropriate lesson plans as well as to become more reflective in practice using experiential learning, modeling, and reflection. Data were collected both prior to and during their field experiences in which they taught lessons to young children. Results indicate that a progression of modeling, videotaped classroom practice, and real-world practice along with ongoing reflection may be an effective method of teaching within early childhood education programs in FCS. Recommendations for FCS teachers with early childhood education programs are shared.

How do teachers learn the art of teaching? How do teachers improve the development of lesson plans? While many people believe that teacher education starts in college, there are several courses offered at the high school level for students who are interested in becoming teachers of young children. In one large southern state, these courses include Early Childhood Education I and Honors Early Childhood Education II. In the particular county where this study took place, Early Childhood Education II was taught as an honors course. Each of these courses are two credits, taught by family and consumer sciences teachers, and are available to students who are at least 16 years old. Students learn about child development and teaching for the birth through kindergarten level. Students are required to complete internships, as well as learn about child development theory, rules and regulations of child care centers, and developmentally appropriate practices (DAP) in early childhood education. After completing these two classes, students with a B average in the class and a raw score of 80 or higher on their final exam can articulate with a local community college and receive their Early Childhood Credential Equivalent. This equivalent can be substituted for the Early Childhood Credential that are required of all lead child care teachers in this southern state. One of the main concepts within early childhood education is DAP, which lays the foundation for high quality early childhood care and education. Within these classes, students learn to plan and implement developmentally appropriate lesson plans.

In the late 1980's, the National Association for the Education of Young Children (NAEYC) created a set of standards that outlined DAP for young children. This standard was based on three overarching themes: (a) what is age appropriate for children, (b) what is individually appropriate for each child, and (c) the social and cultural contexts in which a child is immersed (Bredekamp & Copple, 1997). A "developmentally appropriate" classroom is very child-centered where the teacher is more of a facilitator and the children direct their learning

(Charlesworth, 1998). To become a teacher that uses DAP, teachers have to take the time to get to know their students and how they learn. Because children are very social, they need to interact with each other through play as well as their environment (Rushton & Larkin, 2001). Current research on brain development indicates a positive link between developmentally appropriate practices and healthy brain development (Rushton & Larkin, 2001).

Although research documents the importance of DAP and the elements that comprise a DAP classroom, students often have difficulty applying what they learn in the classroom about DAP to actual practice in their internship. Therefore, the purpose of this study was to help FCS high school students in Early Childhood Education create more developmentally appropriate lesson plans as well as to become more reflective in practice using experiential learning, modeling, and reflection. Students (a) observed modeling of developmentally appropriate lessons, (b) reflected on these lessons, (c) created their own developmentally appropriate lessons, (d) practiced their lessons in front of the class for peer review while being videotaped, (e) completed self-reflection on this videotaped lesson, (f) created new lessons and implemented them at their internship sites while being observed and evaluated, and (g) reflected on what they accomplished. This progression of learning activities was expected to result in the development and implementation of developmentally appropriate activities during their internship. This research study was guided by the following question: Does the inclusion of modeling, videotaped classroom practice, and ongoing reflection improve development and implementation of Developmentally Appropriate Practice (DAP) lesson plans by FCS Early Childhood Education high school students in an internship setting?

Review of Literature

Teaching pre-service teachers within a high school setting is a concept that has been used for many years but very little research has been conducted on teaching early childhood education secondary students how to teach. According to Lampert (2010) “Problems with learning the work of teaching are often stated in terms of the connection—or disconnection—between teacher education and some conception of practice” (p. 22). This disconnect comes from theory being taught in classes but with little time to apply or practice the theory before graduation. While Lampert’s thoughts are based on university students, this disconnect may also be evident with high school Family and Consumer Sciences Early Childhood Education students.

Moran (2007) discussed the difficulties university students have when planning curriculum for internship sites because of the inconsistency of required hours for internship (small number of hours per week) versus the hours of operation of the child care center (approximately 11 hours a day). High school Early Childhood Education students have even shorter internship hours than university students and have trouble planning activities that relate to the teachers’ plans. This conflict of schedules is a second contributor to a disconnect between class content and real world application.

A third contributing factor to a disconnect is high school students’ cognitive development. High school students often have difficulty thinking abstractly and anticipating how a situation will be carried out in a classroom, making it hard to relate theory to real life application. One way to facilitate this real world application is to use Lampert’s (2010) thought “that learning also occurs while doing the work” (p. 21). In this case, students should hear about the theory, participate in an activity using the theory, and then create their own activity based on the theory, and have a practice run of the activity before they actually teach children.

Lampert's (2010) idea is not new. Dewey (1938) and Kolb and Kolb (2008) also developed theories based on students' learning through doing. Students must be given the basic information about a subject and be immersed in it. This happens through hands-on learning and experimenting. Teachers scaffold the learning through a series of steps. After giving the "information" to students, hands-on practice must come for students to truly understand the information or new learning. From the hands-on experience, students will remember more and will be able to draw conclusions about their learning as well as relate the information to new experiences. Dewey theorized that real life learning comes from education put to the test (Dewey, 1938). Kolb and Kolb (2008) expanded this idea by discussing how true learning comes with experience. Teachers have to be able to integrate what they are teaching with how it will relate to a real classroom (Birbili, 2007; Kolb & Kolb, 2008; Wilson & Burket, 1989).

Modeling can be an important part of this learning through doing approach. Modeling is a technique in which instructors demonstrate processes and then let the students demonstrate and expand those processes (Jacobs, 2001). Modeling engages students while motivating them to be self directed learners (Kolb & Kolb, 2008). It is one of the best ways for students to truly understand a concept (Ball & Cohen, 1999) and allows preservice teachers to make their own pathways and apply knowledge (Birbili, 2007).

Teachers may model techniques to use in classrooms and then have students expand on those techniques and how they can be used in their internship classrooms. The more a student uses the techniques, the less the teacher has to be there for support. In this model, reflection is a key part of learning. Students must continually reflect on the processes they have used and what has and has not been successful. With this reflection, students can focus on areas that need improvement and possible ways to achieve improvement (Jacobs, 2001).

In Kolb's Experiential Learning Cycle, reflection begins with the question "What," where students discuss what they did in their project. "So What" follows where students discuss how this process relates to what they have learned. "Now What" is the last question where students discuss how this will affect them in the future (Connors & Seifer, 2005; Kolb & Kolb, 2008). Reflection should occur during the whole event not just at the end and it should be written so clear learning goals can be developed. Kolb's Experiential Learning Cycle can provide a framework to elicit quality reflection that challenges students to think beyond the classroom. In other words, students must learn to think more critically about the experience and how to relate it to teaching (Connors & Seifer, 2005).

Reflection not only allows students to move into higher levels of thinking and self-assessment, but reflection can be an important measure of student learning and an important mechanism for improvement. Moran (2007) who studied preservice teachers use of reflection, emphasized that through peer reflections, preservice teachers learn to improve weaknesses, build on group ideas, and collaborate more regularly to see and document where they have succeeded and where they need to improve. Although the recent literature discussed focuses on preservice teachers that are at the postsecondary level, these same concepts need to be examined from the perspective of the secondary student. Can using more DAP in lesson planning, implementing lessons, adding peer and self-reflection, and videotaped practice teaching improve FCS high school students' skills in an early childhood education internship site?

Methodology

Participants

Nine high school seniors comprised of two males and seven females participated in this study. The ethnic make-up of the students included four Caucasians, two African Americans, two Hispanics, and one Multi-Racial. Students were 17 and 18 years old and graduated in June 2011. The students completed an application and were accepted into Early Childhood Education I followed by Honors Early Childhood Education II. All students indicated they enjoyed working with young children and several had interests in career fields that incorporated child development concepts. Nine out of ten students returned both student and parent permission forms stating they would like to be included in this study, resulting in a return rate of 90%.

Setting

All students resided in a large southern state and attended a rural public high school (1290 students) with an average academic class size of 20. There are 65% Caucasian, 26% African American, 4% Hispanic, 2% Asian, 2% Multi Racial, and 1% American Indian students in the school. Thirty percent of the students have free and reduced lunch. The study was conducted in a career and technical/family and consumer sciences classroom as well as at a local half-day preschool center.

Research Procedures

This action research took place from February 2011 until April 2011. Approval for this study was gained through the Institutional Review Board at a large Southeastern University. Participation in this research was not mandatory for the class but was open to all the students enrolled. Students who chose not to participate were not penalized. The only incentive offered was the increased knowledge of developmentally appropriate practices in the classroom.

Pre-internship procedures. In the first three weeks of the spring semester, students learned basic information about DAP as depicted in the course outline. During this unit, the instructor modeled several developmentally appropriate activities for preschool children. These lessons included (a) reading a book with props, (b) a science activity for developing creativity in children, and (c) a lesson on dental health. While modeling these DAP lessons, the instructor discussed with the students the purpose of each lesson. Then the students created similar activities and the instructor discussed both the positive and negative aspects of their lesson activities as well as ways to change the lesson to fit individual needs and be sure they were developmentally appropriate.

After this unit on DAP was complete, students were given the task of creating a lesson plan that could be used in a preschool classroom. They were assigned a theme and created lesson plans around this theme. Students then completed a lesson plan form for the teacher's review. Next, the students engaged in a role-play of the lessons with the rest of the class and this lesson was videotaped. Initially after the role-play, students evaluated the lesson they presented, discussing strengths and weaknesses using a reflection form. Students were also assigned random partners for peer evaluations. During the peer evaluations, the partner evaluated the lesson plan from the receiving end and gave feedback to the student using a teacher-created form. Then, the student who taught the lesson watched the video and completed a self-reflection form documenting their observations and changes they would make to the lessons. The FCS high school instructor also completed an evaluation of the lesson using the same form used at the internship site. This form includes (a) questions about the goal of the lesson, (b) teaching

strategies that were used, (c) how the student interacted with the children, and (d) the outcome of the lesson. At the bottom of the form is a 7-point Likert scale. A score of one indicates that no part of the lesson was developmentally appropriate, while a score of 7 indicates that all parts of the lesson were developmentally appropriate. Students could fall between one and seven depending on the developmental appropriateness of their lesson.

Internship lesson plan implementation procedures. After each student completed a videotaped lesson plan, and all peer, self and instructor reflections and evaluations were complete, students began their internship at a local preschool accredited by the NAEYC. Based on the knowledge learned about developmentally appropriate lesson plans, students created new lesson plans to implement with the children. These lesson plans followed the preschool teachers' theme or unit and were evaluated on their developmental appropriateness. Students' lessons were approved by the FCS instructor before finalizing the development and implementation of the plan. At the preschool, the students implemented their lessons with the children each week using a partner system. Four sets of students worked with their partners in four separate classrooms. One partner created the lesson for Monday and the other partner created the lesson for Wednesday. Both students were responsible for working with the children during the lesson. Two students were in separate classrooms and were only required to develop one lesson plan a week.

The FCS high school instructor observed the lessons taking place in the preschool classroom and documented the process on an evaluation using a 7-point Likert scale. The scale ranged from 1- no aspects are developmentally appropriate to 7- all aspects are developmentally appropriate. This evaluation was identical to the evaluation used in the video recording of the students. Through this coding process, the instructor was able to chart and follow growth of individual students. A folder was kept on each student including their lesson plans and the Likert scale rating they received on lesson implementation. Charting the ratings allowed the FCS high school instructor to see if students improved in increasing their use of DAP. Additionally, pictures were taken of the students implementing their lessons at the internship site.

At the end of their internship day, students completed reflections using Kolb's "What", "So What," "Now What," outline (Connors & Seifer, 2005). A total of 6 reflections were completed by each of the students.

Each reflection was evaluated by the FCS instructor for individual growth and learning during the semester. Growth was measured from where the student started at the beginning of the semester to how much they improved at the end of the semester. Students kept a portfolio with their lesson plans and reflections to chart progress throughout the semester. The internship teacher also completed evaluations on their progress. These were completed at the mid-point and end of the internship to see if growth could be determined.

Results and Discussion

Pre-Internship Experiences

Data from videotaped lessons, self and peer evaluations and reflections, and the FCS instructor evaluations were analyzed. After the videotaping was over, the FCS instructor evaluated the students' lessons based on the seven-point Likert Scale that was also used at the internship site. A score of one meant that elements of DAP were significantly missing within the lesson plan (e.g. lesson was not age appropriate and children were not able to complete the activity). While a score of seven signified the whole lesson was developmentally appropriate

(e.g. lesson was age appropriate, interested the children). The average rating was 2.7 on a scale of 1 to 7 on the videotaped lessons.

Specifically, students had difficulty developing an appropriate lesson plan, and difficulty implementing the lesson introductions, conclusions as well as generally facilitating the lesson. Only 3 students had written plans with appropriate activities that preschoolers could have successfully completed and were developmentally appropriate. Five of the students delivered solid introductions, while the other four students did not have an introduction at all or it was very weak. Four of the students had no conclusions at the end of their lessons. During the videotaped presentations, four of the students did not talk to the “class” and just randomly walked around. Another four walked around and asked questions but did not start conversations about the topic they were teaching.

According to the peer evaluations of the videotaped lessons implemented prior to the internship, peers were able to easily identify lesson plan themes/concepts. Seventy-eight percent of the themes were appropriate for preschoolers based on developmental checklists. Sixty-seven percent of the time students could identify the developmental goal being taught in the lesson. According to Lampert (2010), humans learn by seeing and then by doing. Having the students do the activities by role-playing as children opened their eyes to tasks with which preschoolers might struggle.

When it came to self-reflection, the students were honest about themselves and took note of their faults. Six students noted changes they should make in the future, such as walking around the room more often, stopping to ask for questions, and being more prepared. Students also commented on how hard it was to teach in front of a group and that they should have prepared and organized their supplies before the start of the lesson. The videotaping allowed students to see themselves in a different light. Through this activity the students became more reflective.

Ratings of the students’ videotaped lessons indicated students were indeed beginners and were at the expected level of lesson plan writing and implementation. The students had the background knowledge of child development and practice they learned in Early Childhood Education I, but were still trying to grasp how these concepts fit into practice.

Internship Lesson Plan Implementation

Data from lesson plans, student and partner reflections and evaluations, and FCS high school instructor evaluations with the Likert scale were analyzed. The table below records the data collected by the FCS teacher on videotaped lessons and the four weeks of lesson implementation at the internship. All the data were collected by the teacher using the 7 point Likert scale. During the first week seven out of the nine students implemented lesson plans and received a five. This was much higher than the average of 2.7 for the videotaped lesson. Two students received a 2.0. In the second week of interning the overall score, 3.4, was much lower due to three groups not having a prepared lesson plan. However, the students that were prepared had an average of 5.2 showing small growth from the previous visit. During the third week the students’ scores ($n = 6$) increased to an average of 5.0 not including a student who did not bring an activity. Two students completed activities that were completely developmentally appropriate in their lessons. In the fourth week the average of scores dropped to 4.5 (See Table 1).

Table 1

Students' scores from FCS instructor's evaluation of lesson plan implementation

Student	In Class Video Lesson	Internship Week 1 Lesson	Internship Week 2 Lesson	Internship Week 3 Lesson	Internship Week 4 Lesson
A	3	5	No Activity	Absent	Absent
B	3	5	6	7	7
C	3	5	5	7	7
D	3	2	4	No Activity	4
E	3	5	No Activity	4	4
F	2	5	No Activity	4	4
G	3	5	7	Absent	No Activity
H	2	2	5	5	3
I	3	5	4	3	3

Through this study, students showed some knowledge of developmentally appropriate practices through their lesson plan development and their application of DAP did improve from the videotaped practice lessons to the internship. However, students still lacked a complete understanding of how to apply their knowledge of DAP. When students implemented their lessons at their internship site, their performance was average. Most lessons were acceptable and complemented the teachers' learning. The students did not excel in delivery of the lessons or in their ability to verbally tie the lesson into the teacher's lesson. Students had problems communicating with the children after giving directions. They would watch the children create the project but would not talk to them about the steps or what they were creating. Students also had a difficult time reviewing what the lesson was teaching. This relates to Moran's (2007) findings with preservice college students. The lack of time at internship settings affects students' abilities to get to know the children and their abilities, which hinders their ability to plan developmentally appropriate lesson plans. Students are only at the local childcare centers two days a week for less than 2 ½ hours. As Moran (2007) discussed, this short amount of time in a childcare classroom can cause students to feel disconnected. These average scores also support Lampert's (2010) ideas of disconnect between what is being learned in the classroom and students being able to apply the concepts in real settings.

Analysis of the high school teacher evaluations of individual students revealed differences between students. Indeed, several students achieved high growth in their DAP lesson plan development. Three students in two different classrooms, adapted to teaching developmentally appropriate activities easily. These students focused on the needs of their children, were more reflective and accepted and used feedback provided through the evaluations.

They challenged themselves to improve and became able to anticipate the success of their lessons and how to adapt them accordingly. All of their activities ranked in the 6-7 rating on the Likert scale indicating a high quality lesson. Ratings improved by an average of 2 points as a whole class and it was clear that some students were beginning to create developmentally appropriate activities. Other students, however, had more difficulty and plateaued at 4 on the Likert scale. These students did not show the mastery of skills needed to develop DAP lesson plans. As indicated in their reflections and their lesson plan implementation, the students with lower ratings did not seem to take the lesson planning seriously and failed to understand the impact they were having on children. Some of these students expressed frustration if a child didn't want to do the activity that was part of the planned lesson. The students equated their hard work on the lesson to high quality, so that as long as they worked hard on the plan, it should be good, even if the activity did not exhibit DAP principles.

Overall, students who were successful in their lesson plan implementation (a) planned lessons aligned with the teachers themes as well as sparked the interest of the children, (b) provided introductions that explained the lesson and continued interacting with the children throughout the lesson, (c) reviewed each activity with each child and let each child claim ownership of the projects and achievements, (d) adapted lessons to fit needs and ensured success of all children including children with special needs, and (e) expressed interest in a career in early childhood education.

Those students who did not experience growth and were not effective in lesson plan implementation (a) did not plan challenging lessons even if they did align with the teachers' theme or they had difficulty adapting to the teacher's theme, (b) had difficulty designing lessons to meet the children's needs, (c) had frequent absences and therefore had limited opportunity to interact with the children and implement lesson plans, (d) exhibited a lack of interest in the children and often did not engage in conversation with the children while they were completing the lesson activities, (e) lacked skill in executing the lesson such as lack of a good introduction and/or appropriate follow up to the activity, and (f) did not express interest in working in early childhood education as a career.

Recommendations

1. To better evaluate growth of the students, it is recommended that students complete the lesson planning and videotaping before teaching DAP. This would allow students to review their videotaped lesson plans and rewrite them based on their new knowledge of DAP gained through class discussions.
2. Results of this study support Moran's (2007) suggestion that students need adequate time at the internship site to get to know the children and their needs. Additional time would have allowed the FCS Early Childhood Education students to feel more comfortable in the classroom and to take more risks.
3. This research had a restricted sample size and a limited time frame. More growth might have been documented if the project was observed over a longer period of time. This research should be replicated with a larger sample of students. Using this research model in an Early Childhood Education I class would lay a more in-depth foundation that could be expanded in level II.
4. While the findings were very promising for students who are planning to pursue a degree in education, either early childhood education or school age education, the results for students who do not have these career goals were not as promising.

Therefore, additional ways to motivate those students whose interest is not in early childhood education would be needed.

5. Reflection is important in any field and students who plan to be teachers need to learn how to be reflective of their practice. Initially, students need guidance and practice as well as reflective feedback to succeed. When no advice is given, students are unable to see where they need to improve. Guided reflection such as the “What?, So What?, Now What?” of Kolb’s experiential learning cycle can help students learn self-reflection. Self-reflection allows an opportunity to evaluate strengths and weaknesses as well as the internalizing of new abilities. Early Childhood Education is a very hands-on field and students need to learn very quickly that there is always room for growth; self-reflection can be an important skill to facilitate this continued learning.
6. Most of the students indicated that they enjoyed the teacher modeling and would have liked more lessons taught this way. Modeling can be incorporated right from the beginning of the semester and not just the DAP unit in the curriculum. Continued modeling throughout the internship would also be beneficial by allowing students to observe the FCS instructor model DAP one day and then students practice and implement similar lessons the next.

Conclusion

Although successful applications of the concepts to the lessons still eluded some of the students, the ongoing reflection seemed to facilitate critical and reflective thinking among the students. Many students were able to identify changes they would make and realized their lesson plan was not perfect.

High school students need guidance in learning how to implement real world practices such as developmentally appropriate lesson plans. Many schools focus on the theories behind learning but less on how to teach learning in a way that can be continued. Modeling effective lesson implementation helps students, not only hear the content, but to see the application of the content. A progression of modeling, videotaped classroom practice, and then real-world practice along with ongoing reflection may be an effective method of teaching within early childhood education programs in the family and consumer sciences classroom.

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About the Authors

Valerie A. Williams is a Family and Consumer Sciences teacher at Southeast Guilford High School in Greensboro, North Carolina.

Sharon Ballard is an associate professor and interim chair in Child Development and Family Relations at East Carolina University, Greenville, North Carolina.

Cheryl A. Johnson is an associate professor in Child Development and Family Relations at East Carolina University, Greenville, North Carolina.

Archana V. Hegde is an associate professor in Child Development and Family Relations at East Carolina University, Greenville, North Carolina.

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The Impact of the Cornell Note-Taking Method on Students' Performance in a High School Family and Consumer Sciences Class

**Lori Quintus
Century High School**

**Mari Borr
Stacy Duffield
Larry Napoleon
Anita Welch
North Dakota State University**

Note-taking is a difficult skill, but it is an important skill, especially considering the pervasiveness of lecture throughout middle-school, high school and college classes. This study set out to examine whether teaching high school students the Cornell note-taking method and requiring them to use it would affect their performance on unit tests. The research question guiding the study was "How does the use of the Cornell note-taking method impact student performance in a high school Family and Consumer Sciences class?" At the conclusion of the research, the data supports the null hypothesis – there is no difference in student-choice note-taking and Cornell note-taking on student performance in a high school Family and Consumer Sciences class.

Lecture format is a common practice in high school classrooms for presentation of content material, and this is true in the Child Development classes at Northern High School (a pseudonym). As part of Family and Consumer Sciences, Child Development does have hands-on projects and units, but when covering the ages and stages of development (in particular from birth through the preschool years), lectures with PowerPoint visuals are an efficient way to communicate the subject matter. There are benefits to the lecture format with note-taking. While writing, students use three senses to process the material: sight, sound, and touch. Notes also give the students study materials for assessment preparation at a later time. However, there are several difficulties with this method: some students write quite slowly, and the instructor and other students must wait while those students write down the information; some students become so focused on writing what is projected on the screen that they cannot listen to the instructor; and some students may have trouble creating notes that are useful at a later time.

During the spring semester of 2011, two sections of Child Development class (taught by the same instructor) at Northern High School were used as the setting for an action research project with the aim of discovering the effectiveness of the Cornell note-taking method through comparison of the infant, toddler and preschool unit tests taken by both sections. The research question guiding the study was "How does the use of the Cornell note-taking method impact student performance in a high school Family and Consumer Sciences class?"

Theoretical Framework

The theoretical framework for this article lies in the information processing perspective and schema theory. Theorists describe information processing as being comprised of three stages (Lieberman, 2000). First, information is received by the sensory memory, and through the

process of transduction converted to a usable format, resulting in a memory (Huitt, 2003). A sensory memory is very brief and, unless it is interesting to the individual or triggers a known pattern, it will not make it to the next stage, the short term memory.

During the second stage, the sensory memory may be transferred to the short term memory, also known as the working memory (Orey, 2001). Working memory, “is a kind of mental workbench where we assemble information and then work on this information” for particular purposes (Lieberman, 2000, p. 371). The working memory can only hold a limited number of items, 5-9, and typically only holds these items for about 20 seconds, but items can be held for up to 20 minutes through repeated use called rehearsal (Huitt, 2003). Then, if there is no interference, the memory may move into long term memory, the last of the three stages of information processing.

“Long-term memory is everything we know and know how to do” (Orey, 2001, para. 7). This information is combined with new information, organized in a way that makes sense, and then stored until it is needed (Eggen & Kauchak, 2013). Schema theory provides a framework for understanding how information is organized and stored (Ormrod, 2012). Schemata are “interconnected categories within the memory” (McKenna & Robinson, 2009, p. 17). As an individual takes in information, schemata are activated and this prior knowledge is used to make meaning. In order for new learning to be retained and retrievable for later use, the material must be stored in meaningful ways. Schemata influence how individuals process information and what they learn (Eggen & Kauchak, 2013). Because teachers have such a strong influence on how schemata are formed and the information with which students are presented, it is important to make thoughtful decisions not only about how information is presented to students, but also the ways in which they are asked to interact with the information (Huitt, 2003).

Review of Literature

Traditional education is often based on effective listening and note-taking, and students of all ages and in all content areas are expected to be responsible for the knowledge shared through lectures (Boyle, 2010; Faber, Morris & Lieberman, 2000). Teachers place importance on the skills of note-taking and listening, and believe that students should have these skills to be successful in class (Boyle, 2010). A large proportion of middle- and high-school teachers use lecture to present important information, and content area teachers, in particular, often use the lecture format (Boyle, 2010; Pevery et al., 2007). General education teachers recognize that students must take notes and learn from lectures to do well in their classes, as lecture and note-taking are considered to be common ways of communicating material (Boyle, 2010; Titsworth, 2001). Teachers often require note-taking, and information relating to content and skills are frequently presented through lecture (Frey, 2006; Konrad, Joseph, & Eveleigh, 2009).

Purposes of Note-Taking

One goal of education is retention of knowledge for life-long learning and for assessment, and note-taking can help students as they reach this goal. Notes “provide students with tools for identifying and understanding the most important aspects of what they are learning” (Marzano, Pickering, & Pollock, 2001, p. 48). Memory is fragile, and information can be forgotten very quickly if it is not transferred to long-term memory (Pauk, 2001). The information from a lecture must be remembered or recorded, or it is forgotten (Kiewra, 1991). This is where note-taking can help. Students who take notes typically retain more information than those who do not, which has a positive effect on learning (Titsworth, 2001). The actual process of note-taking

has value in promoting recall, with noted items recalled at a higher rate than non-noted items (Kiewra, 1985). Note-taking in classes has been shown to increase academic achievement (Boyle, 2007; Boyle, 2010; Kiewra, 1985; Kiewra & Benton, 1988). Notes can serve as a summary of the material gained through listening and observing during the lecture, and note-taking can also facilitate comprehension through internal connections made during the lecture (Faber et al., 2000; Kiewra et al., 1991; Piolat, Olive & Kellogg, 2004).

Taking notes can enhance learning due to the generative effect – students retain knowledge better when they generate materials themselves rather than having materials given to them (Piolat et al., 2004). Even though the information is given to students through lecture and visual aids, the act of writing notes creates a further learning opportunity. Notes that have the main concepts stated along with details are related to student recall and transfer of knowledge and to improved performance (Baker & Lombardi, 1985; Kiewra, 1985; Kiewra & Benton, 1988). Effective notes help students make connections to information that they already know (Faber et al., 2000). Note-taking supports information processing and serves as a means of external storage for later review (Kiewra, 1991; Piolat et al., 2004; Titsworth, 2001).

Since memory can be short-lived, and there is a span of time between hearing the information during a lecture and being assessed on that information, the external storage function of note-taking is crucial. Students who take the time to review their notes typically have higher achievement than those who do not (Kiewra, 1985; Kiewra, Benton, Kim, & Risch, 1995; Kiewra et al., 1991). Notes can serve as a permanent record of the information from the lecture, and complete notes are best for students to use in review (Boyle, 2010). The product of note-taking or the review materials is important, and so is the process of actually recording the notes (Kiewra et al., 1995; Piolat et al., 2004). The cognitive effort happening during the note-taking process adds to the learning effect.

Students who effectively record notes typically process the lecture information at a deeper level (Kiewra et al., 1995; Titsworth, 2001). This process of encoding, or making connections between the new material and past knowledge, facilitates comprehension (Cohn, Cohn, & Bradley, 1995; Faber et al., 2000; Kiewra, 1991). When the new material is incorporated with prior knowledge, the encoding process is successful (Faber et al., 2000; Kiewra et al., 1991; Piolat et al., 2004). Encoding leads to deeper meaning, better understanding, and better results on assessment (Baker & Lombardi, 1985; Kiewra, 1985). Successful note-takers end up with an effective set of notes that make connections to what they already know (Faber et al., 2000). The actual process of generating the notes is a learning aid, and students who add details to their notes during this process find the content more meaningful (Boyle, 2007; Boyle, 2010). When students are better able to identify the main points of the lecture, the encoding effect becomes as important as the external storage function (Faber et al., 2000). When comparing a group of students who wrote their own notes and used them for review (encoding and storage group) to a group who studied notes that were given to them (storage only group), the first group recalled more and performed better on assessments (Kiewra et al., 1991). In order to take advantage of the process of encoding notes, students need to have good working memory.

Difficulties of Note-Taking

Note-taking is a complex activity that combines comprehension with production of notes, and this complicated process is dependent upon working memory (Piolat et al., 2004). As students listen to a lecture, the important information should be held in working memory long

enough to access it as they write it down (Cohn et al., 1995). Note-taking is dependent on working memory to “acquire, mentally represent, select and understand” (Makany, Kemp, & Dror, 2009, p. 620) the incoming information while making connections with previous knowledge. This intricate process may be difficult for students, which may be one reason students often are not successful at note-taking.

Other difficulties include balancing the effort of writing and listening at the same time, deciding which items are important to note, and writing fast enough (Boyle, 2010). It is difficult to listen, write and select important information all at once (Konrad et al., 2009). Students often assume that anything shown on the blackboard or screen is important and write everything (Baker & Lombardi, 1985). Other students will record verbatim everything that is said, which is ineffective and possibly detrimental to learning, as their focus on catching every word takes away from their focus on the information given in the lecture (Boyle, 2007; Kiewra & Benton, 1988). Just copying what is seen or heard does not lead to comprehension (Piolat et al., 2004). Unfortunately, few students are good at the skill of decoding what is important, and most just duplicate what is shown or said (Baker & Lombardi, 1985). The key to effective notes is to record the important material in an ordered manner, as comprehensively as possible (Boyle, 2007).

To better comprehend the material, students should have good notes with main points and added detail. Because of the difficulty of integrating information while taking notes, students sometimes limit their note-taking to improve comprehension, or limit their processing to improve transcription (Kiewra, 1985; Piolat et al., 2004). Neither solution leads to success; using either alone limits the encoding effect and the effect of external storage. Additionally, lectures often move at a fast pace, with many facts and vocabulary words (Boyle, 2010). The rate of speech is approximately two to three words per second, and the average handwriting speed is .2 to .3 words per second, which can lead to a problem in balancing the speed of writing against the speed of the lecture (Makany et al., 2009; Piolat et al., 2004).

Though most students do not receive any kind of instruction in note-taking, a good system or format of notes can make a big difference in dealing with these difficulties and can increase learning and achievement.

Organized Note-Taking: The Cornell Note-Taking Method

Most students are not taught how to take notes, or are taught these skills at a relatively late point in the course of their education (Boyle, 2007; Faber et al., 2000). When students are shown a structure for note-taking, it often improves the quality of their notes (Gray & Madson, 2007). Students in science courses implementing the Cornell Note-taking method had a 10-12% higher average than students in the previous semester not using this method (Donohoo, 2010). When “Western” (a pseudonym) High School struggled with meeting AYP, they determined a course of action for improvements, including a plan to teach all students the Cornell note-taking system based on research showing that this system can increase comprehension and achievement (Fisher, Frey, & Lapp, 2009). Faber et al. (2000) showed that students who were taught the Cornell method had significantly better scores than the students who were not taught this method. AVID (Advancement Via Individual Determination) is a national program created to increase the number of students enrolling in four-year colleges, especially those from the academic middle, which are the second and third quartiles, who are neither academically advanced nor in special education (Gray & Herr, 2006). The AVID program, which is currently

in 4,800 schools in 48 states, includes the Cornell note-taking method as part of their successful curriculum (AVID, 2012).

The Cornell note-taking method is a two column system; the left column is one third of the page, and the right column is two thirds of the page (Faber et al., 2000). The right column is used to “capture the lecturer’s ideas and facts” (Pauk, 2001, p. 238), with students taking notes during the lecture in this column. The left column (the cue column) is filled in later with questions matching the main points (Pauk, 2001). After the note-taking session, students review their notes and write questions in the cue column to highlight main points, meanings, and relationships. The process of writing the questions in the cue column “helps clarify meanings, reveal relationships, establish continuity, and strengthen memory” (Pauk, 2001, p. 237). This column is also used in the review process when notes are studied (Pauk, 2001). At the bottom of the page, a two inch-space is left for summarizing the main point(s) of the page, which again clarifies meanings and also makes review easier (Pauk, 2001). When the note column, cue column and summary area are used for note-taking and for review, students have an organized system that can improve comprehension and achievement.

Summary

Note-taking is a difficult but important skill, especially considering the pervasiveness of lecture throughout middle-school, high school and college. Much of the material that is presented in classes is given through lecture, and students are responsible for learning in this style. Students need to be able to listen and look while writing the main ideas and details from the lecture, all the while matching the new information to previous knowledge for comprehension. The synthesis of new material with old, or the encoding aspect of note-taking, is as valuable as the storage function, which is having the material available for later review. High quality notes contribute to better comprehension and better review, which can lead to higher achievement and better retention of knowledge. If students are taught an organized system like the Cornell note-taking method, many of the difficulties of lecture learning and note-taking might be overcome.

Methodology

Overview

Research took place in one researcher’s Child Development classes at Northern High School (a pseudonym) during the spring semester of 2011, with one section of 23 students and one section of 17 students. Each of the two sections met daily for 50 minutes. Section A had 19 females and four males, and the students included 13 sophomores, nine juniors, and one senior. Section B had 12 females and five males, with 12 sophomores, five juniors and no seniors. This is a typical enrollment in Child Development, as the Family and Consumer Sciences classes tend to have fewer males, and the Child Development classes tend to have a higher rate of sophomores.

Northern High School enrolls approximately 1,000 students each year, and has little ethnic or cultural diversity, with a high majority of students who are Caucasian and who speak English as a first language. The 2007-2008 data for free and reduced lunch show that out of total enrollment of 1,045, 62 students were part of the free lunch program and 51 were in the reduced-price lunch program. This is equal to 10.8% of the Northern High School population. The overall trends at Northern High School for ethnic and cultural background and socio-economic status follow through in the Child Development population.

The Child Development curriculum is based on the textbook, *Child Development: Early Stages Through Age 12* (Decker, 2011) by Goodheart-Willcox. Many of the units covered in Child Development have hands-on projects and learning opportunities, but the infancy, toddlers, and preschoolers units also have a lecture component, with information presented through PowerPoint slides and instructor lectures. The goal of this action research was to discover a more effective approach for classroom note-taking.

Data Collection

The researcher read a recruitment script to each section of Child Development, explaining the research process to students. It was emphasized that all students would be involved in the regular classroom procedures (including lectures, note-taking, and unit tests) whether or not they volunteered to participate in the study, but only the test data from those who agreed to participate would be analyzed in the study. Their inclusion in the research data was strictly on a voluntary basis. At this time, a letter to parents explaining the research project and explaining implied consent was mailed home and students were given an assent form. No parents chose to opt out their child, but in Section A, seven students decided not to participate, and in Section B, one student missed much of the class due to other circumstances, so was not included in the research. The final population for the study was 16 students in each section. The Section A study sample had 14 females and two males, and the students included 11 sophomores, four juniors, and one senior. The Section B study sample had 12 females and four males, with 12 sophomores, four juniors and no seniors.

Section A of Child Development was randomly chosen through a coin flip to take notes in a student-choice manner. Section B was taught to use the Cornell note-taking method.

Student scores from a previously administered standardized test (ACT PLAN) were used to compare the academic level of the two sections of Child Development prior to intervention. The school district administers the ACT PLAN to all sophomores, so the scores for students involved in the research were available, except for one student in Section A, who was not at Northern High School in the fall semester. The ACT PLAN scores were used as a comparison between the Section A non-intervention group and the Section B intervention group to check that abilities and performances were similar between the two groups. The PLAN test includes multiple-choice tests in English, Math, Reading, and Science, and is a nationally-normed test that assesses academic progress in high school.

A PowerPoint explaining the Cornell note-taking method was used as an introduction to this system in section B of the class, along with examples of notes taken using the Cornell method from several different classes. Instruction in the Cornell note-taking method followed and students learned to create organized notes by dividing their paper into three sections. See Figure 1 for the example of Cornell notes used during this instruction. During initial instruction in this method there was an instructor demonstration, examples were made available, and there were opportunities for students to practice with feedback from the instructor.

Research began with the infancy unit, followed by the toddlers and preschoolers units. Students in both sections were required to take notes, with Section B using the Cornell note-taking method and Section A using student-choice. The students in both sections received two points for each day of notes, with the instructor visually checking notes each day for use of assigned method. Points were given for completion of notes, with total points for notes equaling 4% of the total semester grade. Students in both classes were cooperative in taking notes, and 100% of the students earned all of the points possible for taking notes. Students took unit tests

Figure 1.

Example of notes on child development used in instruction of Cornell method of taking notes.

Infancy Unit	
How long is infancy stage?	Infancy - 2 weeks to 1 year
difference between growth + dev?	Growth - Change in size Development - Change in skills
length + weight change - 1 st year?	length at 1 - 1 1/2 x birth length Weight at 1 - 3 x birth weight
what is more important than size?	Rate of growth - more important than size
possible reasons for failure to thrive?	Failure to thrive - slow rate of growth - to point of health problem disease, lack of nutrients, short/in frequent feedings, No attachment, Abuse, Neglect
<ul style="list-style-type: none"> - growth + development important in infancy. - need steady rate of growth - Failure to thrive - can be problem 	

after each unit was completed. The unit tests were built using the Goodheart-Willcox curriculum for *Child Development: Early Stages Through Age 12* (Decker, 2011), and were based on lecture content throughout the unit. Test bank questions were chosen based on the four chapters in each unit to make an assessment consisting of true/false, matching, multiple choice, and essay questions. The length of the tests ranged from 67 questions and 75 points to 74 questions and 80 points.

Results

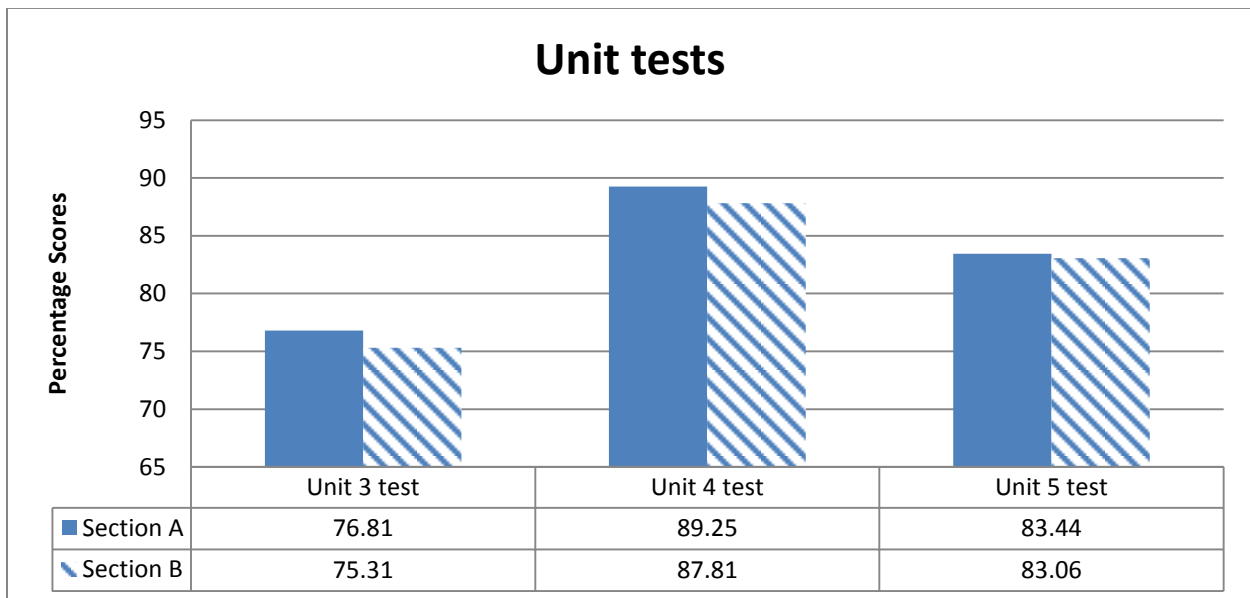
The scores from the previously-administered PLAN test were analyzed to compare the academic levels of the two sections of Child Development. An independent-samples t-test was conducted to compare the scores for Section A (M = 18.4, SD = 2.185) and Section B (M = 18.19, SD = 2.404); $t(29) = .25, p = .80$. As $p > .05$, the results showed no significant difference in the PLAN scores for the two sections which indicate that both sections were at a similar

academic level prior to the research beginning. Additionally, the average PLAN test scores for both classes were slightly below the average PLAN scores for all students in their grade levels at this school. The school-wide grade average PLAN test scores for those who were sophomores during this study was 19.2, and the school-wide grade average PLAN test score for those who were juniors during this study was 18.7.

Three unit tests were administered during the course of the action research consisting of true/false, matching, multiple choice, and essay questions. The first was the unit three test, which was administered after approximately three weeks of note-taking, with students in Section B using the Cornell note-taking method and students in Section A using any method they chose. The test included 67 questions and 79 points. An independent-samples t test was conducted to compare the scores between the two class sections. The results indicated that the mean for Section A non-intervention group ($M = 76.81\%$, $SD = 8.99$) was not significantly different than the mean for Section B intervention group ($M = 75.31\%$, $SD = 9.08$), $t(30) = .47$, $p = .64$. Therefore, for the unit three test, there was no significant difference in scores (see Figure 2).

Figure 2.

Comparison of unit test scores, using percentages. This figure illustrates the average test scores for units three, four, and five in Section A (non-intervention) and Section B (intervention).



The unit four test, administered after approximately 5 total weeks of note-taking, included 61 questions and 75 points. The results indicated that the mean for Section A non-intervention group ($M = 89.25\%$, $SD = 6.03$) was not significantly different than the mean for Section B intervention group ($M = 87.81\%$, $SD = 5.78$), $t(30) = .69$, $p = .50$. Therefore, for the unit four test, there was no significant difference in scores. (see Figure 2).

The last test, unit five, was administered after approximately seven total weeks of note-taking. This 80 point test, which had 74 questions, was the final test in the action research process. The results indicated that the mean for Section A non-intervention group ($M = 83.44\%$, $SD = 8.31$) was not significantly different than the mean for Section B intervention group (83.06,

SD = 5.40), $t(30) = .15$, $p = .88$. Therefore, for the unit five test, there was no significant difference in scores (see Figure 2). The standard deviations were similar on all three tests to the standard deviations on tests on the same units from previous semesters.

Conclusions

This action research was formulated around the question “How does the use of the Cornell note-taking method impact student performance in a high school Family and Consumer Sciences class?” At the conclusion of the research, the data supports the null hypothesis – there is no difference in student-choice note-taking and Cornell note-taking on student performance in a high school Family and Consumer Sciences class. The ACT PLAN scores show that both sections of Child Development were at a similar level in academics prior to the beginning of the research process. The comparison of scores between Section A (the non-intervention group) and Section B (the intervention group) for the three unit tests given during the research process shows no significant differences in scores for either group. Section A performed consistently (but not significantly) higher on the tests than Section B. Although there was no significant difference, examination of the scores shows that Section B (the intervention group) appears to have been slowly closing the gap between their scores and Section A’s scores.

Reflection upon the research study and the populations involved indicates that there may be several factors that had some bearing on the results, and thus, are acknowledged as possible limitations within this study, including: (a) Child Development is an elective class with mostly sophomores enrolled, (b) both sections were required to take notes, (c) there was no way to determine if notes were actually used for studying, (d) learning styles among students vary, and (e) there was some resistance to note-taking in both sections and to the Cornell method in Section B. Each of these will be explored more below.

Family and Consumer Sciences classes are electives, and some students seem predisposed to consider these classes as less important than and worth less of their time than required classes. Child Development students have shown this attitude in the past in this particular school, and depending on the student, this attitude can affect the amount of concentration and work that the student is willing to put into the class. In addition, Child Development has a high number of sophomores, which may also affect the effort given in the class. Northern High School includes grades 10 through 12, so sophomores are at a transitioning stage, and are adjusting to high school work. The combination of the elective class and the high number of sophomores may have led to less focus and less studying, which could have affected the results.

For the purpose of this study, both sections of Child Development were required to take notes, and the teacher checked the notes of each student daily. The non-intervention group in Section A took notes in whatever method they chose, but “true” student choice is often to take no notes at all. Not taking notes would potentially result in less processing of the information along with not having notes to study from. Because every student was taking notes in some form, and they did not have the option of not taking notes, this may have affected the test scores for both populations.

One of the objectives of the Cornell note-taking method is to provide organized notes for studying. Although all students in both sections of the class did take notes, there was no way to know if students were actually using the notes for study purposes. The assumption would be that some students in both sections did study, but that others did not. If students were not using the Cornell notes for studying, this could have affected the results.

Students do have different learning styles, and while note-taking is expected in class, it may be that many of the students would have preferred to learn in a different way. For example, students who were auditory learners may have been distracted by the visual requirement of note-taking. Those who were kinesthetic learners may not have gained much from either the audio or the visual portions of note-taking.

As stated earlier, note-taking is not easy, and it is certainly not an educational skill that is favored by many students. Throughout the length of the research study, there was resistance toward the idea of note-taking by both sections. Although students were cooperative and did take notes as required, some students protested this requirement to take notes and showed a negative attitude toward notes overall. Also, within the intervention group there were students who showed resistance to the Cornell note-taking method itself, with negative comments regarding the work, the format, and the overall strategy of the Cornell method. Some students had positive reactions to the method, but the more vocal students complained. This vocalized negative attitude could have affected the use of the Cornell notes, which could have affected the results.

One recommendation for future study would be to include a third section of the class. In this section, the students would not be required to take notes. This “true” student-choice method could then be compared with the other two methods. It may also be interesting to look at a class that has a more equal male/female population, as females tend to have higher literacy skills (Watson, Kehler, & Martino, 2010). Based on the comments of some students who appreciated learning a new way of taking notes that was helpful to them, it may also be beneficial to teach students a variety of note-taking methods, including image-based notes, and have each student choose which note-taking method works best for him or her. Marzano, Pickering, and Pollock (2001) state that each student may learn best from a different note-taking format and teachers should provide instruction on how to take notes in a variety of ways.

Note-taking continues to be an important part of many high school classes, and will remain part of the Child Development curriculum. Through the course of the action research, there were some students who commented positively on the instruction in note-taking, and some in the intervention section who commented that they found the Cornell note-taking method useful and helpful. In the future, it may be worth addressing the possible issues of attitude towards the class and attitude towards note-taking, and to look at use of the notes for studying, perhaps with time allowed in class for studying to take place. It might also be constructive to further investigate note-taking in general, and to research other formats of note-taking.

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Authors

Lori Quintus is a Family and Consumer Sciences teacher at Century High School, Bismarck, North Dakota.

Mari Borr is an assistant professor in Family and Consumer Sciences Teacher Education; Stacy Duffield is an associate professor in Teacher Education; Larry Napoleon is an assistant professor in Teacher Education; and Anita Welch is an assistant professor in Teacher Education at North Dakota State University, Fargo, North Dakota.

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Creative Cooking with Preschoolers: A Service Learning Experience for FCS Students

Holly Kihm
The Pennsylvania State University

Kay Singleton
Southeastern Louisiana University

Service learning projects have been identified as teaching tools that may be used to enhance student learning experiences among university students. The aim of the service learning project, "Creative Cooking with Preschoolers," was to give Family and Consumer Sciences students the opportunity to learn course material, synthesize the information, and develop age-appropriate lesson plans, demonstrations, and supplemental materials for preschool children and their families. The positive outcomes of the project were many, and were measured by student, child and parent feedback, formal student evaluations, and faculty observations. Based on the success of the project, Creative Cooking with Preschoolers may be considered a "Promising Practice."

The field of Family and Consumer Sciences (FCS) encompasses a broad range of areas that are all aimed at improving the lives of individuals and their families. As undergraduate FCS students gain knowledge through traditional classroom learning, they become eager to apply what they have learned through working with others. Service learning is one avenue educators and students may take in efforts to apply classroom-based knowledge in a "real-world" setting.

Principles of Service Learning

According to Bringle and Hatcher (1996) effective service learning is based on three principles. First, students learn course content, and they learn it well. Kuh's 2008 report on *High-Impact Educational Practices* found that "service-learning correlated strongly with deep learning and personal development for both first-year and senior-level undergraduates." Astin, Vogelgesang, Ikeda, and Yee (2000) analyzed data from over 22,000 undergraduate students from across the United States. They found that the students who participated in service learning had significantly higher rates of academic achievement than students who participated in community service and those who did not participate in either service learning or community service activities.

Second, students provide a service to their community. Students take the knowledge they have learned in the classroom, and use it to educate others. Wold, Connor, Downes, Howett, and Layne (2010) reported on the success of an on-going service learning program that partners universities students with immigrant farmers and their families. Students from community health, dental hygiene, physical therapy, pharmacy, public health, and psychology all work together to develop, implement, and assess a comprehensive health program. The authors report that over 1000 families have been educated about healthy living practices and this has helped to improve the quality of life for those families. Keino, Torrie, Hausafus, and Trost (2010) reported that their family and consumer sciences students developed a project whereas they made school

supplies (such as book bags and uniforms) for more than 200 children in Rwanda. Students reported that the project was “an exciting, meaningful, and personally rewarding experience.”

Third, students reflect on their experiences. This reflection challenges students to think about the service learning process as a whole. They are encouraged to ask themselves many questions such as how well they learned and understood the course content. Were they able to successfully apply what they had learned? Did the project yield the intended outcomes? How might the project been implemented differently to increase its effectiveness? Because the service learning experience has been associated with improved content retention, increased demand for critical thinking, and higher course satisfaction by students (Markus, Howard, & King, 1993; Sax & Austin, 1997; and Strage, 2004) educators in FCS may consider this application of service learning as a Promising Practice.

Service Learning Project-Creative Cooking with Preschoolers

Introduction

This service learning project, “Creative Cooking with Preschoolers,” was developed in partnership between FCS students focusing on nutrition and food service, and our campus Head Start program. Because childhood obesity continues to be an issue in our community, with nearly one-third of children overweight or obese, (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010), it was important to develop a project in which FCS students could apply their knowledge of child nutrition, and food and kitchen safety with our youngest campus members.

Preparation

Throughout the semester, FCS students learned about child nutrition principles, child-friendly food preparation techniques, and how to talk with the children about kitchen and food safety. As they gathered information, the students created lesson plans that were developmentally appropriate for preschool children. The lesson plans all focused on addressing the guidelines set forth by the American Dietetic Association [ADA] that encourages children to eat a variety of fruits, vegetables, low-fat dairy, and whole grains throughout their day. The ADA also suggests that in order to pique children’s interests in eating a variety of healthy foods, children should be introduced to the foods at an early age, and the environment in which taste-testing occurs should be fun and stress-free (ADA, 2006).

Implementation

During the latter part of the semester, the preschool children were brought to the FCS Foods Laboratory. The first time the children came into the lab, they were introduced to their FCS partners, were taught about their work stations (for example, where measuring cups and utensils were located) and how to be safe while in the lab. The FCS students explained the rules of the lab, and demonstrated to the children how certain pieces of equipment worked. On subsequent visits to the lab, the FCS students would spend some time talking with their partner about the how certain foods grow, why they are healthy choices, and how to prepare them for meals or snacks. The students would then prepare a snack or meal item. During the process, the students would talk with the preschool children about making healthy choices. The preschool children were able to participate in the preparation of the snack or meal item to the best of their abilities. Developmentally appropriate tasks included: washing, spreading, stirring, opening, measuring, pouring, arranging, and of course, tasting.

Each session included time for questions and answers, and the FCS students also prepared a small packet of information for the children to share with their parents. The information contained recipes, descriptions of the meal item or snack, how to care for vegetation (should the family want to add the food to a garden), the nutrition benefits of the food, and tips to help the families make healthy choices. Examples of tips given to parents included ideas for what to pack in school lunches, how to make better choices at vending machines, how to create a healthier “kids” meal at a restaurant, and how to help children drink more water.

Evaluation and Outcomes

The success of the project was measured informally by asking the students, preschool children and their parents, and other FCS faculty members about their experience with the project. The principle investigators asked students open-ended questions such as how did you feel about the project idea at the beginning of the semester? How did planning and implementing the project impact your learning experience in the course? Would you elect to complete a service learning project in the future, why or why not? The student responses were overwhelmingly positive. Many students reported being surprised that the children actually ate healthy foods such as fruits and vegetables when they were able to help in the preparation. The students also shared that the preschool children were very curious about how to prepare the foods in creative or different ways. When planning and implementing the lesson plans, the students shared that because of the preschoolers’ curiosity and their need to understand every detail, they were challenged to think more critically about how to present the information, as they knew the preschoolers were going to ask them a lot of questions! The FCS students also came to understand that they had a unique opportunity to make a positive impact on the eating habits of the preschool children. Therefore, the FCS students unanimously reported that they invested more time, and placed more effort into this project because of the potential impact they could make on the preschool children’s choices.

The principle investigators also asked the parents of the preschool children informal questions about the project. Parents were asked how much they thought their child benefitted from participating in the project. Did they use any of the information provided to them by the FCS students? Would they recommend students doing the project again in another semester? Many parents shared stories of how the project benefitted their child and family. They reported using the information sheets the FCS students prepared which included recipes, tips on choosing healthier foods, and how to grow certain vegetables in their own backyards. One parent said she changed the way she viewed options in the vending machines at her workplace, and wrote a note to the office manager to add healthier choices to the vending machine. A father said that he used the information to help add variety to his older daughter’s lunches. The FCS students enjoyed the positive feedback and used it as motivation to continue doing great work.

Informal feedback was also shared by other faculty members whose students participated in the project. Compared with students who completed the same course, but without the service-learning component, they felt that these students were more engaged in learning the course material, most likely because they were going to apply it while working with preschool children, they asked more questions both during class and in office-hours, wrote more critically on their other course assignments, and appeared to have a more positive attitude toward their learning experience. Based on the positive feedback from the students, parents, and faculty members, it is very likely that the project will be run again in future semesters.

Summary

Creative Cooking with Preschoolers was a service learning project that brought together FCS students and children attending preschool on the University's campus. The FCS students had the opportunity to synthesize course content and use the information to develop lesson plans, demonstrations, and supplemental materials for the children and their families. The positive outcomes of the service learning project were many and supported previous research that showed service learning opportunities enhance the learning experience.

Future research with the project should include a more formal method of assessment. Data could then be used to apply for additional funding and encourage more participation. Additional information regarding the long-term effects of the project on the FCS students, the preschool children, and their parents would be beneficial to include in future assessments. The information could be used to develop stronger projects with greater impact. Both the FCS faculty and the preschool director would like to have the project continue, and with an increase in faculty resources and funding, the project has the potential to continue to be a great service learning experience for the students and the community.

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Authors

Holly Kihm is an assistant professor in Human Development and Family Studies at Pennsylvania State University, Sharon, Pennsylvania.

Kay Singleton is a registered dietician and instructor at Southeastern Louisiana University, Hammond, Louisiana.

Citation

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