

## **Instructional Strategies in Family and Consumer Sciences: Implementing the Contextual Teaching and Learning Pedagogical Model**

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*The purpose of this paper is to inform and assist in-service and pre-service teachers generally and family and consumer sciences teachers specifically on the strategies associated with the Contextual Teaching and Learning pedagogical model. This paper provides information on the Contextual Teaching and Learning model and supporting instructional strategies. The four strategies described in this paper were selected based on their prior use (Smith, 2003; Smith & Katz, 2006; Ward & Lee, 2002) and compatibility to the subject matter in family and consumer sciences.*

In 1998, the United States Department of Education funded several projects that investigated promising practices to improve teacher preparation and professional development (Lynch & Harnish, 2002). The College of Education at the University of Georgia received one of those projects. These funded projects developed and tested innovative models and practices that prepare and support teachers to improve academic achievement for all students. The College of Education at the University of Georgia developed a model of teaching excellence for pre-service teacher education known as Contextual Teaching and Learning (Lynch, Padilla, Harnish, & DiStefano, 2001).

The Contextual Teaching and Learning project at the University of Georgia was designed to supplement and enrich existing programs in teacher education. Contextual Teaching and Learning addresses the issue that some students do not see the connection or application of the content of school to their lives now or into the future. Therefore, they do not see purpose in school. The principles and practices of Contextual Teaching and Learning are: a) enable teachers to relate subject matter learning to settings where it is used in real world life at home, work, and the community; and b) help students transfer knowledge and problem solving skills learned in school to other life contexts as well as help them prepare for future careers, citizenship, or continued learning (Lynch et al., 2001). Therefore, much of the focus of Contextual Teaching and Learning project at the University of Georgia was on the use of instructional strategies based on current research on how learning occurs.

As a result of this five-year funded project at the University of Georgia's College of Education, several illustrative instructional strategies that supported the Contextual Teaching and Learning pedagogical model emerged (Lynch & Harnish, 2002). Those identified strategies were problem-based learning, project-based learning, inquiry-based learning, work-based learning, service learning, cooperative learning, and authentic assessment. The purpose of this paper is to inform and assist in-service and pre-service teachers generally, and family and consumer sciences teachers specifically, on the strategies associated with the Contextual Teaching and Learning pedagogical model. This paper provides information on the Contextual Teaching and Learning model and supporting instructional strategies. The four strategies described in this paper were selected based on their prior use (Smith, 2003; Smith & Katz, 2006; Ward & Lee, 2002) and compatibility to the subject matter in family and consumer sciences.

## **Overview of Contextual Teaching and Learning**

Several definitions of Contextual Teaching and Learning have been formulated by different authors. Following are two of the many varying definitions of Contextual Teaching and Learning. One definition is a conception of teaching and learning that helps teachers relate subject matter content to real world situations (United States Department of Education Office of Vocational and Adult Education, 2005). On the other hand, Berns and Erickson (2001) defined the concept as an innovative instructional process that helps students connect the content they are learning to the life contexts in which that content could be used.

Although Contextual Teaching and Learning is a relatively new concept in the field of education, its principles and practices have been around for centuries (Dijkstra, 1998). The concept of teaching students in a context as close to real life as possible can be dated back to the 16th century. Michael of Montaigne, a Renaissance writer, believed that students could learn more from traveling and experiencing the world first hand than they could from studying a textbook (Ediger, 1997). Early in the 20<sup>th</sup> century, Dewey was an advocate for schools resembling life where people learned by engaging in meaningful activities (Dewey, 1916). Following the work of Dewey in the early 1900s, several theories (Constructivism, Situated Cognition, and Communities of Practice) have been cited by contemporary theorists (Brown, Collins, & Duguid, 1989; Bruner, 1966; Lave & Wenger, 1991) as relevant to the literature base for Contextual Teaching and Learning.

## **Contextual Teaching and Learning Classroom**

Characteristics of the Contextual Teaching and Learning classroom can be attributed to the roles and responsibilities of the teacher, student, and methods of assessment. Each of these dimensions will be briefly explained.

The subject matter can be delivered using the Contextual Teaching and Learning pedagogical model while also building critical and problem solving skills and social skills (Medrich, Calderon, & Hoachlander, 2002). However, to use the Contextual Teaching and Learning pedagogical model skillfully, teachers need to think and act in certain ways. For example, there is less direct instruction on the part of the teacher, yet students are provided with a clear set of learning objectives. The teacher's role is to guide, discuss, question, listen, and clarify (Souders, 1999); a facilitator of knowledge rather than a dispenser of knowledge. In order to accomplish these roles, the teacher must be actively engaged with students. In using Contextual Teaching and Learning, teachers often need new equipment as well as new skills (Predmore, 2005; Souder, 1999), and sometimes an adjusted or new philosophy of teaching. Teachers interested in implementing Contextual Teaching and Learning should participate in professional development.

The student in a Contextual Teaching and Learning classroom plays an active role in his or her own learning. The student's role is to explore, investigate, validate, and discuss (Souders, 1999). As these roles are new for most students, many may initially be uncomfortable with the open-endedness and self-directed learning that Contextual Teaching and Learning often entails (Medrich et al., 2002). With guidance from the teacher, students can make the transition from traditional teaching to teaching using the Contextual Teaching and Learning model.

To assess students' progress in a Contextual Teaching and Learning classroom, teachers may need to use alternative methods of evaluation. As teachers focus on process and products

and demonstration of understanding, they may also rely on portfolios, journal entries, self-evaluations, and rubrics in addition to objective-type questions (Llewellyn, 2001).

### **Contextual Teaching and Learning and Traditional Teaching Methods**

As the framework for Contextual Teaching and Learning for preservice teacher education at the University of Georgia was developed, ten guiding principles emerged. These principles characterizing Contextual Teaching and Learning were then aligned and compared with those of traditional methods of teaching. Traditional methods of teaching include, but are not limited to lecture, discussion and questioning, and drill and practice. The assumptions and practices of both methods of teaching (traditional and Contextual Teaching and Learning) are shown in the table below, which was adapted from Schell (2001).

<b>Assumptions &amp; Practices of Contextual Teaching and Learning</b>	<b>Assumptions &amp; Practices of Traditional Teaching</b>
Students are actively engaged	Students are passive recipients
Students view learning as relevant	Students regard content as having no relevant application
Students learn from one another through cooperation, discourse, teamwork, and self-reflection	Students work in isolation. Peer review and/or discussion is absent
Learning is related to "real world" and/or simulated issues and meaningful problems	Learning is abstract and theoretical
Students are encouraged to take responsibility for the monitoring and development of their own learning	The teacher is considered the sole arbiter of student learning
Appreciating students' diverse life contexts and prior experiences are fundamental to learning	Little or no consideration is given to the experiences and backgrounds of students
Students are encouraged to become active participants in the improvement of society	Students not encouraged to become involved in social improvement
Student learning is assessed in multiple ways	Learning is assessed in a singular, standardized format
The perspectives and opinions of students are valued and respected	Student perspectives are unsolicited or undervalued
Teacher acts as a facilitator of student learning	Teacher controls and dictates aspects of the instructional environment

*Table 1.* Assumptions and practices of contextual and traditional teaching methods.

Adapted from Schell, J. W. (2001). *An emerging framework for contextual teaching and learning in preservice teacher education*. Retrieved from <http://www.coe.uga.edu/ctl/theory/framework.pdf>

### **Benefits of Contextual Teaching and Learning Strategies**

USA Today (2006) has teamed with the Ohio State University's College of Education to help prepare teachers to use Contextual Teaching and Learning strategies. The three benefits as given on USA Today's website are as follows: (a) students are more responsive when using their knowledge and skills in real-world situations;(b) students are more likely to engage in their own

learning if it applies directly to their lives as family members, citizens, and present/future workers; and (c) parents, students, and community members can all use and relate to these ideas.

Furthermore, researchers at the University of Georgia's College of Education also discovered benefits of using Contextual Teaching and Learning in the classroom. The University of Georgia researchers spent five years studying how teachers make Contextual Teaching and Learning into reality (Predmore, 2005). During two of the five years, eight novice teachers who were among a cohort group of Contextual Teaching and Learning trained pre-service teachers participated in case study research. Their subject areas were career and technical education (business and marketing, family and consumer sciences, and technology education), science, and mathematics. Two key benefits that novice career and technical education teachers and academic teachers who participated in the University of Georgia's College of Education study found in using Contextual Teaching and Learning strategies were identified. First, students reported that they learned a lot more in Contextual Teaching and Learning strategy classes than in other traditional courses in that same subject area. The rationale given for student success is that they are learning the material within a concrete context, which reinforces memory. Second, students are more highly motivated in the Contextual Teaching and Learning classes as they respond well to the related strategies. When students saw the real-world relevance of what they were learning, they became more interested and motivated; this is especially true for those students who dismiss school as boring.

#### **Facilitators and Barriers**

Through observations of a group of eight Contextual Teaching and Learning trained novice teachers from academic and career and technical education areas, several facilitators and barriers to implementing Contextual Teaching and Learning were identified (Lynch & Studdard, 2003). The facilitators to implementing Contextual Teaching and Learning were: teacher's philosophy of education; student's positive response to Contextual Teaching and Learning approaches; block schedule (90 minutes or more) which allows extended class time; support from administration and teaching area with resources; availability of the latest technology; and good training on Contextual Teaching and Learning in the undergraduate program. The barriers to implementing Contextual Teaching and Learning included: subject matter that is not often conducive; it is time consuming to implement; a lack of support from administration; apathetic student response and poor preparation of students; curriculum (standards that must be met); required textbook (not conducive to Contextual Teaching and Learning); high-stakes testing requirements; and lack of classroom management as Contextual Teaching and Learning approaches require movement of students.

Through conducting case study research focused on one teacher in a family and consumer sciences classroom, several facilitators and barriers to implementing Contextual Teaching and Learning were identified (Smith, 2003). The facilitators to implementing Contextual Teaching and Learning were: diverse environment; the diversity was used as a backdrop to enrich teaching by capitalizing on the experiences of students; block scheduling that allow extended class time in both laboratory and non-laboratory settings; physical arrangement of the classroom with tables rather than desk; and good budget to gain needed resources; the budget afforded her field trips and consumable supplies. The barriers to implementing Contextual Teaching and Learning included: time consuming to plan Contextual Teaching and Learning strategies; lack of space during planning period; and general apathy of students.

## **Instructional Strategies for Implementing Contextual Teaching and Learning**

A variety of instructional strategies has been identified and may be used to implement Contextual Teaching and Learning. Berns and Erickson (2001) identified five approaches whereas Lynch and Harnish (2002) identified seven approaches that supported the Contextual Teaching and Learning model. Both Berns and Erickson and Lynch and Harnish identified problem-based learning, project-based learning, work-based learning, service learning, and cooperative learning. Lynch and Harnish identified two additional approaches, inquiry-based learning and authentic assessment. For the purpose of this paper, four of the seven approaches identified by Lynch and Harnish will be explored. Those strategies are problem-based learning, project-based learning, inquiry-based learning, and cooperative learning. The four strategies were selected based on their prior use (Smith, 2003; Smith & Katz, 2006; Ward & Lee, 2002), appropriateness, and compatibility to the content of family and consumer sciences.

Many of the Contextual Teaching and Learning strategies may already be in use in classrooms (TeachNET, 2006) for some career and technical education educators generally and family and consumer sciences educators specifically. These active strategies are viewed as methods to help students connect the content to real-world situations, master subject matter, and improve achievement. These strategies are also methods that encourage problem solving and higher order thinking skills, and are used in family and consumer sciences classes (Shamsid-Deen & Smith, 2006). Context is a critical component in the implementation of these strategies which engage students in an active learning process (TeachNET, 2006). The following sections explain the four instructional strategies selected for this paper which will include a definition, the characteristics, and steps for implementing the strategy.

### **Problem-based Learning**

Problem-based learning is an instructional approach that challenges students to seek solutions to real-world problems by themselves or in groups, rather than learn primarily through lectures or textbooks (Sonmez & Lee, 2003). Furthermore, it is the elaboration of knowledge that occurs through discussion, answering questions, peer teaching, and critiquing (Biley & Smith, 1998). The goal of problem based learning is twofold: to learn a required set of competencies and to develop problem solving skills that are necessary for lifelong learning (Engel, 1991). Therefore, the central concept of problem-based learning is that students will learn content as effectively as they would through lecture by attempting to solve realistic problems (Biley & Smith, 1998; Ward & Lee 2002). Problem-based learning helps students develop the skills they need to thoroughly research a situation, weigh possible solutions, then select and defend what they think is most appropriate (D'Agostino, 1997).

### **Implementing Problem-based Learning in an FCS Classroom**

The checklist for developing a problem as identified by Delisle (1997) includes selecting content and skills, determining availability of resources, writing a problem statement, choosing a motivation activity, developing a focus question, and determining an evaluation strategy. Each of the six items on the checklist will be briefly explained and an example provided using a Creative Foods class as the frame of reference.

**Selecting content and skills.** The content for problem-based learning is selected by referring to the curriculum framework developed by the district and the state. Skills are determined by teacher's experience with class, students, district and/or state curriculum

framework. For example, the teacher chooses the content area of salad greens in a foods and nutrition course.

**Determining availability of resources.** You can provide a list of resources with information on the content such as texts, internet, library, and any other school or community resources. For this activity, the teacher elected to use content from Largent and Bence's (2006) text as a resource. The teacher may also provide handouts that will help students and/or have them use the computer for research. It is recommended that the teacher provide the needed materials for the students.

**Writing a problem statement.** The problem statement should be developmentally appropriate (consider the age and maturity of students), grounded in student experiences (interesting or something they care about), curriculum based (from the standards and content), variety of teaching and learning strategies (students can engage in solving the problem individually or as a group), and not easily answered (students must research for information for possible solutions). The teacher might create the following scenario: *You are employed at a five star hotel restaurant as a salad maker. There are three different types of green salads on the noon buffet. Today, the executive staff from the regional office will be eating in the restaurant. What salads are you going to make and what types of greens would you use for each? Why?*

**Choosing a motivation activity.** Show the connection of the problem to students' lives. When students are involved in the problem, they tend to be more invested. The motivation activity will depend on the context and learners. Therefore, each teacher will decide what motivates her students. For example, identifying the appropriate greens could help prepare students for the exam or gain bonus points for a grading period for those students motivated by grades

**Developing a focus question.** Write a question that will help students focus on the task and challenges them to think critically. A typical question might be: What are the characteristics of the different salad greens for the different kinds of salads?

**Determining an evaluation strategy.** Evaluation strategies may vary from standardized to performance based. Performance based assessments are given in the introduction such as authentic assessment and rubrics. Use the results of a chart to evaluate your work.

Delisle's (1997) checklist is recommended for teachers who plan to implement problem-based learning in their classrooms. Although problem-based learning is time consuming to plan, implement, and evaluate, recurring use of the strategy will help teachers manage its implementation.

## **Project-based Learning**

Project-based learning is an in-depth investigation of a real-world topic worthy of children's attention and effort (Katz & Chard, 2000). Project-based learning can involve an individual teacher or teams of teachers from different disciplines working together to assist students in producing real-world products or projects (Harwell, 1997), and can span a number of class periods, several weeks or even an entire semester. It can be characterized as an assignment in which an individual or group of students creates some useful, authentic finished product or service that is community-based or school-based in nature. However, project-based learning is not unstructured; there is a complex but flexible framework with features that characterize the teaching-learning interaction quality (Concept to Classroom, 2004).

## **Implementing Project-based Learning in an FCS Classroom**

There are three phases to implementing project-based learning (Katz & Chard, 2000). The first phase is planning and getting started. The second phase is progress and the final phase is reflections and conclusions. Each of the phases will be explained and an example provided using a Creative Foods class as the frame of reference.

**Planning.** First, the teacher selected a topic of study for the project based on students' interests, curriculum standards, and the availability of local resources. The teacher discussed the topic with the students to find out what they already knew about it and helped them develop questions that their investigation would answer. For this project, students are interested in regional foods. Therefore, the teacher and students elected to conduct an in-depth study on regional foods. After discussions, four different regions of the United States are determined to be of interest to students. Students are allowed to select the region of their choice. However, each group was limited to five students. Their investigation of the region included the environment, people, food customs, and recipes of the most popular foods.

**Progress.** Next, the teacher arranged opportunities for students to do field work (library, in-class research). The teacher provided resources to help the students with their investigations and suggests ways for students to carry out a variety of investigations. Students could represent their explanations in a variety of ways such as drawings, writings, and/or graphic organizers. For this project, the teacher arranged for the class to visit the library to use all available resources which included books, maps, magazines, and the internet. The teacher was available to facilitate and monitor. After the visit to the library, teacher and students returned to the classroom where information was compiled on posters using pictures and drawings that represented the food and culture.

**Reflections and conclusions.** In the concluding phase, the teacher arranged a culminating event through which the students shared with their peers what they had learned. The teacher helped the students decide how to display their results and in so doing, involved them purposefully in reviewing and evaluating the entire project (Curtis, 2002). The poster summarizing the required information was the product for this project. After the completion of the project, the poster that illustrated main facts about the region, popular foods, and the people was presented and discussed with students and teacher. The posters were displayed in the classroom for a week.

When teachers implement project-based learning successfully, children can be highly motivated, feel actively involved in their own learning, and produce work of a high quality (Katz & Chard, 2000; Curtis, 2002.).

## **Inquiry-based Learning**

Inquiry is an approach to teaching that involves a process of exploring the natural or material world that leads to asking questions and making discoveries in the search of new understandings (Llewellyn, 2001). It is a multifaceted activity that involves making observations; posing questions; examining books and other sources of information to see what is already known in light of experimental evidence; using tools to gather, analyze, and interpret data; proposing answers, explanations, and predictions; and communicating the results (National Committee on Science Education Standards and Assessment, 1996). The inquiry process begins by the learner noticing something that intrigues, surprises, or stimulates a question. As the process unfolds more observations and questions emerge, giving occasion for deeper interaction and relationship with the phenomena-and greater potential for further development of

understanding. The inquirer is collecting and recording data, making representations of results and explanations, drawing upon other resources such as books, videos, and colleagues (Llewellyn, 2001).

### **Implementing Inquiry-based Learning in an FCS Classroom**

In order to implement inquiry-based learning, four steps have been included on the lesson planning checklist by Alvarado and Herr (2003). Those steps include: developing essential understandings, identifying specific objectives, locating resources, and question development (initial, guiding, and follow-up). Each step will be explained and an example provided using a Creative Foods class with a diverse population of students.

**Developing essential understandings.** As the teacher, what do you want students to know and be able to do? What is the content/subject matter? For this activity, the teacher wanted students to gain information on foods common to people in different cultures as well as cultural aspects of foods.

**Identifying specific objectives.** Next, the teacher determined the objectives for the content in the subject matter. The objectives for foods common to people in different cultures might be: determine foods that are commonly eaten in the culture you selected, (repetitive), explore why foods are eaten in the culture you selected.

**Locating resources.** To assist students, the teacher provided a list of resources for them (students) to use. For this assignment, students were able to use the library, internet, and additional textbooks and magazines to conduct the research. If students were going to the library, the teacher scheduled that time with the media specialist in advance and took the class as a group.

**Question development.** Finally, you can start with an initial question. The initial question should be open-ended (can not be answer with a yes or a no), higher-level (analysis, synthesis, and evaluation in Bloom's taxonomy), and flexible (broad enough to serve as umbrella). The initial question should stimulate additional questions. The initial question might be: What are foods unique to people in this particular culture? Continue with a guiding question that further develop the assignment, but at the same time focus and refocus students. Guiding questions might be the following: Why are these foods common? How are these foods prepared? What is the most popular dish? When is it eaten? What are some of the variation of serving the dish? Finish with a follow-up question, a question that helps students provide possible solutions. The follow-up question might be: what are environmental conditions that contribute to this food's popularity?

Inquiry-based learning has been used extensively in the public education arena in science education. Moss (1989) maintained that family and consumer sciences is deeply rooted in physical and life science; this is especially true with foods and nutrition concepts. Therefore, the commonality of concepts between science education (the pacesetters in inquiry-based learning) and foods and nutrition makes the implementation of inquiry-based learning relevant in family and consumer sciences.

### **Cooperative Learning**

Cooperative Learning is the instructional use of small groups so that students work together to maximize their own and each other's learning (Johnson, Johnson, & Holubec, 1993). It is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each



member of the team is responsible not only for learning, but also for helping teammates learn. In cooperative learning, the teacher establishes the structure to achieve heterogeneous groups of students working collaboratively toward some common learning goal or task (Scaglione & Blank, 1997).

**Basic elements of cooperative learning.** According to Johnson and Johnson (1991), unlike traditional classroom learning groups, Cooperative Learning groups are distinguished by five basic elements. These elements include heterogeneous grouping, positive interdependence, individual accountability, social skills, and processing. Each element will be explained in the following paragraphs.

*Heterogeneous grouping.* Each cooperative learning group should contain 3 to 6 members; usually 4 members in a group. Each group should reflect the heterogeneous nature of the class. Groups might be mixed heterogeneously, first according to academic abilities and then on ethnic background, race, and gender. Students should not be allowed to form their groups based on friendship or cliques.

*Positive interdependence.* Students in the learning groups must recognize that they are positively interdependent upon each other as they work toward a learning goal. This positive interdependence might be achieved through the task (division of labor), an established group goal, interdependent roles, and/or joint rewards.

*Individual accountability.* Although the group has established performance goals, individuals are also measured on their performance. Students may be measured through test scores, task completion, or an assessment of collaborative effort.

*Social skills.* The face to face interaction that is required in Cooperative Learning reinforces the need to identify, model, and assess social skills. In addition to the lesson, project, or product that groups are involved with, students are directly taught to listen actively, resolve conflicts, set and revise agendas, keep on task, and to monitor individual and group progress.

*Processing.* The final stage in individual and any Cooperative Learning activity requires groups to reflect on and evaluate their group effectiveness. This structured evaluation typically allows group members to identify how well they achieved both the social and academic goals of the experience. Critical to this self/group assessment is the identification of strategies to overcome the identified obstacles or barriers during the next cooperative lesson.

## **Formal Structures of Cooperative Learning**

Any collaborative structure that includes the five basic elements identified above would be considered Cooperative Learning (Scaglione & Blank, 1997). However, there are a number of specific cooperative structures that might be used in most any classroom including Student Teams-Achievement Divisions (STAD), Teams-Games-Tournaments (TGT), Jigsaw, and Group Investigation. Jigsaw and group investigation are among the most commonly used and popular versions of Cooperative Learning structures that extend for days or weeks (Newman & Thompson as cited in Vermette, 1998). Jigsaw and group investigation are conducive to family and consumer sciences subject matter and will be defined in the following paragraphs.

**Jigsaw.** Like a jigsaw puzzle, each student in a five- to six-member group is given unique information on a topic that the whole group is studying. After reading their material (one section of the chapter or content), students work with members from other teams assigned the same content; each student becomes an "expert" on one topic. Next, students return to their teams to teach it to their teammates so that ultimately, the entire lesson is covered within the group. Students are all assessed on all aspects of the topic (Kagan, 1989). **Note.** To ensure that all

students have the same information, the teacher may want an expert to explain each topic for the entire class or the teacher can provide an explanatory statement or elaborate on each topic.

**Group Investigation.** Students work in small groups, but each group takes on a different task or project, and within groups, students decide what information to gather, how to organize it, and how to present what they have learned as a group project to classmates. In evaluation, higher level learning is emphasized (Sharan & Sharan, 1992). **Note.** The teacher may elect to determine the information to be covered in this assignment and develop guiding questions.

### **Informal Structures of Cooperative Learning**

Informal Cooperative Learning groups are often organized so that students engaged in three-to-five minute focused discussions before and after a lecture. Informal structures are also two-to-three minute turn-to-your-partner discussions interspersed throughout a lecture. According to Kagan (1989), some of the informal Cooperative Learning structures (for example, think-pair-share) are very effective and work well in class. There are several informal and temporary Cooperative Learning structures including round table, partners, think-pair-share, corners, and three-minute review. Each structure will be briefly described. With each of the informal Cooperative Learning structures below, the teacher will follow-up students' explanations with clarifying statements to ensure understanding and provide re-enforcement.

**Round Table.** Students in a group pass around a paper and pencil and each student writes one answer to a series of questions. Other students in the group discuss the answer with the student who wrote it down. For example, students might use a round table to check and discuss their answers about a series of questions relating to the relationship between a nutrient (fats) and the pyramid guide. With simultaneous roundtable more than one pencil and paper are used at once.

**Partners.** In this informal structure, students work in pairs to review or master subject matter. The pairs split up and meet with other students from other pairs to discuss the information they are reviewing. Finally, the initial pairs come back together to review all the information they have learned from other classmates.

**Think-Pair-Share.** This strategy requires students to think on their own about a subject posed by the teacher. After a period of brainstorming, students form pairs and discuss their ideas with each other. Afterwards, students can revise their ideas based on the feedback from their partner. After the paired discussions, the students share their final thoughts with the class.

**Corners.** Each student moves to a corner of the room representing a teacher-determined alternative (topic/subject). For example, the subject matter is nutrients. Students discuss the assigned topic within their corners (proteins, fats and carbohydrates, vitamins, and minerals). After a designated time period, students share their ideas on the topic from their corner and listen to and paraphrase ideas from other corners. **Note.** With the structure corners, one would think of a square. However, corners can be almost any shape such as a square, a triangle, or pentagon depending on the categorization of the information to be covered.

**Three-Minute Review.** Teachers stop any time during a lecture or discussion and give teams of students three minutes to review what has been said, ask clarifying questions or answer questions. This review can be conducted with a partner, a group of three, or whole class. **Note.** A variation of the three-minute review is the *Three-Minute by Three*. With the three-minute by three, students are paired and assigned content to read, discuss, and share with the class. Students will take the first three minutes to read the information individually, the second three minutes to discuss and clarify the content with the partner, and the third three minutes to explain the content

with the class. This structure is especially useful when there is a large amount of content to be covered.

### **Implementing Formal Cooperative Learning Structures in an FCS Classroom**

The guidelines determined by Johnson, Johnson, and Holubec (1993) for implementing and structuring *formal* Cooperative Learning in the classroom include five steps. The steps are: making pre-instructional decisions; specifying objectives for the lesson; explaining the task and positive interdependence; monitoring students' learning and providing task assistance; and evaluating students and helping students evaluate themselves. According to Johnson and Johnson (2000), any assignment in any curriculum for any age student can be done cooperatively. The curriculum in family and consumer sciences is no exception to being done cooperatively. The guidelines listed above will be explained providing a family and consumer sciences example specifically.

**Identify objectives for the lesson.** This step requires the teacher to develop the objectives that specify the concepts and strategies to be learned and a social skills objective specifying the interpersonal or small group skill to be used and mastered during the lesson. For the purpose of this assignment, the order of the guidelines for implementation was altered so that the identification of the objectives was first. The content or concept to be learned is nutrients (carbohydrates, fats, proteins, vitamins, and minerals). The Cooperative Learning structure is *Group Investigation*. The objectives for this lesson are: identify and define the nutrient, describe main functions of the nutrient, list foods that are a rich source of the nutrient, determine and explain the effects of a deficiency of the nutrient. The teacher may modify the objectives listed above and identify a social skill based on the dynamics of the class and context of the school and community. An example of a social skill is active listening or conflict resolution.

**Make pre-instructional decisions.** The teacher will decide on the size of groups, the method of assigning students to groups, the roles students will be assigned, the materials needed to conduct the lesson, and the way the room will be arranged. An additional guideline is the establishment of a timeline; teachers should estimate the time devoted to this assignment. There will be five groups, one for each category of nutrient. However, the size of the group will depend on the number of students in the class. The recommendation is groups of four to six students. Students will be assigned to one of the five groups randomly by simply counting from one to five whereby all the ones, twos and so forth form a group. Students will be assigned roles such as facilitator, recorder, and spokesperson depending on the number in the group. In order to complete this assignment, students will need their textbook and other sources (content from references and internet) as provided by the teacher. Students will work together at assigned tables in the classroom.

**Explain the task and the positive interdependence.** The teacher clearly defines the assignment, teaches the required concepts and strategies, specifies the positive interdependence and individual accountability, gives the criteria for success, and explains the expected social skills to be engaged in. The teacher will introduce the unit on nutrients. The teacher may choose to use the sample assignment sheet to develop the Group Investigation assignment. For this assignment, students should be given directions on the task to be completed (that is, what should be included, what they need to complete the task, where to go in the classroom to work, and how long they have to complete the assignment). If this is a graded activity, students should be informed about the evaluation criteria.

**Monitor students' learning and intervene within the groups.** The teacher systematically observes and collects data on each group as it works. When necessary, the teacher intervenes to assist students in completing the task accurately and in working together effectively. The teacher moves around the classroom assisting each group by answering questions and/or redirecting with clarifying statements, assesses students' learning and helps students process how well their groups functioned. Students' learning is carefully assessed and their performances are evaluated. Members of the learning groups then process how effectively they have been working together. Teacher may choose to use the rubric to evaluate students and/or have students evaluate themselves using the rubric.

### **Implementing Informal Cooperative Learning Structures in an FCS Classroom**

Johnson, Johnson, and Holubec (1993) provided directives for implementing and structuring *informal* Cooperative Learning strategies. According to Johnson et al., short-term, temporary learning groups might be assigned randomly. Family and consumer sciences teachers in any subject matter area may choose to follow the suggestion given below.

A teacher may choose to have students *turn to the person next to them, assign numbers*, or have students *move to the person across the room*. However, because these groups are short-term and last less than a class period, it is permissible to let students select the person to work with. The concept for this activity is carbohydrates. The informal Cooperative Learning structure used for this activity is *corners*. The four corners of the classroom will represent carbohydrates generally and the three types of carbohydrates (sugars, starch, and fiber). Students can be assigned to a corner by counting off one to four or by choice with a limit on the number of students in a group. Teacher will develop two or three questions for students to answer on carbohydrates, sugars, starch, and fiber during this activity. For example, what is the main function of (carbohydrates, sugars, starch, or fiber)? What are good sources of a (carbohydrate, sugar, starch, or fiber)?

### **Summary**

Student learning and achievement is the focus of many reform initiatives such as the No Child Left Behind (NCLB) Act (2002). According to Greeno (1997), using Contextual Teaching and Learning strategies will increase the likelihood of transfer from the classroom into life situations, which also increases the likelihood of student learning and mastery of the subject matter. Therefore, much of this paper focused on the implementation of the strategies associated with the Contextual Teaching and Learning concept.

This paper was written to inform and assist in-service and pre-service teachers generally and family and consumer sciences teachers specifically on the Contextual Teaching and Learning pedagogical model. The paper provided the theoretical underpinning of the Contextual Teaching and Learning model and the instructional strategies associated with the concept.

Based on the literature, the Contextual Teaching and Learning pedagogical model has been applied in family and consumer sciences (Lynch & Harnish, 2003; Predmore, 2005; Shamsid-Deen & Smith, 2006; Smith, 2003; Smith & Katz, 2006). Additionally, teacher educators are provided with information useful in preparing pre-service teachers to implement Contextual Teaching and Learning strategies.

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