FAMILY AND CONSUMER SCIENCES TEACHERS' CHANGES IN ATTITUDES AND KNOWLEDGE ABOUT FOOD IRRADIATION

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Immediate and longer-term changes in attitudes and knowledge of high school family and consumer sciences teachers regarding food irradiation were assessed using a repeated measures design to assess the effects of a professional development workshop on food safety and food irradiation. Data were analyzed within six constructs relative to food irradiation, including the teachers' attitudes towards its safety, their desire to learn more, their perceived levels of understanding and competence in teaching about it, their perceived risk of foodborne illness, and their knowledge of the subject. Results revealed significant positive changes in attitudes and knowledge, both immediate and longer-term, suggesting the workshop contributed to increased knowledge and more positive attitudes about food irradiation.

Food irradiation is a food processing technology used for improving the safety and quality of food, and has been scientifically researched for over 50 years (Diehl, 1995; Smith & Pillai, 2004). It has been shown to destroy harmful microorganisms in foods that cause foodborne illnesses in humans, and can extend the shelf life of produce (Smith & Pillai). Currently, irradiated food is commercially available at more than 4,000 foodservice outlets and retail chains in the U.S. (Minnesota Beef Council, 2004).

Consumers, however, have been slow to adopt food irradiation, with only 50% reporting they would buy and 25% indicating they would pay a premium for irradiated food if it were available, even though most are highly concerned about food safety and rank foodborne illness as a top concern (Frenzen, DeBess, Hechemy, Kassenborg, Kennedy, McCombs, et al., 2001; Troxel, 2000). Estimates support that foodborne illness in the U.S. still results in approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths annually (Mead et al., 1999).

Education, Knowledge, and Attitudes on Food Irradiation

Education about food safety and the benefits of food irradiation technology can be effective in influencing a person's knowledge and attitudes about food irradiation (Bruhn, 1998; Eustice, 2004; Pohlman, Wood, & Mason, 1994). Studies have revealed that persons familiar with or knowledgeable about food irradiation were more likely to purchase irradiated products

compared to those who were unfamiliar with the process (Bruhn; Fox, 2002; Troxel, 2000). However, recent studies suggest that consumers may be more receptive to negative and/or misinformation about food irradiation rather than positive information (Fox; Fox, Hayes, & Shogren, 2002). These facts underscore the importance of education and the need for teachers to provide effective education in this area.

Consumers' attitudes toward food irradiation are largely based on the knowledge and information they have received about the technology. Consumers typically harbor misconceptions associated with food irradiation, including: irradiation will cause food to become radioactive and/or toxic, irradiation will be used to make spoiled food marketable, irradiation will replace good manufacturing practices, and irradiation will alter the nutritional content of foods (Bruhn, 1998; Resurreccion & Galvez, 1999). In addition, previous research studies have found that consumers' acceptance of irradiated foods are impacted by their different demographic variables, such as ethnicity, gender, level of education, and household status (Fox, 2000; Fox et al., 2002; Nayga, Poghosyan, & Nichols, 2004; Troxel, 2000) although results about specific impacts have been mixed.

Educators differ from consumers in regards to food irradiation knowledge and attitudes because of their occupational association with the generation of knowledge. Family and consumer sciences teachers have the ability to disseminate information on food irradiation to a range of audiences, including their students and the public. Research conducted more than a decade ago suggested that nutrition educators, including family and consumer sciences high school teachers and county Extension agents, held neutral to positive attitudes about food irradiation but had limited knowledge about it (Johnson, 1990). Recent research indicates that family and consumer sciences county Extension educators hold neutral beliefs and limited knowledge regarding food irradiation (Thompson & Knight, 2006a; Thompson & Knight, in press, Thompson, Schielack, & Vestal, 2004). A more recent study conducted by the authors revealed that even though family and consumer sciences high school teachers hold neutral to positive attitudes about the safety of irradiated foods, their perceptions of the risk of foodborne illness, and their attitude towards learning about food irradiation, they possess neutral to negative perceptions of their understanding of food irradiation and their competence to teach about the topic (Thompson, Phelan, Wingenbach, & Vestal, 2006).

Educating the Educator

A review of research on educators' knowledge and belief systems reveals that familiarity with and knowledge about a subject matter influences teaching behaviors related to that subject, with knowledge and beliefs collectively comprising a teacher's knowledge base (Munby, Russell, & Martin, 2002). Education in the form of professional development can play an important role in shaping the knowledge and beliefs of teachers. At the basic level, education is concerned with transforming beliefs and generating new knowledge and understanding (Southerland, Sinatra, & Matthews, 2001). Professional development can improve educators' perceived competency in providing education about certain subjects, which can affect an educator's desire or ability to teach within that subject, according to Berliner and Calfee (as cited in Munby, Russell, and Martin). For purposes of this manuscript, beliefs will be referred to as attitudes, since they are considered synonymous (Pajares, 1992).

Purpose and Research Questions

The purpose of our study was to determine the effects of an educational intervention/professional development workshop with regard to changes in family and consumer sciences teachers' attitudes and knowledge about food irradiation. Specifically, our objectives were to (1) describe family and consumer sciences teachers' baseline attitudes, understanding, and knowledge about food irradiation, and (2) determine immediate and longer-term changes in food irradiation attitudes and knowledge following a professional development workshop on food safety and food irradiation.

Methods

Data Collection

To determine changes in the food irradiation attitudes and knowledge of family and consumer sciences high school teachers, the authors administered a pre-test 2.5 months before the professional development workshop, a post-test immediately after, and a delayed post-test approximately 10 months after a workshop on food irradiation, using a previously validated instrument. This close-ended instrument, known as the Food Irradiation Teacher Assessment (*FITA*) (Thompson et al., 2006), was administered online via a secure Web link (Ladner, Wingenbach, & Raven, 2002) after obtaining approval to conduct the study from the Texas A&M University Institutional Review Board.

Participants

The pre-test was completed by 121 randomly selected high school family and consumer sciences teachers in Texas who taught Food Science and Technology, Nutrition and Food Science, and/or Food Production, Management, and Services (Thompson et al., 2006). Of the 121 respondents who participated in the benchmark survey, 29 teachers were randomly selected to participate in a food irradiation professional development workshop. Most of the 29 teachers were female (99%), Caucasian (90%), and had taught at least 11 years (67%). All had a bachelor's degree, 35% had earned a master's, and most had never participated in a food irradiation training (85.7%). Twenty-eight survey responses were collected immediately after the workshop and during the delayed post-test, for a response rate of 96.6% from the 29 participants who attended the professional development workshop.

Instrument

Participants indicated their agreement to 19 attitudinal items, identified their perceived understanding of food irradiation via two rating questions, and responded to six multiple choice questions regarding food irradiation concepts. The 19 attitudinal items were rated on a five-point Likert-type scale ranging from "strongly disagree" to "strongly agree" addressing attitudes about the safety of food irradiation (*Safety*), learning about food irradiation (*Learning*), competency in teaching about food irradiation (*Competence*), and the risks of foodborne illnesses in the United States (*Foodborne Illness Risk*). Respondents rated their understanding of food irradiation (*Understanding*) using a four-point scale from "poor" (1) to "excellent" (4). To measure knowledge of food irradiation (*Knowledge*), participants responded to six multiple-choice items. Sample questions included: "Compared to cooked or frozen food, food that is irradiated at approved doses has (answer: similar nutritional value)", and "Consumption of irradiated food is associated with (answer: decreased risk of foodborne illness)". Demographic data (gender, age, ethnicity, years of teaching experience, and educational level) were collected at pre-test.

Intervention

The two-day professional development workshop, held on the campus of Texas A&M University, focused on food safety and food irradiation. The goal of the workshop was to expose high school family and consumer sciences teachers to the most current research and science in the area of food microbiology and the emerging food safety technology of food irradiation. The workshop incorporated various learning activities related to food safety and food irradiation, including: participating in presentations by food microbiology and food irradiation scientists and experts from multiple universities, touring a local food processing facility, touring an electron beam food irradiation research facility, as well as focusing on the development of classroom applications regarding current science related to food microbiology and food irradiation. Upon conclusion of the workshop, the researchers administered the *FITA* using a computer lab and directing the participants to an online link.

Data Analysis

A previous study established six scales, or constructs, of the *FITA*: *Safety*, *Competence*, *Learning*, *Foodborne Illness Risk*, *Understanding*, and a *Knowledge* component (Thompson et al., 2006). To obtain a score for each scale, Likert-type items were recoded so that higher scores reflected beliefs that were more favorable to food irradiation (Crocker & Algina, 1986).

Descriptive and inferential statistics were determined using the Statistical Package for Social Sciences (SPSS 12.0, Chicago, Il). Mean and standard deviation were calculated for each item and scale. Statistically significant differences between respondents' pre-, post-, and delayed post-test scale scores were analyzed via repeated measures analysis of variance using the Bonferroni-corrected post hoc procedure. Because statistically significant outcomes do not provide information regarding the size or strength of the outcome, or "quantitative estimate of practical significance" (Rennie, 1998, p. 238), we estimated the strength of the association via partial eta (η). Guidelines for interpreting effect size estimates for measures of association suggest that coefficients of .10, .30, and .50 are small (negligible practical or educational importance), medium (moderate practical or educational importance), and large (crucial practical or educational importance), respectively (Hojat & Xu, 2004).

Results

Food Irradiation Attitudes

Overall, participants held relatively neutral attitudes regarding food irradiation before the workshop. Table 1 shows the mean and standard deviation for each item, organized by scale. Participants were neutral to positive regarding the safety of food irradiation (*Safety*) and the risk of foodborne illness (*Foodborne Illness Risk*). They held positive attitudes regarding learning about food irradiation (*Learning*); however, they had negative self-efficacy attitudes regarding their ability to teach about the topic (*Competence*).

Table 1
Descriptive Statistics for Each Attitudinal Item of the Food Irradiation Teacher Assessment (FITA) at Pre-test, Organized by Scale (n = 28)

	M	*SD*
Safety[a]		
Food that has been irradiated is safe to eat.	3.54	.79
I would serve irradiated food to my family.	3.07	.98
I would buy irradiated food if it was available.	3.11	.99
Not enough research has been done to prove that food irradiation is safe.(-)	2.79	.96
Consuming irradiated food could be harmful to me in the future.(-)	3.44	.83
Food irradiation destroys the nutritional content of food more than other processing techniques.(-)	3.50	.84
Irradiated food causes cancer.(-)	3.33	.77
Irradiation facilities give off radiation to the surrounding community.(-)	3.57	.63
Irradiation will make food radioactive.(-)	3.96	.74
Learning[a]		
I am interested in learning more about food safety technologies.	4.79	.42
Students will benefit from knowing about food irradiation.	4.57	.50
I am interested in learning more about food irradiation.	4.68	.48
Competence[a]		
I feel competent teaching about food irradiation.	2.00	.94
I feel confident teaching about food irradiation.	2.07	1.02
Foodborne Illness Risk[a]		
I believe foodborne illness caused from bacteria in meats is a problem in the U.S.	3.89	.88
I believe foodborne illness caused from bacteria in fruits and vegetables is a problem in the U.S.	3.39	.88
Understanding[b]		
How would you rate your knowledge of food irradiation?	1.39	.63
How would you rate your understanding of the technology behind food irradiation?	1.29	.46

Note: [a]Items on a five-point scale. (-) Items reverse coded so that higher scores reflect more favorable attitudes towards food irradiation. [b]Items on a four-point scale.

Repeated measures ANOVA scale scores at each time point revealed statistically significant results. Participants' attitudes towards the *Safety* of food irradiation, their *Competence* to teach about it, and their *Understanding* were statistically significantly higher on post-test and delayed post-test compared to pre-test results (Table 2). Effect size analysis indicated large estimated effects for *Safety* (η =.82), *Competence* (η =.88), *Understanding* (η=.91*)*, supporting the educational importance of these outcomes (Table 2).

Table 2
Repeated Measures ANOVA of High School Family and Consumer Sciences Teachers' Attitudes toward Food Irradiation, as assessed on the FITA (n = 28)

Scales*	Pre	Post	Delayed	*df*	*F*	*p*	*η*
Understanding	2.68 (.98)$_a$	6.21 (1.10)$_b$	5.89 (1.23)$_b$	2, 54	133.60	<.001	.91
Competence	4.07 (1.70)$_a$	8.32 (0.77)$_b$	8.07 (1.49)$_b$	2, 54	96.08	<.001	.88
Safety	30.31 (5.49)$_a$	40.63 (4.75)$_b$	39.56 (4.48)$_b$	1.47, 39.76	58.25	<.001	.82
Learning	14.04 (1.10)$_a$	14.56 (0.79)$_{ab}$	13.89 (1.10)$_{ac}$	2, 54	5.53	.007	.41
Foodborne Illness Risk	7.29 (1.54)$_a$	8.96 (1.37)$_b$	7.71 (1.84)$_a$	2, 54	14.13	<.001	.58
Knowledge	4.39 (1.13)$_a$	5.86 (.36)$_b$	5.32 (.77)$_c$	1.53, 41.16	27.73	<.001	.71

Note. *Individual items were summated to determine respondents' overall attitudes in four factors. Maximum scale points for *Understanding*, *Competence, Safety, Learning, Foodborne Illness Risk, and Knowledge was* 8, 10, 45, 15, 10, and 6, respectively. [a/b/c] Scores not sharing a letter are statistically significantly different between time points for each scale.

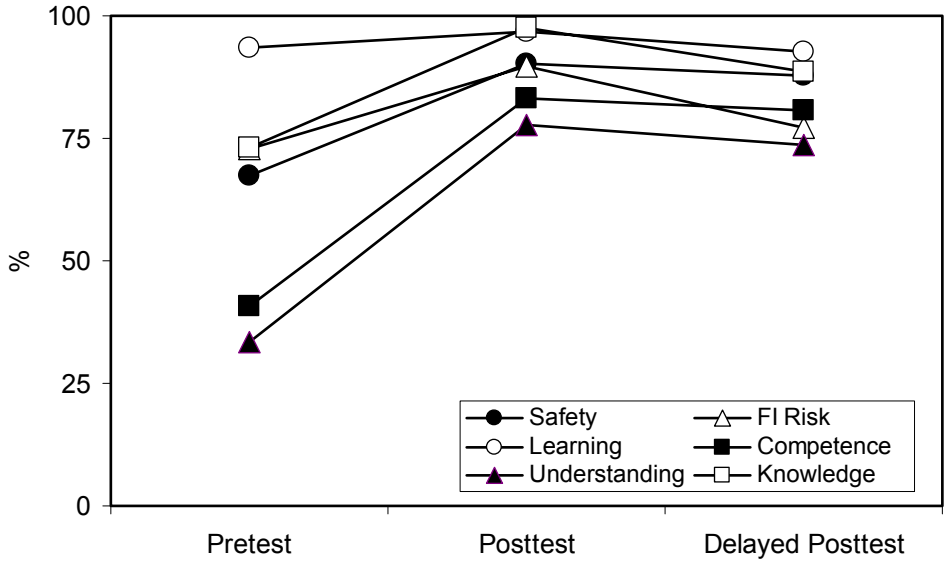
Participants' attitudes towards *Learning* were similar between pre-test and both post-test and delayed post-test. This finding was not surprising given the pre-test mean of 14.04 (*SD*=1.10) out of a possible 15 points, indicating that teachers felt learning about food irradiation was important before and after the workshop. *Learning* scores decreased between post-test and delayed post-test; although the decrease was significant, effect size analysis revealed a medium effect size (Table 2), meaning this was of moderate educational importance.

Scores on the *Foodborne Illness Risk* scale increased from pre- to post-test and then returned to baseline at delayed post-test. Interestingly, this was the only scale in which attitudes statistically significantly increased immediately after the workshop and then returned to pre-test levels on the delayed post-test. Effect size analysis of these scores indicated a large effect. Figure 1 provides a graphical representation of the scale score trends for all scale scores across time points, plotted as a percent of the total possible points.

Food Irradiation Knowledge

During each administration, the food irradiation knowledge of participants was assessed via the *FITA*. Analysis revealed that participants made statistically significant gains in their knowledge of food irradiation, as assessed via the 6 multiple-choice items on the *FITA*. Specifically, post-test and delayed post-test scores were statistically significantly higher when compared to pre-test scores (Table 2), even though a decrease was noted between post-test and delayed post-test. Effect size analysis indicated that the increases in knowledge were large.

Figure 1.



Changes in levels of *Understanding*, *Competence*, *Safety*, *Learning*, and *Foodborne Illness Risks* of high school family and consumer sciences teachers as assessed on the *FITA* (n=28). Pre-test administered 2.5 months before participants attended a food irradiation professional development workshop, post-test administered immediately after the workshop, and delayed post-test administered 10 months after the workshop. Scores on each scale of the *FITA* are graphed as a percentage of the total maximum points.

Discussion and Conclusions

The purpose of this study was to determine the effects of an educational intervention/professional development workshop with regard to changes in Texas family and consumer sciences teachers' attitudes and knowledge about food irradiation. To accomplish our purpose, our specific objectives were to (1) describe family and consumer sciences teachers' baseline attitudes and knowledge about food irradiation, and (2) determine differences between teachers' pre-, post-, and delayed post-test attitudes and knowledge of food irradiation.

Family and consumer sciences educators provide knowledge and guidance about daily living, including a focus on nutrition and food health, for purposes of improving living conditions for individuals (Baugher et al., 2005). Family and consumer sciences teachers possess the ability to disseminate information on the topic of food irradiation to a range of audiences; therefore, it is important to provide professional development opportunities to enhance their knowledge, attitudes, and technical competencies regarding food irradiation. It is important to note that consumer acceptance of complex public health-related technologies, such as food irradiation, is dependent on sound, science-based public education (International Council on Food Irradiation, 2003).

This study utilized a repeated measures approach to data collection, assessing participants 2.5 months before the professional development workshop (pre-test), immediately after (post-test), and approximately 10 months after the workshop (delayed post-test) using a previously validated instrument known as the Food Irradiation Teacher Assessment (*FITA*) (Thompson et al., 2006). The assessment compared six constructs (or scales) of attitudes and knowledge towards food irradiation. The constructs included teachers' (a) attitudes about safety of food

irradiation (*Safety*), (b) attitudes toward learning about food irradiation (*Learning*), (c) self-perceived competency in teaching about food irradiation (*Competence*), (d) level of concern regarding risks of foodborne illnesses in the United States (*Foodborne Illness Risk*), (e) level of understanding about food irradiation (*Understanding*), and (f) knowledge of food irradiation (*Knowledge*).

Descriptive statistics from the pre-test revealed that Texas family and consumer sciences teachers held neutral to positive attitudes towards the safety of food irradiation (*Safety*), positive attitudes regarding learning about food irradiation (*Learning)*, greater than average concerns regarding the risk of foodborne illness (*Foodborne Illness Risk)*. Teachers held negative attitudes regarding their ability to teach about food irradiation (*Competence*) and their perceived level of understanding about it (*Understanding*).

The influence of prior knowledge and attitudes is well documented in science education (e.g. Chinn & Brewer, 1993; Chinn & Brewer, 1998). Strongly held prior knowledge and attitudes that are inconsistent, incorrect, or "naïve" can be considered a misconception (Driver & Easley, 1978; Hasan, Bagayoki, & Kelley, 1999). These misconceptions can obstruct an individual's learning and understanding of complex science and technologies. The food irradiation workshop in this study was designed to provide a diversity of experiential learning regarding the biological and physical sciences surrounding food irradiation technology and to address potential food irradiation misconceptions.

The post-test, administered immediately following the workshop, showed statistically significant increases on five of the six scales, suggesting an immediate impact associated with the workshop. In concert with the findings of earlier food irradiation educational research (Bruhn, 1998; Eustice, 2004; Pohlman et al., 1994; Thompson et al., 2004; Thompson & Knight, 2006b), these data revealed significantly positive increases regarding teachers attitudes' toward safety of food irradiation (*Safety*), their perceived level of understanding about food irradiation (*Understanding)* and their ability to teach it (*Competence*), their knowledge of food irradiation (*Knowledge*), and heightened concern regarding the risk of foodborne illness (*Foodborne Illness Risk)*. Teachers' attitude towards learning about food irradiation (*Learning*) remained high immediately after the workshop, suggesting that teachers felt that education regarding food irradiation was important.

Data collected in the delayed post-test period substantiated results obtained immediately after the workshop, with teachers sustaining the statistically significant positive post-test increases in four of the six constructs. Teachers' gains remained statistically significant in the *Safety, Competence, Understanding*, and *Knowledge* constructs. The delayed post-test revealed one attitudinal change that merits additional study. Teachers' delayed post-test concerns about foodborne illness risk reverted to pre-test levels, indicating that the workshop heightened their concerns immediately, but had minimal long-term effect. Further study may reveal why teachers' levels of concern for foodborne illness risk decreased during the time between the post- and delayed post-test. It would be beneficial to determine if teachers became less concerned about this issue over time, if they forgot the connections between *Foodborne Illness Risk* (caused from bacteria in meats, fruits, and vegetables) and food irradiation technologies, or if attitudes towards foodborne illness risk were strongly held beliefs that were influenced immediately but not long term, as has been documented for many strongly held science misconceptions (Chinn & Brewer, 1993; Chinn & Brewer, 1998).

Although we did not measure actual teaching behavioral change, it would be interesting to investigate the change in behavior regarding classroom teaching of food irradiation curriculum

following the intervention. Interestingly, previous educational research has indicated that teachers who have had experiences or education in certain subject matter, such as the biological and physical sciences, were more likely to teach those sciences than were their counterparts who had little knowledge or experience (Terry, 1990). Another worthy inquiry would be a similar study of students receiving this information from participating teachers.

Limitations

The results of our study suggest that the educational intervention (professional development workshop) was effective in helping to improve the knowledge of family and consumer sciences teachers and in positively changing their attitudes towards food irradiation; however, the study only included teachers in Texas. In addition, although participants were randomly selected, they self-selected to attend the workshop and therefore may have been more motivated to learn about food irradiation. Consequently, the results of this study should be viewed with limited generalizability. Additional studies are needed to confirm and extend the findings from this research.

Although the research findings suggest that participants made and sustained improvements in attitudes and knowledge after the workshop, other confounding factors may have existed. Because this study did not have a control group, other factors unknown to us may have contributed to those changes. In addition, a repeated measures design was used to assess both immediate and longer-term changes of participants. Since the *FITA* instrument was used to collect data at each time point, a memory or testing effect could have confounded the results. However, research has suggested that the largest testing effect occurs within two weeks and is of limited concern after one month (Cook & Campbell, 1979). Therefore, this external validity threat was minimized since each test administration was at least 2.5 months apart.

Implications

Family and consumer sciences teachers have the potential to reach multiple audiences, including students, administrators, and members of local communities. They have the unique opportunity to provide information about food irradiation so that individuals and families can make more informed choices regarding food irradiation. Our study suggests that professional development opportunities for family and consumer sciences teachers regarding food innovations, such as food irradiation, can improve their attitudes toward such innovations and potentially decrease any misconceptions they may have. In addition, these opportunities can increase FCS teachers' self-efficacy beliefs (attitudes) regarding their understanding and their competency to teach about new technologies or innovations (Thompson & Knight, in press).

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EFFECTIVE TEACHING METHODS FOR LARGE CLASSES

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Colleges and universities in the United States are experiencing significant growth in student enrollment (U.S. Department of Education, 2005). Concurrently, enrollment in family and consumer sciences-related programs is growing. As a result, family and consumer science educators face the daunting challenge of teaching larger classes while maintaining/improving the quality of instruction and subsequent value delivered to students. This study uses descriptive and inferential statistical techniques to examine the effectiveness of five teaching methods (lecture, lecture/discussion combination, jigsaw, case study, team project) in a large class setting. In addition, student preferences for class size and teaching methods are explored. The findings provide valuable direction for faculty teaching large classes.

According to the U.S. Department of Education's 2005 "Condition of Education" report, undergraduate enrollments in colleges and universities will continue to increase at a steady rate. Class sizes are reaching unprecedented levels. Concurrently, institutions of higher education are pushing faculty to become better teachers and to deliver higher levels of quality and value in the classroom. Delivering quality and value to a large class presents unique challenges. Therefore, it is crucial for faculty to identify viable methods of instruction for large classes.

Purpose

The primary purpose of this exploratory study was to identify effective teaching methods for the large class environment. The research questions guiding the study were "What teaching methods are effective in the large class environments?" and "What are students' perceptions of these methods?" Using student learning outcomes as the criteria for effectiveness, several commonly-used teaching methods (lecture, lecture/discussion combination, jigsaw, case study, team project) were applied and evaluated in a large class setting. In addition, information on student feelings about large versus small classes and student opinions of the teaching methods was gathered. It is hoped that the findings from this study will provide actionable directions for faculty charged with teaching large classes.

Review of the Literature

Managing large classes

Effective management of large classes is a popular topic among faculty in higher education. Carbone (1998) and Stanley & Porter (2002) have produced books focused on the large class environment, offering strategies for course design, student engagement, active learning, and assessment. The advantages of large classes include decreased instructor costs, efficient use of faculty time and talent, availability of resources, and standardization of the learning experience (McLeod, 1998). However, there are significant disadvantages to large classes, including strained impersonal relations between students and the instructor, limited range of teaching methods, discomfort among instructors teaching large classes, and a perception that faculty who teach large classes are of lower status at the institution (McLeod).

Class size and student performance

Extant research on the relationship between class size and student performance has identified conflicting results (Toth & Montagna, 2002). The results of some studies show no significant relationship between class size and student performance (Hancock, 1996; Kennedy & Siegfried, 1997), while other studies favor small class environments (Gibbs, Lucas, & Simonite, 1996; Borden & Burton, 1999; Arias & Walker, 2004). Results vary based on the criteria used to gauge student performance, as well as the class size measure itself. When traditional achievement tests are used, small classes provide no advantage over large classes (Kennedy & Siegfried, 1997). However, if additional performance criteria are used (e.g., long-term retention, problem-solving skills), it appears that small classes hold an advantage (Gibbs et al., 1996; Arias & Walker, 2004).

Effectiveness of teaching methods

The traditional passive view of learning involves situations where material is delivered to students using a lecture-based format. In contrast, a more modern view of learning is constructivism, where students are expected to be active in the learning process by participating in discussion and/or collaborative activities (Fosnot, 1989). Overall, the results of recent studies concerning the effectiveness of teaching methods favor constructivist, active learning methods. The findings of a study by de Caprariis, Barman, & Magee (2001) suggest that lecture leads to the ability to recall facts, but discussion produces higher level comprehension. Further, research on group-oriented discussion methods has shown that team learning and student-led discussions not only produce favorable student performance outcomes, but also foster greater participation, self confidence and leadership ability (Perkins & Saris, 2001; Yoder & Hochevar, 2005).

Hunt, Haidet, Coverdale, and Richards (2003) examined student performance in team learning methods, finding positive learning outcomes as compared to traditional lecture-based methods. In contrast to these findings, a study by Barnes & Blevins (2003) suggests that active, discussion-based methods are inferior to the traditional lecture-based method. A comparison of lecture combined with discussion versus active, cooperative learning methods by Morgan, Whorton, & Gunsalus (2000) demonstrated that the use of the lecture combined with discussion resulted in superior retention of material among students.

Students' preferences for teaching methods

In terms of students' preferences for teaching methods, a study by Qualters (2001) suggests that students do not favor active learning methods because of the in-class time taken by the activities, fear of not covering all of the material in the course, and anxiety about changing from traditional classroom expectations to the active structure. In contrast, research by Casado (2000) examined perceptions across six teaching methods: lecture/discussion, lab work, in-class exercises, guest speakers, applied projects, and oral presentations. Students most preferred the lecture/discussion method. Lab work, oral presentation, and applied projects were also favorably regarded. Hunt et al (2003) also noted favorable student attitudes towards active learning methods.

Methodology

Application of teaching methods

An introductory level retailing class was selected for the study (N=109). Specific learning objectives were set forth for each of five chapters, and a different teaching method (lecture,

lecture/discussion combination, jigsaw, case study, team project) was applied for each chapter. For the lecture format, the instructor used PowerPoint slides and delivered in the traditional manner of the lecture style, with no student input/feedback. In the lecture/discussion combination, the instructor used PowerPoint slides to deliver the material, but discussion questions were included on several slides throughout the presentation. The instructor paused and generated student input/discussion several times during the class session using discussion questions. Students discussed and debated issues relevant to the chapter.

The jigsaw method involved grouping the students into teams of four, with each member being given responsibility for reading/learning a portion of the chapter outside of class. Teams were allowed to meet during the next class and deliver their assigned chapter portions to the rest of their team members. Under the case study method, students were assigned a case study to read prior to class time. They were also required to individually prepare written responses to several discussion questions related to the case study. Once in class, students were then organized into groups of four and instructed to share their individual responses to the questions in order to develop a set of "team" responses to showcase the best of all of their individual responses. The team project assignment required teams of four students to develop a profile of a retail firm, with the entire project being completed outside of class.

Assessment of teaching methods

Students were pretested and posttested using objective, multiple-choice questions covering basic terminology and concepts from each chapter in order to assess knowledge of the material before and after each treatment (teaching method) was applied. For example, a learning objective for the first chapter involved defining the term 'retailing.' Therefore, on the pretest and posttest, the same multiple-choice question was used to assess the students' ability to define the term. Then, differences in the pretest and posttest scores were compared to assess improvement under the teaching method being applied in the chapter.

Assessment of the course, preferences for class size, and perceptions of teaching methods

In order to gather information related to students' assessment of the course, preferences for class size, and perceptions of teaching methods, a survey instrument was developed for the study (see Appendix). The first section of the survey included questions related to students' overall perceptions of the course using five point Likert-type scales anchored by 'completely agree' and 'completely disagree.' The next section of the survey required students to answer three questions about each of the five teaching methods examined in the study. For purposes of comparison, the same three questions were asked about each of the five teaching methods. Students were then asked to indicate a single teaching method they thought was the most valuable, and to indicate the one they thought was the least valuable. A space for further explanation of these responses was provided. Next, students were asked about preferences for class size. Background information including gender, class rank, and major was also collected.

Analysis & Results

Sample characteristics

The final sample included 109 students, 82% female and 18% male. In terms of class rank, 8% of the students were seniors, 30% were juniors, 41% were sophomores, and 20% were freshmen. Students represented a variety of academic majors, but the majority of students were majoring in retail merchandising (40%), business administration (33%), and communications

(16%). Fifty percent of the students expected to receive a grade of "B" in the course, while 43% expected an "A." The remaining 6% expected a "C" as their final grade in the course.

Effectiveness of teaching methods

A repeated measures ANOVA procedure was used to explore differences in the students' mean scores between the pretests and posttests for each of the teaching methods examined in the study. Significant models were further investigated using multiple comparisons to identify specific differences between the teaching methods. The results of the repeated measures ANOVA omnibus test indicated highly significant differences between the teaching methods ($F=37.54$, $p<.001$) (see Table 1). Multiple comparisons revealed that student performance improved under the lecture method as compared to the lecture/discussion ($p=.010$) and team project methods ($p<.0001$) (see Table 2). In contrast, student improvement under the lecture method was not as positive as under the jigsaw method ($p<.001$). The test for differences between the lecture and case study methods produced non-significant results.

In terms of the lecture/discussion method, significant improvement was seen as compared to the team project method ($p=.004$). However, results indicate that student improvement was stronger under the jigsaw ($p <.0001$) and case study methods ($p <.000$). Performance under the jigsaw method showed significant improvement as compared to the case study and team project methods (both $p <.0001$). The case study method also appeared to be superior to the team project method ($p <.0001$).

Table 1
Repeated Measures ANOVA: Overall Test for Differences between Groups

		Sum of Squares	df	Mean Square	F	Sig.
Difference under teaching methods applied		305.075	4	76.268	37.54	<.001
	Total	877.724	432	2.031		

Table 2
Multiple Comparisons

Teaching Method (I)	Teaching Method (J)	Mean Difference (I-J)	F Value	Sig.
Lecture	Lecture/Discussion	0.468	6.83	.010
	Jigsaw	-0.135	46.47	.001
	Case Study	-0.257	1.39	0.24
	Team Project	0.844	16.37	<.0001
Lecture/Discussion	Lecture	-0.468	6.83	0.01
	Jigsaw	-1.817	129.34	<.0001
	Case Study	-0.725	12.68	.000
	Team Project	0.376	4.25	0.04
Jigsaw	Lecture	0.135	46.47	.001
	Lecture/Discussion	1.817	129.34	<.0001
	Case Study	1.092	22.96	<.0001
	Team Project	2.193	112.08	<.0001

Case Study	Lecture	0.257	1.39	0.24
	Lecture/Discussion	0.725	12.68	.000
	Jigsaw	-1.092	22.96	<.0001
	Team Project	1.101	78.44	<.0001
Team Project	Lecture	-0.844	16.37	<.0001
	Lecture/Discussion	-0.376	4.25	0.04
	Jigsaw	-2.193	112.08	<.0001
	Case Study	-1.101	78.44	<.0001

In summary, results of the tests revealed that the students' scores improved between the pretest and posttest for all five of the teaching methods. However, significant differences between the teaching methods were found. Specifically, students' scores improved the most under the jigsaw method. The next largest improvements were under the case study method and the lecture method. The ANOVA tests revealed no significant difference between the case study and lecture methods. Lecture/discussion produced the next largest improvement. The team project method produced the least improvement (see Table 3). For further exploration, analysis of pretest and posttest scores among students of each class rank was undertaken, but produced non-significant results.

Table 3
Improvement from Pretest to Posttest by Teaching Method

Teaching Method	Mean Difference	Std. Dev.	Rank
Jigsaw Posttest – Jigsaw Pretest	2.972	1.487	1
Case Study Posttest – Case Study Pretest	1.880	1.809	2
Lecture Posttest – Lecture Pretest	1.624	1.508	2
Lecture/Discussion Posttest – Lecture/Discussion Pretest	1.156	1.375	3
Team Project Posttest – Team Project Pretest	0.780	1.560	4

Assessment of the course, preferences for class size, and perceptions of teaching methods

Students were asked a series of questions to gather information on their perceptions of the course, as well as their preferences for class size. Eighty-nine percent of respondents indicated that the course had been of value to them. Likewise, 90% of respondents indicated that they had "learned a lot" in the course and 86% rated the topic material as "interesting." Fifty-one percent of respondents indicated a preference for small class sizes (less than 50 students), while 38% indicated no preference and 10% preferred large class sizes (100 or more students). Ninety-nine percent of respondents reported that they were currently enrolled in other large classes besides this course.

Students were also asked to share their opinion of the most valuable and least valuable teaching method applied. In terms of the most valuable teaching method, the lecture/discussion method was most often selected (38%) (see Table 4). The lecture and jigsaw methods received the next most selections (20% and 19%, respectively), followed by the case study and team project methods (13% and 10%, respectively). Students were also asked why they selected the method as most valuable using an open-ended question (*why?*). The most common reasons for selecting the lecture/discussion method included "forced me to be alert," "allowed me to contribute and ask questions," and "not as boring as lectures."

Jigsaw and lecture were also listed by several students as the least valuable methods (31% and 30%, respectively). The team project (21%) and case study (18%) methods were the next two least valuable methods. Interestingly, no student mentioned the lecture/discussion method as being the least valuable of the teaching methods. As with the most valuable method, students were asked why they selected a method as the least valuable. The most common reasons for selecting the jigsaw method included "people don't do their fair share," "don't enjoy working in groups," and "difficult to learn from another student." Common reasons for selecting the lecture method as being the least valuable included "boring," "doesn't inspire me to think about the material after class," and "allows me to sleep in class."

Table 4
Students' Preferences for Teaching Methods

	Teaching Method	Frequency	Percent
Most Valuable	Lecture/Discussion	41	38%
	Lecture	22	20%
	Jigsaw	21	19%
	Case Study	14	13%
	Team Project	11	10%
Least Valuable	Jigsaw	34	31%
	Lecture	32	30%
	Team Project	23	21%
	Case Study	19	18%
	Lecture/Discussion	0	0%

Conclusion

Based on the pretest and posttest results, all five of the teaching methods appeared to positively affect students' grasp of the material. Students' scores improved most under the jigsaw method, and least under the team project method, whereas the lecture, lecture/discussion, and case study methods produced similar improvement. This finding suggests that moderately-active learning methods such as the jigsaw method are more effective than the lecture, lecture/discussion, and case study methods. However, more extreme active learning methods such as team projects completed outside of class may not be as effective as moderately-active or passive teaching methods.

The findings of this study demonstrate that most students (51%) have a preference for small class sizes (less than 50 students). However, some students (38%) indicated no preference for class size, while the remaining 10% indicated a preference for large classes (100 or more students). Nearly all of the respondents (99%) indicated that they were currently enrolled in other large classes. Therefore, it appears that even though the trade-off between class size and university resources is causing many students to experience large class environments, this is generally not the preference of most students.

The lecture/discussion teaching method was the most preferred among students. Student comments as to their reason for selecting this as the most valuable method seem to suggest that they have a desire to be somewhat active learners, engaging in discussion rather than passively listening to a lecture. The jigsaw method was the most valued by a small percent of the students (19%). This suggests that some students wish to be very active in their learning process, taking sole responsibility for a portion of the material and learning the other portions through

interaction with their classmates. The case study and team project methods were less popular with the students.

Large groups of students found the jigsaw and lecture methods to be the least valuable (31% and 30%, respectively), while some students listed the team project and case study methods. No student indicated that the lecture/discussion method was the least valuable teaching method. This finding suggests that most students enjoy a blend that includes at least some component of active learning/participation in combination with traditional lecture, and confirms the importance of including some level of discussion during the class, but also providing structure through an organized lecture.

Overall, the findings of this study suggest that faculty teaching large classes should attempt to include constructive, active teaching methods in their courses whenever possible. Structured, controlled collaboration (e.g., jigsaw, case study) would probably be most comfortable to students as opposed to uncontrolled, unstructured experiences (i.e., team projects). Results indicate that most students prefer to be active in their learning process. The active and collaborative teaching methods examined in this study are not only desirable to many students, but they also appear to produce significant improvement in terms of learning outcomes.

Future research should investigate the effectiveness of additional active and collaborative teaching methods in the large class environment. Future studies should also incorporate measures of learning outcomes in addition to examination scores. Measuring improvement in higher level comprehension, critical thinking, and problem solving skills could provide more insight into the value of the teaching methods. Based on enrollment projections, large classes are going to become a way of life for most faculty at least during the short term. Therefore, further investigation of large class issues is paramount.

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Appendix (Survey Instrument)

Major: _____

Year in School: ☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior

Gender: ☐ Male ☐ Female

Grade you expect to receive in this course: ☐ A ☐ B ☐ C ☐ D ☐ F

Please indicate your level of agreement with the following statements by placing an "X" in the appropriate box.

	Completely Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Completely Agree
This has been a valuable course.					
I have learned a lot in this course.					
The topics covered in this course were interesting to me.					
Compared to other college courses I've taken, this course was easier for me.					
Overall, I'd say the assignments and activities in this course have been worthwhile.					

In Chapter 1 of the course, the content was delivered in a pure lecture format (no discussion groups or activities). Please indicate your level of agreement with the following statements about the pure lecture format by placing an "X" in the appropriate box.

	Completely Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Completely Agree
I learned a lot during the pure lecture portion of the course.					
I wish more of the course would have been conducted in the pure lecture format.					
The pure lecture format is the best way for me to learn the material.					

In Chapter 2 of the course, the content was delivered in a lecture/discussion format (formal lecture along with small discussion group sessions). Please indicate your level of agreement with the following statements about the lecture/discussion format by placing an "X" in the appropriate box.

	Completely Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Completely Agree
I learned a lot during the lecture/discussion portion of the course.					
I wish more of the course would have been conducted in the lecture/discussion format.					
The lecture/discussion format is the best way for me to learn the material.					

In Chapter 3 of the course, the content was delivered using a jigsaw strategy (peer-to-peer learning). Please indicate your level of agreement with the following statements about the jigsaw format by placing an "X" in the appropriate box.

	Completely Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Completely Agree
I learned a lot during the jigsaw portion of the course.					
I wish more of the course would have been conducted in the jigsaw format.					
The jigsaw format is the best way for me to learn the material.					

In Chapter 4 of the course, the content was delivered using the case study method. Please indicate your level of agreement with the following statements about the case study format by placing an "X" in the appropriate box.

	Completely Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Completely Agree
I learned a lot during the case study portion of the course.					
I wish more of the course would have been conducted in the case study format.					
The case study format is the best way for me to learn the material.					

In addition to the learning objectives for each chapter in the textbook, this course included several other learning objectives (e.g., learning where to look for industry/company information and learning to cite references APA style). The team project assignment was used to accomplish several of these. Please indicate your level of agreement with the following statements about the team project assignment by placing an "X" in the appropriate box.

	Completely Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Completely Agree
I learned a lot during the team project portion of the course.					
I wish more of the course would have been conducted in the team project format.					
The team project format is the best way for me to learn the material.					

In your opinion, which of the following methods was MOST VALUABLE for you, individually, to accomplish the learning objectives in this course? **(PLEASE CHOOSE ONLY ONE OF THE METHODS LISTED)**

☐ Pure lecture (as in Chapter 1)
☐ Jigsaw method (as in Chapter3)
☐ Team project method (as in team project)
☐ Lecture/Discussion combination (As in Chapter 2)
☐ Case study method (As in Chapter 4)

Why?

_____

In your opinion, which of the following methods was LEAST VALUABLE for you, individually, to accomplish the learning objectives in this course? **(PLEASE CHOOSE ONLY ONE OF THE METHODS LISTED)**

☐ Pure lecture (as in Chapter 1)
☐ Lecture/Discussion combination (As in Chapter 2)
☐ Jigsaw method (as in Chapter3)
☐ Case study method (As in Chapter 4)
☐ Team project method (as in team project)

Why?

Do you prefer small class sizes (less than 50 students) or larger classes (100 students or more)?

☐ Small ☐ Large ☐ No preference

Why?

Are you enrolled in another large class (100 students or more) this semester?

☐ Yes ☐ No

INCIDENCE OF PREGNANT AND PARENTING TEENS WITH DISABILITIES WITHIN FACS PROGRAMS

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All teenagers, including those with disabilities, have the potential to become parents. However, little has been published on appropriate teaching techniques to use when instructing students with disabilities about pregnancy prevention. Likewise, there is no documentation of the incidence of pregnancy and parenting among specific disability categories identified by the Individuals with Disabilities Education Act (IDEA) of 1997. This study surveyed members of the Family and Consumer Sciences (FACS) teacher division of the Association for Career and Technical Education (ACTE). Participants (n=1015) reported on the incidence of pregnancy and parenting among students with disabilities at their schools, services they felt should be made available to pregnant and parenting students with disabilities, and teaching strategies within four categories most often used when instructing students with disabilities.

FACS teachers play an important role in providing information to students on pregnancy prevention. Despite educational efforts, teenagers still become pregnant at an alarming rate, with the U.S. reporting teen pregnancy rates that are two times higher than any other industrialized democracy (Aspen Health and Administrative Development Group, 2000; Boonstra, 2002; Yampolskaya, Brown, & Vargo, 2004). According to the Centers for Disease Control and Prevention (CDC) (2006), 47% of high school students had sexual intercourse in 2003. In addition, the CDC's most current statistics reported 43.0 births per 1,000 teenagers aged 15-19 in 2002 (Martin et al., 2003). No statistics are available about the sexual activity of teens with disabilities. Having a disability places a teen at further risk for pregnancy, as the disability itself may lead to inadequate school performance and low cognitive and emotional development (Yampolskaya, Brown, & Greenbaum, 2002). Pregnancy for any teen involves many challenges, but for teens with disabilities, these challenges may be even greater. When the stress of two developmental stages, adolescence and young adulthood are compressed, successful completion of either set of developmental tasks is compromised (Rodriguez & Moore, 1995; Tapert, Aarons, Sedlar, & Brown, 2001).

Children born to teen mothers often have birth weights below 5 pounds, placing these infants in a high-risk category. This translates into a greater risk of low cognitive and emotional development; an increased probability for mortality and morbidity including mental retardation, cerebral palsy, or hyperactivity; and it doubles the risk of learning disabilities such as dyslexia (Dash, 2003; Hao & Cherlin, 2004). Further, children born to teen mothers frequently perform lower academically and have a higher rate of behavioral problems than their peers. As teens,

they, in turn, have an increased chance of becoming teen parents (Farber, 2003; Howard & Mitchell, 1996). Children of teens with disabilities may experience even higher rates of these risks.

Rationale

Information concerning the incidence of types of disabilities, such as mental disabilities and specific learning disabilities, is available and vital statistics provide information on the pregnancies, live births, and induced terminations of teen mothers. However, information regarding the number of pregnant and parenting teens with disabilities and their educational needs has not been previously recorded (Shapland, 1999). Currently, there is little research and information available on the incidence of pregnancy among youth with disabilities. There is also insufficient information on whether the educational needs of youth with disabilities differ from those of their non-disabled peers in regards to sexuality, reproductive health, pregnancy, and parenting. Additionally, many teen pregnancy programs do not adequately address specific needs of youth with disabilities (Seiler, 2001). Thus, further research is necessary to design interventions that address the needs of this particular population of youth on topics including sexual activity and pregnancy (Shearer et al., 2002).

Although youth with disabilities are at an extremely high risk for teen pregnancy, an extensive review of the literature revealed few studies or resources that specifically addressed the learning needs of pregnant and parenting students with disabilities (Carter, 1999). Most of the literature on pregnancy prevention is designed primarily for regular education students; the subgroup of youth with disabilities is rarely acknowledged in literature addressing teen pregnancy (Brantlinger, 1992; Shapland, 1999). Much of the available printed material on reproductive health is generic in nature, rarely mentioning considerations that may be needed for youth with disabilities. In addition, a large portion of references are related to sexuality and sex education rather than pregnancy and parenting. Several of these resources are over 10 years old (Finger, 1990; Hingsburger, 1990; Kempton, 1988; Kupper, Ambler, & Valdivieso, 1992; Sugar, 1991; Summer, 1986; Way, 1982). Thus, the population of pregnant and parenting teens with disabilities continues to confront service providers and policymakers with multiple challenges in developing and providing appropriate programs and services to meet their needs (Wolff & Foster, 1993).

Students with Disabilities

In 1997 IDEA defined students with disabilities as those individuals with mental retardation; specific learning disabilities; specific emotional disturbances; speech or language impairments; visual, hearing, orthopedic, and other health impairments; autism; and traumatic brain injury that limits one or more basic life activities, including learning.

Teens with disabilities are further challenged when they are recipients of mainstream services whose providers are frequently unaware of their individual learning needs. They often receive the same information in the same manner as teens without disabilities (Shapland, 1999). However, their unique learning needs may prevent them from retaining and utilizing information they obtain in ways presented by community service agencies and teachers (Doren, Bullis, & Benz, 1996). There are many misconceptions about the sexuality of youth with disabilities. One of the most common is that people often view students with developmental disabilities as asexual, thus ignoring their emerging sexuality issues and believing they do not need education regarding their sexuality (Fritz, 2003; Sugar, 1991). Coren (2003) also noted that youth with

mental disabilities felt they received less sex education at school compared to their nondisabled classmates.

Wong, Wiest, and Trembath (1998) compared regular education students to students with disabilities and found the latter were more likely to participate in antisocial behaviors, such as criminal activity and drug use, despite the fact they stated they did not wish to participate in these antisocial behaviors at all. In a study by Sprouse, Hall, Webster, and Bolen (1998), students with disabilities were consistently rated by their teachers as exhibiting higher incidence of social perceptual difficulties. These types of social behaviors can contribute to the disenfranchisement of youth with disabilities from their peers without disabilities. How students feel about and see themselves greatly impacts their development and future outcomes. One of the antisocial behaviors students with disabilities could be persuaded to participate in is premarital sex. This could be attributed to the fact that students with low intelligence could possess a limited understanding of the relationship between sexual activity and one possible outcome, pregnancy. Likewise, female teenagers with low cognitive ability may succumb to sexual pressure from males to gain peer acceptance (Raphael, 2005; Shearer et al., 2002; Ventura, Matthews, & Curtin, 1998).

Appropriate Strategies

Individuals with mild mental disabilities represent a diverse group of learners who possess a variety of learning strengths and weaknesses (Sarkees-Wircenski & Scott, 2003). Instructional strategies chosen by teachers may make a difference between student success and failure in FACS programs. Therefore, in an effort to best meet the needs of students with disabilities, teachers should select a variety of instructional techniques. When students with disabilities are also pregnant or parenting, teachers might need to consider additional teaching techniques to assure the highest level of information retention. Although there is some overlap, the focus of teaching strategies varies according to the type and degree of each student's disability (Hallahan & Kauffman, 2003; Hardman, Drew, Egan, 2002; Sarkees-Wircenski & Scott, 2003).

Teaching strategies and instructional methods for regular education students on pregnancy prevention are a starting point for making accommodations for adolescents with disabilities; however, teachers need more readily available resources for meeting the educational needs of these students. Teen pregnancy prevention efforts have emphasized education, skills, abstinence, and access to contraception. The definition of what constitutes teen pregnancy prevention is best expanded to include activities that seek to instill teens with confidence and a sense of the future (U.S. Department of Health and Human Services, 1999). Since there is little information available to educators for making instructional accommodations, it is critical that teachers working with students with disabilities be consulted about appropriate strategies for instructing them.

Purpose of the Study

This study provides results from a national survey distributed to members of the Family and Consumer Sciences Education division of the ACTE. The purposes of this study were to: 1) collect national data regarding the incidence of pregnancy and parenting among youth with disabilities, 2) identify services teachers felt should be available to those students, and 3) determine appropriate techniques when teaching students with disabilities about pregnancy prevention.

Method

Participants

The population for this descriptive study was selected using an experimentally accessible approach (Gall, Borg, & Gall, 2003). All members of the FACS teacher division of ACTE were surveyed. A pilot test was conducted with 127 Georgia FACS teachers. Based on feedback, the survey was revised for national distribution. Because Georgia members were used for the pilot test, they were excluded from the national survey.

Instrument

A review of literature was conducted to assist in developing a two page, three-part, self-report questionnaire to obtain 1) descriptive information from participants, 2) information regarding incidence of pregnancy among their students with disabilities and 3) teaching methods and services they regarded important for students with disabilities who were pregnant or parenting. The first part, which provided a population profile, asked participants to supply information about their years of teaching experience, employment and state of residence. The second part of the questionnaire related to students with disabilities who were pregnant and parenting and currently enrolled in the participants FSCS programs. Part three of the questionnaire related to teaching issues and services students with disabilities should be taught or have access to, and methods teachers used most often when teaching students with disabilities. Teachers reported on the item relating to teaching techniques on a 4-point Likert-type scale, described in the Teaching Techniques section below.

Procedure

A three-tier mailing design was used to assure a greater return rate of the instrument. The survey was mailed to 3,116 teacher members, Spring 2003, with two follow-up mailings at three-week intervals. Of these surveys, 171 were returned as undeliverable and 127 were unusable because of teacher retirements. Thus, the accessible population was 2,818. A total of 1,015 teachers responded to the survey for a return rate of 32%. Descriptive statistics were used to describe respondents' characteristics, numbers of students with disabilities who were pregnant, parenting, or both, as well as their use of various teaching techniques. In addition, comments to an open-ended question were analyzed.

The Statistical Package for the Social Sciences (SPSS) program was used to enter and manage data collected from the survey. Descriptive statistics including means, standard deviations, and frequencies were calculated. Cross tabulations determined relationships between two or more categorical variables, such as job title and responses to items such as disability category, services that should be offered, and teaching techniques. Chi-square tests were used as a test of association between variables.

Results

Demographics

National data were divided into four regions as identified by the U.S. Census Bureau: Northeast, Midwest, South, and West. Responses were received from 39 states. Table 1 displays states according to their U.S. Census Bureau regions.

Table 1
State Divisions According to Census Regions

Region	States
Midwest	Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania
South	Delaware, District of Columbia, Florida, Georgia (not included in our population), Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, Texas
West	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Alaska, California, Hawaii, Oregon, Washington

Forty-nine percent (n=497) of responses represented the South region, the Midwest region accounted for 39% (n=395) of responses, the West region contributed 10% (n=102) of the responses, and the Northeast region accounted for only 2% (n=20) of the responses. States that provided the most responses were Oklahoma (132 or 13.0%), Ohio (126 or 12.4%), Alabama, (108 or 10.6%), and Missouri (96 or 9.5%). Approximately 88% of ACTE's FACS teacher division membership is located in the South and Midwest regions of the United States; therefore, the majority of the responses received were from these areas.

An overwhelming majority of the respondents (86.6%) reported a job title of Family and Consumer Sciences teacher. Other titles were Graduation, Reality, and Dual-Role Skills (GRADS) instructors, counselors, and evening school teachers. GRADS is an elective FACS class taught by certified FACS instructors who promote personal growth, educational competence, and economic self-sufficiency among pregnant and parenting male and female students to help them become socially responsible members of society.

Over 20% of the FACS teachers had 1-10 years of teaching experience, whereas 52% had 11-20 years of teaching experience. The remaining 28% of teachers had over 21years classroom experience. Additionally, over one-half were also members of the American Association of Family and Consumer Sciences (AAFACS).

FACS programs were located in a variety of settings: high schools 55% (n=562), combination schools 21% (n=217), middle schools 12% (n=127), comprehensive vocational schools 8% (n=83), and alternative, magnet or other type schools 2% (n=22). Programs were located primarily in rural (56%) or suburban (24%) locations with only about 15% in urban areas. A majority of the programs, 82%, served both male and female parents.

Pregnant and Parenting Students with Disabilities

Forty-eight percent of the teachers responded that they had no pregnant or parenting students with disabilities at the time they completed the survey. Twenty-six percent of teachers reported having 1 or 2 students with disabilities who were currently pregnant or parenting. Eleven percent of the teachers reported having 3 to 4 students with disabilities who were pregnant or parenting. Ten percent of the teachers had 5 to 9 students while 5% reported 10 or more pregnant or parenting students with disabilities. Additionally, 14% of teachers reported they taught students with disabilities who were parenting more than one child.

Approximately 12% of teachers did not report the ethnicity of their pregnant and parenting students with disabilities. Ethnicity of students with disabilities who were pregnant

and/or parenting reported by teachers responding to this item indicated that 38.2% were Caucasian, 20.5% were African American, 8.1 % were Hispanic, 2.9% were Native Americans, 1.9% were Asian, and .6% of students were reported as Other.

Disability Category

Teachers were asked to report the number of enrolled students by disability category as identified by IDEA. Table 2 presents percentages of students by disability category.

Table 2
Percentage of Students by Disability Category

Disability	% of Students
Learning Disability	62.1
Mental Disability	30.3
Emotional/Behavioral Disorder	27.9
Speech Impairment	16.3
Hearing Impairment	14.6
Physical Disability	14.4
Health Impairment	10.3
Visual Impairment	10.2
Unknown	8.6

As would be expected, many teachers indicated they taught several students with disabilities, and these students represented more than one disability category. A large majority of students (62.1%) were identified as having learning disabilities (LD), followed by students with mental disabilities (30.3%), and students with emotional/behavioral disorders (27.9%). The fastest-growing category of disability is learning disabled, a disorder in one or more of the basic psychological processes involved in understanding and using spoken and written language (Hardman et al., 2002; Henkel, 2001). Students with LD remain one of the top four categories served under IDEA (U.S. Department of Education, 2002).

Interestingly, approximately 19% of the teachers did not respond to the item describing the specific disability category of their students. Of that figure, 60% of respondents from the Northeast region and 40% from the West region did not provide information on the specific disabilities of their students. Some respondents indicated in marginal notes that they were concerned about confidentiality issues, or they indicated a lack of knowledge regarding the disabilities of their pregnant and parenting students; therefore, they did not respond to this item, even though an assurance of anonymity was included.

Challenges

A write-in item asked teachers, “Describe the challenges you face when teaching students with mild mental disabilities such as mental retardation and learning disabilities.” Responses were coded into ten themes. Table 3 presents the ten categories and percent of teachers who wrote comments related to each category.

Table 3
Challenges Faced When Teaching Student with Mild Mental Disabilities

Topic	% Response
Making Accommodations	33.2%
Low Academic Skills	19.5%
Other Individual Challenges	19.6%
Lack of Resources	11.9%
Off-Task Behavior	10.4%
Lack of Individual Attention	8.7%
Low Social Skills	3.2%
Lack of Family Support	3.1%
Excessive Absences	2.9%
Low Self Esteem	2.5%

Themes most often reported by the teachers included*: making accommodations* (33.2%), *low academic skills* (19.5*%), lack of resources for working with students with disabilities* (11.9%), and *off-task behavior* (10.4%). There were many individual challenges that teachers described, and those were placed under the theme *other* (19.6%). Comments from the theme *other* included: assessment and grading, student attitudes toward coursework, reasons students get pregnant, unrealistic goals on Individual Education Plans (IEPs), lack of motivation, unrealistic mindsets toward parenting, discipline, other students' attitudes toward students with disabilities, breaking a family cycle of teen pregnancy, knowing what to teach about possible birth defects, low reading skills, and being sure information taught is applicable to student's real life situation.

Services

Participants were asked which services should be made accessible to pregnant and parenting students with disabilities: *counseling, health services, tutoring, daycare, mentor support,* or *work/life skills classes.* Only one service, *daycare*, was a significant indicator when cross tabbed with the variable job title. Interestingly, a large majority of counselors (75%) indicated that daycare should not be provided to parenting students. Teachers were almost evenly divided on whether daycare should be offered to parenting students. However, 82.5% of GRADS instructors felt that students with disabilities should be offered daycare services during school hours. It appears that the closer an educator works with students who are parents, the more likely they are to see the value of offering services to those students that would afford them the opportunity to continue their secondary education.

Teaching Techniques

Using a 4-point Likert-type scale, respondents rated teaching techniques used when instructing students with mild mental disabilities (0 = never, 1 = seldom, 2 = sometimes, 3 = frequently). Four categories of teaching techniques were provided on the survey: 1) group methods, 2) instructional methods, 3) material-oriented methods, and 4) dramatic methods. Most of the respondents, 986, or 97.14%, rated their use of one or more of the teaching techniques. Group methods include techniques that would involve students with small to large groups of their peers such as debates, panel discussions, and case studies. Instructional methods contained the most methods, thirty-four, and included techniques such as field trip, oral report,

demonstrations, lectures, and laboratory experience. Material-oriented methods included exhibits, chalkboard, and graphs. Dramatic methods included the three areas of role play, sociodrama, and story telling. Appropriate teaching techniques for special populations included on the survey were taken from Sarkees-Wircenski, & Scott (2003). Table 4 provides information on the ten techniques with the highest mean scores and the method category they represent.

Table 4
Mean Scores for Teaching Techniques Based on Method

		Method	
Teaching Techniques	Group	Instructional	Material-Oriented
Illustration		2.37	
Video			2.32
Demonstration		2.30	
Review		2.27	
Questioning		2.21	
Cooperative Learning	2.09		
Laboratory		2.05	
Group Instruction		2.04	
Problem-Solving		1.94	
Directed Discussion		1.93	

It is interesting to note that only one technique from both the Group method and the Material-Oriented method and none from the Dramatic Methods ranked in the top ten choices for teachers. Out of the 60 techniques provided on the survey, the three lowest means scores were for flannel board (.25) from the material-oriented method, and language lab (.25) and radio (.18), both from instructional method. Illustration, the use of video, and demonstration received the highest mean scores, indicating that teachers see the value of using teaching techniques that involve the use of pictures and movement when teaching students with disabilities. Literature supports the use of computer-based programs as independent means to deliver instruction. Alberto, Cihak, and Gamma (2005) reported that video modeling has been shown to be an effective instructional strategy when teaching students with moderate disabilities. Additionally, multimedia programs using customized simulated programs such as video recording and CD-ROM have been show to be effective for delivering instruction to students with intellectual disabilities (Mechling, Gast, and Barthold, 2003).

Conclusions

The purposes of this study were to: 1) collect national data regarding the incidence of pregnancy and parenting among youth with disabilities, and 2) determine appropriate techniques when teaching these students about pregnancy prevention. Because FACS teachers provide instruction in family and child development, their opinions are beneficial in determining key teaching techniques to include in pregnancy prevention programs for students with disabilities.

National data is not available on the incidence of pregnant and parenting teens with disabilities. As a result, FACS teachers were asked to provide information regarding the numbers of pregnant and parenting students by specific IDEA category in their schools. Knowing the disability category of students who are pregnant and parenting might provide educators with valuable information regarding which sub-populations are more likely to become teen parents.

This may give educators guidance when preparing curriculum in terms of specific learning needs, strengths and weaknesses, and strategies which best assist students with acquisition and retention of information. This study provided limited information regarding which group of students with disabilities is most likely to become pregnant. Therefore, more research needs to be conducted to accurately determine rates of pregnancy by IDEA disability category.

Many individuals from special populations learn best through direct experience, cooperative learning and collaboration, and high levels of interaction (Sarkees-Wircenski & Scott, 2003). This study provides documentation that FACS teachers working with pregnant and parenting students with disabilities most often utilize learning strategies that promote high levels of interaction in the classroom. For example, cooperative learning, laboratory methods, and group discussion rank among the top 10 recommended and used teaching strategies for their students. This implies teachers select strategies that introduce, reinforce, and refine program materials. Additionally, teacher rankings indicated that attention is given to frequent learning comprehension through the use of review and questioning. Attention is also given to actively involve learners through use of demonstrations, cooperative learning, and laboratory methods.

Findings from this study have implications for curriculum development and instructional planning. FACS teachers can benefit from information about the most appropriate instructional techniques to use when presenting information regarding pregnancy prevention to students with disabilities. Results of this study were used to develop an interactive CD-ROM to teach pregnancy prevention and self-esteem to students with disabilities. FACS educators can utilize the CD-ROM in numerous ways. It may function as a supplement to the curriculum they have chosen to teach sexual education and pregnancy prevention. The CD-ROM can be used for large group instruction with the teacher clicking through the activities, for small groups of students with similar learning styles or levels, or by single students for individualized learning. If used individually, it is suggested that headphones be used due to the narration of the activities and lessons. Contents and developmental format for the CD-ROM are reported in a companion article included in this issue.

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A FOLLOW-UP STUDY: THE EXAMINATION OF TEACHING BELIEFS AND ITS INFLUENCE ON CURRICULUM ORIENTATION DECISIONS

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A follow-up study was conducted to determine whether original participants involved in a curriculum change workshop made lasting changes in their teaching practice. Mailed survey data received from FCS teachers in a Midwestern state who participated as members of learning communities over a 3-year period were analyzed to reveal what influenced and supported change, and what barriers hindered change from occurring. The majority of the respondents of this study made lasting changes in their curriculum orientation since attending the curriculum change workshops ten years earlier. The major influence causing change to occur was their participation in the learning communities. The most frequent change among these individuals was moving from what Eisner and Vallance (1974) referred to as the Technical, more traditional curriculum orientation to a Cognitive Processes curriculum orientation. Follow-up telephone interviews with the teachers who made changes revealed insights into how their teaching changed and what teaching and learning looks like in their classrooms today. Support is needed for teachers to continue with their current teaching orientations.

Since the early years of family and consumer sciences (FCS), societal conditions and the problems of individuals, families, and communities have changed. Both parents are working; the divorce rate has increased; single parent families and step families are prevalent; family violence, drug use, and crime are on the rise; and health care and adequate housing are not affordable. These societal concerns change the teaching and learning environment for teachers and students.

While some changes have been made in FCS curriculum, more changes are needed to address the issues faced by today's families. Brown (1980) and others have written about what they believe FCS should address and the approach that should be used (Baldwin, 1991; Vaines, 1990).

The mission of FCS as proposed by Brown and Paolucci in 1979 challenged professionals to address problems of the family:

> The mission of home economics (the profession now known as family and consumer sciences) is to enable families, both as individual units and generally as a social institution, to build and maintain systems of action which lead to (1) maturing in individual self-formation, and (2) enlightened, co-operative participation in the critique and formulation of social goals and the means of accomplishing them (p. 23).

In 1992, Johnson developed learning communities in four regions across a Midwestern state as part of a curriculum project. The learning communities were designed to help FCS teachers examine their beliefs about curriculum, explore curriculum orientations, and identify an

orientation they wanted their practice to reflect. The teachers learned about various curriculum orientations or ways to approach or think about curriculum from an FCS teacher educator. These orientations are known as social reconstruction, personal relevance, cognitive processes, technology (or technical), and academic rationalism. Over a three-year period, the teachers examined their own beliefs about teaching and learning by writing journals, video-taping their teaching, and meeting as learning communities. In these active learning sessions they discussed their beliefs and teaching practice. They were encouraged and challenged to move toward having their teaching practice match their beliefs or orientations.

Statement of the Problem

The original project focused on the examination of the teachers' beliefs. It was not known if the teachers actually changed their curriculum orientation, or what support or barriers they had encountered in the process. A decision was made by the co-researchers of the project to conduct a follow-up to the initial study to determine the effect of time on the participants of the curriculum change project. The purpose of the follow-up study was to determine whether the original participants made lasting changes in their teaching practice since their involvement in the learning communities ten years earlier and to learn what supported or hindered those changes. The types of changes that occurred, what their teaching looks like now, and the kinds of support needed by the teachers will also be identified.

Review of Literature

The FCS mission forwarded by Brown and Paolucci (1979) implies that in order to enable individuals and families to view societal problems from many views and take action to improve society, teachers should approach curriculum from a critical science orientation. The traditional or technical orientation will not accomplish the desired results. It is important for teachers to examine their beliefs and to know what their philosophy consists of, because, according to Coomer (1982), "If each of us does not have a thoughtfully and clearly stated position, we are subject to the fascination of the latest fad" (p. 2). If teachers are to change their teaching, they must first examine their beliefs and take action consistent with their beliefs.

According to Vaines (1990), "A philosophical orientation is essentially a process which integrates what was, is, and should be, related to beliefs, knowledge, and action" (p. 6). Hoeft (1986) referred to curriculum as "my thoughts, beliefs, and ideas---what happens between my students and [me] in the classroom. It is my state of mind" (p. 37). A philosophy or orientation, according to Jax (1986), is "the teacher's framework for thinking about, developing, and practicing curriculum and is based upon personal beliefs and values" (p. 246). A philosophical orientation can become the means for guiding the curriculum decisions of the teacher. These decisions include the purpose of the curriculum, the role of the learner, the role of the teacher, the subject matter, the classroom actions taken, and the expected learning outcomes of the students. In an ideal situation, all of these curriculum components would be decided based on a well-thought-out philosophy or orientation. Many authors have identified different views or beliefs teachers hold about curriculum (Fenstermacher & Soltis, 1986; Brown, 1980; Eisner & Vallance, 1974; Jax, 1986).

Eisner (1985) identified several orientations: cognitive processes, academic rationalism, personal relevance, social reconstruction, and curriculum as technology (technical). Brown's (1980) writing on home economics (family and consumer sciences) issues reflected a critical science approach that seems to combine Eisner's social reconstruction and cognitive processing

orientations. Social reconstruction analyzes social issues from many viewpoints and asks questions in order to find solutions to bridge the gap between what exists and what should be. The cognitive processes orientation is focused on developing skills in a variety of processes, including problem solving, decision making, critical thinking, and memory skills; it means learning intellectual processes.

A council of teacher educators and state supervisors in the Midwestern state in this study made the decision in 1985 to develop curriculum using Brown's writings as the philosophic base used for curriculum decision making. Using Brown's work results in family and consumer sciences courses concerned with the practical problems of individuals and families in their everyday lives. Students learn how to take action in situations using reflective decision making or practical reasoning. Moving to this type of curriculum meant teachers might need to change their beliefs about curriculum.

Changing one's philosophy or curriculum orientation appeared to be a task of monumental proportions for family and consumer sciences teachers, and one that was different from other changes previously asked of them. Teachers needed to be involved in questioning the assumptions they held related to curriculum and involved in deciding which orientation was the most defensible. Then they could make better decisions based on an examined orientation or philosophy, yet there was no literature available on what it was like for FCS teachers to change their teaching orientation (Lichty, 1996).

A study by Jenkins (1997) documented an exemplary first year teacher's struggle with the conflict between the beliefs she held and her actions related to curriculum concerning student-centered teaching. In spite of having significant potential to use student-centered teaching methods successfully in her classroom, she chose to use the teacher-centered methods because she earned positive rewards and recognition when she used those methods. This caused her to feel conflicted and, in turn, caused her to want to lessen the conflict and maintain confidence. In order to do this, the teacher avoided situations or issues that questioned her instructional competence. Jenkins (1997) recommended that teacher education programs make new teachers aware of the lack of support they may encounter for implementing student-centered teaching, feelings of incompetence they may experience, the resistance they may face from their students, and how their own conceptions of teaching and learning might be resistant to change.

The issue of curriculum orientations is becoming more of interest to educational researchers than in the past. Most teacher preparation programs utilize a specific model or approach, yet students come to the programs with various life and educational experiences, and, therefore, certain beliefs about teaching and learning. In an effort to bring some agreement between the teacher education program and the students in the program, Nottis, Feuerstein, Murray, & Adams (2000) developed an instrument for measuring the theoretical and practical orientations of pre-service teachers.

In 2002, Cheun and Wong developed an instrument to investigate the curriculum orientations of teachers already in the field. Teachers' beliefs have a major impact on what and how teachers will teach. Findings from previous studies have revealed that a teacher's beliefs about what students should learn often influence curriculum planning. Ekpone's (1999) investigation of factors influencing curriculum selection made by high school special education teachers revealed that education philosophies as well as curriculum content directed toward the students' acquisition of necessary skills were evident in curriculum decisions.

Brodhagen's (1998) qualitative study reported teacher beliefs as the number one influence on teacher decisions related to curriculum integration. Brodhagen concluded that a

teacher's beliefs regarding curriculum integration will guide curriculum selection for students. Willey's (2002) investigation of literacy curriculum decisions made by two beginning teachers also reported that beliefs, teaching theories, and practices influence teacher decisions. Rogers (1999) implies that the very nature of a subject, the beliefs held by teachers concerning those subjects, and students' needs also impact a teacher's curriculum decisions. According to Rogers, students play a major role in curriculum decisions as their needs and benefits of instruction are always taken into consideration.

Lichty (1996) reported what it was like for FCS teachers to examine their curriculum orientation and identified factors that created obstacles or support for a change to take place, including a possible change of curriculum orientation. Teachers met as learning communities six times in three years to learn the various curriculum orientations and then reflect on their beliefs and actions as they worked through the experience (Lichty, 1996).

The learning communities were designed to help teachers explore their beliefs about their curriculum, learn other curriculum orientations, and identify an orientation(s) they wanted their practice to reflect. Twenty-nine teachers kept journals, recording assignments, thoughts, ideas, beliefs and personal reflections. The journals were transcribed and coded and were used as the data for analysis (Lichty, 1996). The teachers' reflective journaling revealed that before teachers can change, they must experience an event or problem that creates readiness for change (Brozovsky, 1998; Lichty, 1996).

Many psychological factors of support existed including excitement, challenge, revitalization, and commitment. Resources of time, skill, knowledge, and finances were important in supporting change efforts. Family members provided support for teachers involved in the change process and, in some cases, school administrators provided support and encouragement to teachers who wanted to make curriculum changes. In some cases, co-workers provided support for teachers involved in change activities. Teachers received various forms of support from college professors and were influenced by them. The learning communities provided an excellent forum for teachers to learn about curriculum orientations, examine their own beliefs and practices, and share learning experiences. The teachers viewed their participation in the learning communities as a luxury and a precious opportunity to network, to grow, and to share (Lichty, 1996; Montgomery, Brozovsky, & Lichty, 1999).

Psychological barriers of fear, insecurity, lack of commitment, and particularly frustration were felt by many of the learning community participants. Lack of financial resources and lack of time, knowledge, and skill created barriers for teachers. Lack of time was the primary resource causing a barrier for most teachers. Administrators, parents, and students were viewed as barriers to change primarily because there seemed to be a gap in the understanding of what family and consumer sciences curriculum should be. Psychological costs of change for teachers included excitement, anxiety, fear, anger, constant turmoil, concern, illness, anticipation, and frustration. Their confidence was challenged, tested, and stretched. Personal resources of time, energy, and skill were viewed by some as personal costs to their change process (Lichty, 1996; Montgomery, et al., 1999).

Understanding FCS teachers' curriculum experiences and how the teachers felt and thought about those experiences provided insight into how curriculum change takes place. For those teachers who were conscientious about having their teaching practice be consistent with their belief system, it was beneficial to study how the examination of their own orientation, a first step in the process of teacher change, and changing their beliefs and practice was accomplished (Lichty, 1996).

Teacher educators gained knowledge of factors that facilitated change and obstacles that inhibited change. Teacher educators in this state and others had a clearer idea of what it was like for teachers to reflect on change as they examined curriculum orientations and assisted other teachers who were in the process of curriculum change. It helped teacher educators and teachers to see what it was like to change from one belief system to another. This helped in the facilitation of the change process with teacher educators enabling teachers to empathize with those of the learning communities, providing the support needed and removing potential barriers where possible.

Questions remained, however, after the curriculum change project ended and the learning communities were dissolved. Were the teachers able to continue their personal journey through the curriculum change process? Were they able to make lasting changes in their practice to reflect their beliefs? This follow-up study addressed these questions.

Methodology and Procedures for Follow-Up Study

In order to answer these questions, follow-up questionnaires were sent to the 29 original participants of the 1992 curriculum change project. In order to refresh the memories of the respondents, the questionnaire included an introductory statement that reviewed definitions of the six curriculum orientations they had studied in the learning communities in 1992. The questionnaire contained rating scales, forced choice and open-ended items, and demographic questions. The questions were:

1. Try to recall which curriculum orientation you held prior to the workshops you experienced in the curriculum change project.
2. Which orientation would describe your current beliefs?
3. Is your current curriculum orientation a result of having participated in the curriculum change project? If so, to what extent did it change?
4. Are there other influences in addition to the workshops that have caused your curriculum orientation to change?
5. If yes, what were the factors that supported your change of orientation?
6. If not, what were the reasons for the change not occurring?
7. How would you describe the match between your current beliefs and your current practice?
8. How often do you reflect upon your teaching to determine if your practice is congruent with your beliefs?
9. Please provide any additional comments or questions you may have related to your curriculum orientation, the workshops, and/or this study.

Follow-up tape recorded telephone interviews were conducted with the teachers who had made changes; three questions were asked:

1. What kinds of changes have you made in your teaching?
2. What does your teaching look like now?
3. What support is needed for you to continue teaching this way?

The quantitative data were analyzed and described as categorical data using numbers and percentages. The constant comparison method was used to analyze the qualitative data. This involved reading transcripts of the audio tapes one after the other, and in the margins noting themes that emerged. The transcripts were re-read again and again and were constantly compared one to another to make note of the commonalities in themes.

Results

Twenty nine surveys were mailed to the original workshop participants and 28 responses were received. Twenty-one chose to participate in the study. The seven who chose not to participate voluntarily provided reasons for their decisions, including no longer teaching, retirement, and family crisis.

Demographics

Seven of the 21 respondents taught for 11 to 20 years, 10 taught for 21 to 30 years, and 4 taught for 31 to 40 years. At the time of the follow-up study, 10 were teaching high school, 7 were teaching middle and high school students, and 4 were now working in non-formal education settings including the State Department of Education, school district staff, the State Educational Service Unit, and a business corporation. Twenty respondents were working full-time and one worked part-time. Six respondents worked in the western region of the state, two were in the central region, three were in the east-central region, and ten were in the eastern region of the state.

Former and Current Curriculum Orientations

Thirteen of those teaching in public schools (n=17) made changes to their teaching beliefs and practice; four did not. Each of the four respondents from non-formal education settings made changes to their teaching beliefs and practice.

The curriculum orientations held in any combination by the respondents at the beginning of the curriculum change workshops (n=21) were described as Technical (16,) Cognitive Processes (6), Social Reconstruction (2), Personal Relevance (7), Social Adaptation (1), and Academic Rationalism (0). (See Table 1). Follow-up study data revealed current curriculum orientations held by the respondents are Technical (7), Cognitive Processes (14), Social Reconstruction (10), Personal Relevance (10), Social Adaptation (0), Academic Rationalism (1), and critical science (1)—a combination of the Cognitive Processes and Social Reconstruction orientations.

Curriculum orientations held by respondants at the beginning of the learning communities project were described as Technical (76%), Personal Relevance (33%), Cognitive Processes (29%), Social Reconstruction (10%), Social Adaptation (4%), and Academic Rationalism (0%). Four percent held the critical science perspective, combination of the Cognitive Processes and Social Reconstruction orientations, at the beginning of the curriculum change project. Follow-up study data revealed percentages of current curriculum orientations held by the respondents are Cognitive Processes (67%), Social Reconstruction (48%), Personal Relevance (48%), Technical (33%), Academic Rationalism (4%), and Social Adaptation (0%). Four percent currently hold the critical science perspective.

Table 1 shows each teacher's curriculum orientation before the project began and then ten years after it ended. For purposes of anonymity, a number was assigned to each teacher who participated in the curriculum change project and the results are listed in numerical order of the teachers.

Table 1
Curriculum Orientations of FCS Teachers

Teacher #	Orientation Before Project	Orientation After Project
1	Technical and Social Adaptation	Cognitive Processes and Social Reconstruction
2	Technical and Cognitive Processes	Technical and Cognitive Processes
3	Technical	Cognitive Processes and Personal Relevance
4	Cognitive Processes	Cognitive Processes
5	Technical	Personal Relevance
6	Technical and Personal Relevance	Personal Relevance and Social Reconstruction
8	Technical	Cognitive Processes and Technical
11	Technical and Social Adaptation	Cognitive Processes, Academic Rat, Social Reconst, Personal Relevance, and Technical
13	Personal Relevance and Technical	Personal Relevance and Social Reconstruction
14	Personal Relevance and Cognitive Processes	Cognitive Processes and Social Reconstruction
15	Technical and Personal Relevance	Social Reconstruction and Personal Relevance
16	Technical	Cognitive Processes and Technical
19	Cognitive Processes	Cognitive Processes
22	Cognitive Processes and Social Reconstruction	Social Reconstruction and Cognitive Processes
24	Technical and Personal Relevance	Cognitive Processes
27	Technical	Personal Relevance
29	Personal Relevance and Technical	Cognitive Processes and Technical
30	Technical	Cognitive Processes, Personal Relevance, and Social Reconstruction
31	Cognitive Processes and Social Reconstruction	Technical and Personal Relevance
32	Technical	Social Reconstruction and Personal Relevance
33	Technical and Personal Relevance	Cognitive Processes, Social Reconstruction, and Technical

Influences on Change

Sixteen respondents indicated that changing their curriculum orientation was the result of their participation in the curriculum change project. Only one respondent who experienced change in her curriculum orientation indicated it was not a result of the curriculum change project, but instead it was due to administrative decisions and community pressure.

All respondents who described their current curriculum orientation as different from their curriculum orientation prior to the curriculum change project described this change as the result of multiple factors. "Personal readiness for change to making teaching what it ought to be" was described as the most important factor in teacher change (83%.) "Commitment" had the second highest selection rate (67%) as a factor that supported change. "Peer support," "dissatisfaction with prior teaching curriculum orientation," and "revitalization," had selection rates (58%) as factors that influenced their change.

Support

Three types of support stated by the respondents as most helpful in their ability to change their curriculum orientation and teaching practice were "administrative support," "peer support," and "family support." "Administrative support" and "peer support" were selected 52% of the time and were described as "significant" factors in curriculum and teaching practice change. "Family support" was selected 49% of the time and was described as a "somewhat significant" supporting factor in curriculum and teaching practice change.

Barriers to Change

The respondents of this study who did not experience change in their curriculum orientations did not provide information about what factors may have inhibited change from occurring; therefore, comparisons of this follow-up data to prior research were not possible.

Self(Reflection

In this study, the frequency of self-reflection reported by respondents had no effect on whether or not change occurred in the curriculum orientation of the participants of this study; therefore, comparisons of this follow-up data to prior research were not possible.

Follow-up Telephone Interviews

Of the 13 respondents teaching in public schools who changed their curriculum orientations, 12 were telephoned for follow-up information; one could not be reached. Data were grouped in three categories as the telephone interview transcripts were analyzed: types of changes made in teaching practice, examples of their teaching, and support needed to continue teaching using their current orientation. Further analysis revealed themes identified within each category (See Table 2). It is important to note that it is possible that other interpretations could be made from the responses given from the participants.

Themes identified for question one, "What kinds of changes have you made in your teaching practice?" are philosophical shift, student-centered learning, active learning strategies, relevance, and intellectual processes. One teacher described her philosophical change the following way,

> Now the curriculum is designed around a practical perennial question or a concern that students might have, although they may not realize it yet. I see a need to make kids aware of what they're going to need when they get out in the real world and what skills might be useful in that respect.

Similarly, another teacher illustrated the kinds of problem-focused curriculum approach she uses, saying,

> We have talked about discrimination, what it consists of. Yesterday they wrote a paper about, What should be done about discrimination? My Parenting class did

> something similar to that yesterday. There happened to be an article in the state's daily newspaper on child abuse and I brought it and they read it. They had a lot of questions about it because it gave a lot of examples of abuse and provided statistics on deaths. They wrote about, What should be done about child abuse? and we used that as an introduction to the unit. In Adult Living, I incorporate a new issue every week that they will have to deal with in their lives. I pose situations to them and they have to decide if it's a crisis or not and how they would deal with those issues. These situations come from my own experiences as a college student and from my colleagues and personal friends who encounter these issues on a daily basis. In Foods, we talk about how the media affects us, our eating habits and that type of thing and they write about, What should be done about eating healthfully?

Another teacher referred to the new approach she used in her teaching, stating, "I was a little more technical, where things had to be perfect. Now it's more that I want to see how you follow directions, how you work together as a group and those kinds of issues."

Many teachers described how important making their lessons relevant to their students had become. One teacher described this in the following way,

> You tend to teach the way you were taught and that was pretty technical. A few years before the workshops, we learned about practical reasoning at another workshop and how "less is more." We learned how to use fun activities for students to learn the concepts and then apply the learning. The application took more time and so less material was covered. But I saw that the kids were having more fun learning and they would enjoy those sorts of things and be with me and not be gazing out the window, and I knew it was more pertinent to them. The curriculum change workshops reinforced this "less is more" concept. So, I decided if I couldn't make something pertinent to the kids in their life, if I couldn't explain why I was teaching it, I wouldn't teach it. Just because they had to memorize something and learn it, it didn't make it relevant to them. So if it wasn't something I could justify, I didn't find it as important anymore.

Themes identified for question two, "What does your teaching look like now?" are a shift in content emphasis, making connections with community, changes in class format, changes in student assessment, incorporating intellectual processes, and changes in methods. One teacher described how she helps students in classes such as Student Parenting and Families in Crisis to learn that as future voters and public servants, knowledge of available resources in their community would be invaluable. Through guest speakers and field trips to various levels of government agencies, they learned about all the resources available in their community that would help them to meet their own needs as well as how to help others in need.

Several teachers gave examples of how using FCCLA (Family, Career and Community Leaders of America) projects had enhanced the students' learning. One teacher described how she allows her students to choose what kinds of community projects to focus on, which helps to motivate them. Her classes had sent 25 boxes of useful items to a former student at a hospital in Iraq to be distributed as needed. The projects are more interesting when they can connect to them in some personal way like this and they feel a sense of community and commitment. The students plan, make decisions, and figure out all the skills required to complete each community project they choose.

Another teacher described how the content emphasis and teaching methods in her classes have changed,

> I think there are more pressing things to be teaching to my students than sewing skills. At one time in Independent Living, we used to sew. Now in this class we just learn to do mending and how to sew a button on and survival kinds of things, taking care of their clothes. We've added more Independent Living and Parenting classes. We have a Reading to Young Children class where the students focus on how to talk with children and how to get along with children and play with children and read to children. In this way, they learn parenting skills and they also explore careers related to children.

Several teachers spoke about how they use questioning differently in their teaching since the workshops. One teacher said,

> When a student has a question, instead of answering it I will often turn it back on them. Instead of coming up with a quick answer for them, I try to get them to explore a little bit more, try to figure it out for themselves.

Another teacher told about incorporating higher level questioning into her students' projects, stating,

> Questioning makes my projects different, too. They may do the same poster-type of a project, but instead of just the information they learned, now they will also include how it applies to them, how it influences who they are, and how it affects their decision making.

Another teacher incorporates more critical thinking into her classes and gave the following examples from her classes,

> I use more group work so they can bounce ideas off each other and maybe stimulate some thinking, get them to look at other groups of people or to open their minds up to consider other viewpoints. In Foods, we study other cultures, other countries, other habits and then compare them to our own. We even look at other religions and what affects they have on food. In Parenting, we talk about different family situations, different cultures. I try to bring that out in just about anything…trying to look at different situations.

Themes identified for question three, "What support is needed for you to continue teaching this way?" are support for FCCLA, professional development, communication with other professionals, time, curriculum, financial, media, school, students, technology, and community.

Several teachers mentioned the learning communities workshops and described how valuable they were to them to have that time to learn and discuss new ways to think about teaching, share successes and challenges, and just network. Time and money were listed as major kinds of support that were difficult to obtain. Many teachers mentioned that workshops in the summer are the best ways to learn new and practical strategies to enhance their teaching. Perkins grants were mentioned as a necessary means of support for developing curriculum in the summer and it was suggested that they could be used to establish on-going learning communities. Workshops provided by university professors and the state FCS supervisor either on campus or across the state were mentioned by many teachers as being very helpful to them to learn new information related to standards, assessment, and topics like questioning techniques and active learning strategies.

One teacher suggested that emailed reminders of what was learned in the curriculum change workshops would be helpful and many teachers mentioned that the state FCS supervisor's e-mail listserv was extremely helpful for distributing teaching tips, strategies, updated subject matter information, and Internet resources for free supplies and downloads.

Several teachers spoke about the invaluable resources in the community. One teacher stated,

> We invite a lot of community people to come into the classroom. We also take kids from the school out into the community to the various businesses to see what careers and occupations are out there. The kids could pick their brains and ask questions about skills and schooling and that type of thing. We have human resources managers who come in and conduct simulated interviews with the kids for jobs, and they actually do the grading, too.

Concerns regarding on-going support of media and technology in their classrooms were expressed by several teachers. One teacher suggested how beneficial it would be to have sessions for teachers to learn the latest programs and processes using the newest technology and equipment at the annual teachers' conference. One teacher described her need for technical support in the following way,

> The world is moving and changing quicker, and the media needs to be current. We have a lot of computers but we struggle with them to work sometimes. We need a lab with enough availability and more control. I feel that schools should have state of the art technology for the teachers and students to use, but the students often have better computers and technology in their homes.

Table 2. Themes Resulting from Telephone Interviews with Teachers

What kinds of changes have you made in your teaching practice?
Philosophical Shift
Shift from Teacher-Centered to Student-Centered Learning
Using Active Learning Strategies rather than Rote Learning
Emphasis on Relevance
Shift from Product Focus to Focus on Processes
What does your teaching look like now?
A Shift in Content Emphasis
Making Connections with Community
Changes in Class Format
Changes in Student Assessment
Incorporating Intellectual Processes
Changes in Teaching Methods
What Support is needed for you to Continue Teaching This Way?
Support for FCCLA
Professional Development
Communication with other Professionals
Financial
Time
Curriculum
Media
School

Students
Technology
Community

Conclusions and Discussion

Were the teachers able to continue their personal journey through the curriculum change process and make lasting changes in their practice to reflect their beliefs? The answer is an overwhelming "Yes!" Several conclusions can be made based on the data collected from this ten year follow-up study. Teachers experienced a readiness for change and a commitment to their profession supported changes they made. As teachers examined their beliefs and teaching practice, they made changes in their teaching practice.

Far fewer teachers in the group studied are using a technical approach; most of the teachers are teaching intellectual skills through the cognitive processing orientation. More teachers are aligning their curriculum orientation with the critical science perspective, the adopted curriculum approach in this midwestern state that combines the cognitive processes and social reconstruction orientations. More teachers are making their curriculum more personally relevant for students. Teachers who used the Cognitive Processes approach before the learning communities project continue to use it and possibly other approaches ten years later.

When teachers change the way they believe about teaching, their practice also changes. There is less emphasis on the technical aspect and more emphasis on engaging the minds of the students. Students know why they are learning and they are more involved in their own learning.

Teachers' lessons include less "how-to" instruction, less emphasis on producing products, and fewer tests. Student learning experiences in their classes include more projects, questioning, writing, and community involvement. Those who have left the classrooms for non-formal educational environments also made positive changes in their orientations, further demonstrating the significance of the learning communities in assisting professional educators in aligning their approaches with their beliefs.

Continued professional development and opportunities to meet and share with other professionals are necessary for the teachers to be able to continue teaching the way they do as a result of the learning communities project. Other types of support are also needed, such as support from their schools and communities, students, time, curriculum, media, technology, support for FCCLA, and financial resources.

Educational researchers (Pehkonen & Törner, 1999; Guskey, 1985) describe support as a key element to the success of teachers' curriculum change. Factors of personal readiness for teaching the way one believes and professional commitment were described as the facilitators of change, as well as dissatisfaction with current teaching, commitment to change, and a desire for revitalization of their program. Lichty (1996) noted that new challenges such as changing one's teaching practice can involve discomfort and can be difficult for teachers. Lichty stated that without support, it is difficult for teachers to maintain their excitement and motivation to change and that continued support is a most crucial factor for change. The participants of this study cite support as a key factor in their curriculum orientation change process, and peers, administration, and family members supported them in the change process.

Four respondents indicated they had not changed their curriculum orientation since the curriculum change project. It is important to note, however, that these respondents held the cognitive processes orientation, either alone or in combination with other orientations, both prior to and ten years after the curriculum change project. Therefore, one might conclude the need for

change was greatly reduced because they had already implemented aspects of the critical science perspective into their curriculum prior to the workshops.

Pehkonen and Törner (1999) found that allowing teachers to self-reflect upon their current curriculum and then determine what areas needed improvement allows the teacher to determine what should actually be occurring in their classroom. Brozovsky (1998) noted that readiness to change in family and consumer sciences is complex, but necessary for implementation of the critical science perspective in the classroom. Brozovsky continued to say that because of the changes in beliefs that are necessary in order to change from the technical approach to the critical science approach to teaching, teachers may require on-going opportunities for self-reflection. The participants in this study support these findings, as they cited most frequently that "personal readiness for change to make teaching what it ought to be" was the primary influence in their curriculum change process. They also stated involvement in the learning communities was a key factor in their change process, supporting Brozovsky's findings.

Self-reflection has been described as a method that can help in identifying "road blocks" that inhibit effective teaching and slow change from occurring. Nottingham (1998) explained that these road blocks can be identified, either individually or in combination, and either strengthened or eliminated to improve the effectiveness of student learning. The self-reflection process must be continually modified and updated in order to adapt to new experiences in everyday life. This constant updating allows teachers to identify areas that need change.

The self-reflection process identifies areas of beliefs or practices that need improvement or elimination. The end result of this process may be the updating and changing of teachers' practice to improve the effectiveness of student learning. Self-reflection causes teachers to refine and improve their performance. The more informed self-reflection there is, the more change should occur; however, the teachers' perceptions and practices in this study do not support that theory. The frequency of the self-reflection process did not appear to affect whether or not the participants experienced change in their curriculum orientation or teaching practice. Interestingly, this reveals a contradiction to other results in this study that indicated the most frequently cited factor for facilitation of their curriculum change was "personal readiness for change to make teaching what it ought to be," as it would seem logical to assume that reflection on their beliefs and teaching practice would have preceded the readiness to change.

Recommendations for Practice and Future Research

Because teachers who made changes to their teaching practice indicated their participation in the learning communities contributed greatly to their change process, it is recommended that learning communities be formed that include curriculum workshops for further examination of teachers' personal teaching beliefs. In addition, sessions could be held at annual professional conferences to allow time for discussion among peers about strategies for continuing their current orientation or aligning it even more closely to the critical science perspective. Teacher educators and the state FCS consultant should continue to disseminate reminders and tips on the state-wide FCS teachers' electronic mail listserv relating to critical science perspective, personal teaching beliefs, and teaching practice, so that teachers receive a constant flow of support to continually motivate and encourage them.

Many years have passed since the National Standards for Family and Consumer Sciences Education (V-TECS, 1998) were developed and the critical science perspective was advocated as one of two approaches, or orientations, to be used by professionals in our field in addressing the

national standards (the other being the competency approach). The current follow-up study was the story of one state's journey of curriculum change. The journey is not over, but rather it will continue over time as society changes. What is the curriculum orientation used by FCS teachers in other states? Research regarding curriculum orientation and teaching practice on a national level will serve to enlighten the profession about the curriculum approaches being used by FCS teachers across the country. Studies could also be done to determine if teaching using the critical science perspective enhances student learning. A study could also be done to demonstrate the contributions made to families and society from such changes in curriculum orientations by FCS teachers.

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FAMILY, CAREER, AND COMMUNITY LEADERS OF AMERICA: LEADERSHIP STANDARDS IN FAMILY AND CONSUMER SCIENCES CURRICULUM

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The purpose of this study was to determine the extent that family and consumer sciences teachers incorporated the Georgia Quality Core Curriculum (QCC) standards for student leadership development in their teaching. Respondents were 163 middle school teachers and 262 high school teachers for a total of 425. Teachers were asked to indicate if they had an affiliated Family, Career, and Community Leaders of America (FCCLA) chapter; if they were on extended day; and if the leadership standards were not an objective, an incidental objective, an important objective, or a major objective in their teaching. Findings revealed that less than one-fifth (16%) of middle school teachers and nearly two-thirds (64%) of high school teachers had affiliated FCCLA chapters. Less than a tenth (8%) of middle school and more than half (55%) of high school teachers were on extended day. Results also showed that the leadership standards were identified as important or major objectives when teaching family and consumer sciences classes by slightly more than one-fifth (21%) and two-thirds (66%) of middle school and high school teachers, respectively.

A plethora of literature exists on leadership as an important topic of discussion and leadership development as an area of research. Several definitions of and beliefs about leadership have been posited and, according to Nall (2005), leadership is rarely defined the same way. Traditionally, leadership is defined as an interpersonal influence directed toward the achievement of a goal or goals. Gardner (1987) defined leadership as the process of persuasion or example by which an individual or leadership team induces a group to pursue an objective held by the leader or shared by the leader and followers. According to Avery (1995), leadership can be conceptualized as providing visionary skills that enable members to provide direction to the profession and empower themselves and others to meet their full potential. Johnson and Johnson (2003) determined that leadership skills were the sum total of one's ability to help the group achieve its goals and maintain an effective working relationship among members. Wheatley (1992) acknowledged that leadership is now being examined for its relational aspects. Leadership is viewed as a skill that can be taught and learned just as you learn academic knowledge and skills which support the statement, "leaders are made not born." Furthermore, Johnson and Johnson (2003) postulate that since leadership takes practice, anyone can learn leadership skills. Although there are numerous ways to define leadership, it is clear that these skills and traits can and should be developed for the purpose of guiding a group or organization

toward its desired goals. Youth organizations in career and technical education are excellent strategies for the development of leadership skills.

The need for the development of leadership skills is germane to the success of youth organizations including those within career and technical education (Seevers & Dormody, 1995). There are 10 career and technical student organizations recognized by the U.S. Department of Education. The student organization connected with family and consumer sciences (FCS) is Family, Career, and Community Leaders of America (FCCLA) which is the only national career and technical education student organization with the family as its central focus. FCCLA assists young men and women in becoming leaders and addressing important personal, family, work, and societal issues through family and consumer sciences education **(**FCCLA, 2000**).** Career and technical student organizations are an integral part in providing leadership experiences to students, both in and beyond the classroom (Wonacott, 2001).

Georgia's Quality Core Curriculum (QCC) was mandated by the Quality Basic Education Act of 1986 (Georgia Learning Connections, 2005). The Quality Core Curriculum Standards (QCCS) provided a statewide basic curriculum that established standards detailing what students should know and be able to do upon completion of courses within every content area. At that time, common core standards in leadership were established. These common core standards were developed by a committee of public school educators, both secondary and postsecondary, in 1997 and have undergone several revisions. Common core standards were developed for all Technology/Career Education courses and intended to be integrated throughout the instructional course sequence of Technology/Career Education programs. Leadership standards included in the common core were developed to provide leadership skills for secondary students. Since a part of the mission of FCCLA is to promote leadership development through family and consumer sciences education, there is a direct connection between the curriculum and the student organization. Therefore, this study was designed to determine the extent that family and consumer sciences teachers in Georgia included the common core standards for leadership in their teaching.

Theoretical Framework

Leadership theories and strategies which were once successful no longer work (Andrews & Clark, 1996). Nowadays, more and more studies are focused on followership, empowerment, and leader accessibility (Wheatley, 1992). As a result, behavioral and trait theories were rejected and the transformational leadership theory was selected as the theoretical framework for this study. Transformational leadership is a blend of behavioral and trait theories. Behavioral theories identify determinants of leadership so that people can be educated to be leaders whereas trait theories assume that certain physical, social, and personal characteristics are inherent in leaders. According to Bennis and Nanus (1997), transformative or transformational leadership occurs when one commits people to action, converts followers into leaders, and converts leaders into agents of change. When a leader makes positive changes, it can result in followers trusting the leader. As a result, behavioral changes may occur that contribute to the achievement of the organizational goals. Additionally, followers may be motivated to perform at a higher level. Bass (2005), a leading leadership development author, defined transformational leadership in terms of how the leader affects followers. He identified three ways in which leaders transform followers. First, leaders transform followers by increasing their awareness of task importance and value. Next, leaders are able to get followers to focus on team or organizational goals first, rather than their own interests. Last, leaders are able to activate followers higher-order needs. The focus of

the common core standards are purpose, achievement, and recognition through an organization. Therefore, a leadership theory that focused on engagement and performance/achievement of all members of the organization was chosen for this study.

Review of Related Literature

Family and consumer sciences professionals have a long history of engaging in leadership discourse (Vail, 1995). However, during the last decade, the dialogue has become even more evident as some researchers (Andrews, Mitstifer, Rehm, & Vaughn; 1995; Vail, 1995; Jackman & Swan, 1996; Ley, 1996; Viegas, Brun, & Hausafus, 1998; Jax, 2000) have produced professional development materials, research, and critical thought and position statements on leadership in family and consumer sciences.

A professional development module entitled *Leadership: Reflective Human Action* was conceptualized by Andrews, Mitstifer, Rehm, and Vaughn (1995). The module included the theoretical framework of reflective human action theory, experiential activities for comprehending the theory, leadership issues, and activities for exploring personal leadership skills. This module was designed to be used by both students and professionals for the development of leadership skills. After publication of the module, *Kappa Omicron Nu Forum,* the National Honor Society in Family and Consumer Sciences, published a special issue on leadership. In the special issue, each paper addressed one or more aspects of leadership using the reflective human action theory. In 1995 and 1996, *Kappa Omicron Nu Dialogue*, a publication of Kappa Omicron Nu Honor Society, also featured a five part series on the reflective human action theory. Each issue contained an article focusing on a different aspect of reflective human action and family and consumer sciences professionals. In 1999, *Kappa Omicron Nu*, published another special issue with leadership entitled Leadership: Up close and personal. Several deans and department heads in family and consumer sciences authored papers that described their journey to leadership.

Other researchers (Vail, 1995; Jackman & Swan, 1996) in family and consumer sciences focused their attention on the development of leadership skills of inservice teachers. Studying a group of family and consumer sciences teachers in Ohio, Vail (1995) determined the extent that the teacher acted as leaders and identified predictors for the emergence of teacher leadership. Teachers in this study agreed that teacher leadership was important. However, they reported that they seldom performed teacher leadership. A teacher's rating of teacher leadership as important was the best predictor of teacher leadership activity, followed by the teacher's involvement in general education organization and the location of the school. A year later, Jackman and Swan (1996) identified the perceived leadership abilities of family and consumer sciences teachers in North Dakota. They found that teachers held similar leadership ability perceptions regardless of teaching assignment, vocational or non-vocational program, or amount of formal education. Teachers in their study perceived a need for leadership development, yet fewer than half were willing to attend leadership development activities.

The profession faces the challenge to help students in higher education units become leaders (Andrews & Clark, 1996). Ley (1996) and Viegas, Brun, and Hausafus (1998) actively pursued the area of leadership development in preservice teachers. Ley helped develop a capstone course for family and consumer sciences students in which leadership was the focal point. The course utilized the reflective human action theory and built on the model proposed in the module *Leadership: Reflective human action* (Andrews et al., 1995). Additionally, student feedback was used to assist in framing the course. Viegas, Brun, and Hausafus (1998) designed a

curriculum to facilitate the development of qualities, styles, and practices of leadership for undergraduate students. Students indicated that the curriculum motivated them to more seriously consider leadership careers and to recognize the role of leadership principles in their career practice.

It is evident from the literature, that family and consumer sciences professionals are actively engaged in dialogue on leadership. However, the missing body of research in professional literature is the development of leadership of secondary students. The focus of the present study is on family and consumer sciences teachers' implementation of leadership standards within the family and consumer sciences curriculum.

Purpose

The main purpose of this study was to determine if family and consumer sciences teachers in middle schools and high schools included the common core standards for student leadership development in their teaching. A secondary purpose was to determine if differences existed on the selected variables of grade level of school (middle or high school), affiliated FCCLA chapter, extended day, and years of teaching experience. Research questions for this study were: 1) To what extent were family and consumer sciences teachers including the leadership standards in their teaching; 2) Were there differences in the teaching of leadership standards between middle school and high school teachers with affiliated FCCLA chapters; 3) Were there differences in the teaching of leadership standards between middle school and high school teachers who were on extended day contract; and 4) Were there differences in the teaching of leadership standards between teacher groups based on years of teaching experience and the inclusion of leadership standards in teaching?

Method

The population of middle and high school family and consumer sciences teachers in Georgia was surveyed. Names and addresses of 255 middle school and 444 high school teachers were obtained from the Department of Education for a total of 699 possible participants. A questionnaire packet including a cover letter and a pre-addressed, stamped return envelope was mailed to teachers. Using Dillman's (2000) survey technique, follow-up postcards were sent to nonresponding teachers approximately 14 days following the initial mailing; a second questionnaire was mailed 3 weeks later to teachers who had not responded to the second mailing. At the end of data collection, 163 middle school teachers and 262 high school teachers responded for a total of 425 or 63% of the participants.

Part one of the questionnaire focused on three standards of leadership found in the common core standards of the Georgia Quality Core Curriculum. For the purpose of this study, FCCLA was added to the questionnaire since leadership is recognized as a purpose of the youth organization. For example, the common core standard on understanding leadership roles was written as: examine the purposes and leadership roles of FCCLA. The Likert type scale was taken from the "Curriculum Orientation Survey (COS)" developed by Hall (1981) where a 4-point scale was used. Participants were asked to indicate the extent to which leadership standards were included in their teaching based on the following choices: not an objective = 1, an incidental objective = 2, an important objective = 3, and a major objective = 4. Findings are reported as both descriptive and inferential statistics. Descriptive statistics included means, standard deviations, frequencies, and percentages whereas inferential statistics included chi-

square and ANOVA to determine differences. Part two of the questionnaire requested demographic and program related information.

Findings

Teachers in this study had an average of 14.5 and 16.9 years of teaching experience, middle and high school, respectively. Middle school teachers ranged in age from 23 to 63 with an average age of 43 whereas high school teachers' range was 21 to 62 with an average age of 44. A little more than half of the middle school teachers held a Bachelor's degree (52%) whereas almost half of the high school teachers held a Master's degree (47%) as their highest earned degree.

Affiliated FCCLA Chapter

When teachers were asked if they had an affiliated FCCLA chapter, 16% of the 163 middle school teachers and 64% of the 262 high school teachers answered "yes." An affiliated chapter has submitted state and national dues along with a chapter affiliation form to the national organization. The national headquarters must process national dues and the accompanying affiliation form before membership is official and the chapter starts receiving services, e.g. as *Teen Times* magazines and chapter mailings. According to Cahill and Brady (1999), more than 1.5 million students were served by the 10 CTSOs which increased enrollment in CTE program areas including family and consumer sciences. Currently, there are over 227,000 FCCLA members in 7,100 chapters in 50 states as well as in the District of Columbia, the Virgin Islands, and Puerto Rico (FCCLA, 2005).

Chi-square analyses were used to determine if differences in the teaching of the three leadership standards existed between middle school and high school teachers with affiliated FCCLA chapters. Results of the Chi-square analyses revealed no statistically significant difference for the three leadership standards between middle school teachers and high school teachers with affiliated FCCLA chapters.

Extended Day

Teachers were also asked if they were contracted for extended day. Extended day is described as salary compensation to teachers who work with students beyond the normal school day. To that question, 8% (8) of middle school teachers and 55% (144) of high school teachers answered "yes." The purpose of extended day is to integrate subject area instruction or leadership activities into the curriculum and provide students with opportunities to participate in contextual learning. The extended day program is designed for curriculum and leadership activities for students in grades nine through twelve. For some career and technical education teachers, their programs are sequenced to build on previous instruction and the extended day activities complement that instruction (National Association of Supervisors of Agricultural Education, 1987).

Chi-square analyses were used to determine if differences in the teaching of the three leadership standards existed between middle school and high school teachers on extended day. Results of the Chi-square analyses revealed no statistically significant difference for any of the leadership standards between middle school teachers and high school teachers who were on extended day.

Leadership Standards

The extent that middle school and high school teachers included leadership standards related to FCCLA in their teaching is presented in Table 1. Overall, two-thirds of the middle

school teachers felt that the leadership standards were *not an objective* in their teaching, whereas a fifth of the high school teachers reported the leadership standards were *not an objective* in their teaching. Conversely, one-tenth of the middle school teachers and one-third of the high school teachers reported the leadership standards as *major objectives* in their teaching.

Table 1
Middle and High School Teachers' Views of Leadership Development Through Student Organizations Related Content Taught in Family and Consumer Sciences Programs

	Not an Objective				Incidental Objective				Important Objective				Major Objective			
	MS		HS		MS		HS		MS		HS		MS		HS	
Standard	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Examine the purposes and leadership roles of FCCLA [a]	96	64	47	19	16	11	31	12	14	9	77	31	18	12	91	36
Analyze how goals are identified, set, and achieved in FCCLA [b]	98	66	49	20	19	13	34	14	10	7	84	34	17	11	79	32
Demonstrate the process that could lead to recognition in FCCLA [c]	99	66	50	20	17	11	37	15	12	8	82	33	16	11	77	31

Note: Middle School High School

[a] $\underline{M}$ = 1.68, $\underline{SD}$ = 1.08 $\underline{M}$ = 2.86, $\underline{SD}$ = 1.11
[b] $\underline{M}$ = 1.62, $\underline{SD}$ = 1.04 $\underline{M}$ = 2.78, $\underline{SD}$ = 1.10
[c] $\underline{M}$ = 1.61, $\underline{SD}$ = 1.03 $\underline{M}$ = 2.75, $\underline{SD}$ = 1.10

On the first standard, examining the purposes and leadership roles of FCCLA, 12% of middle school teachers and 36% of high school teachers said that it was a *major objective* in their teaching. On this same standard, 9% of middle school teachers and 31% of high school teachers reported the standard as an *important objective* in their teaching.

Responses were consistent for middle school and high school teachers on the remaining two standards: analyze how goals are identified, set, and achieved in FCCLA; and demonstrate the process that could lead to recognition in FCCLA. Slightly more than a tenth (11%) of middle school teachers and almost a third (32% and 31%) of high school teachers said that these standards were a *major objective* in their teaching. Considering the same two standards, a fraction (7% and 8%) of middle school teachers and a third (34% and 33%) of high school teachers reported these standards as an *important objective* in their teaching.

Teaching Experience

Teachers varied in their years of teaching experience. Eight teachers reported 1 year of experience while two reported 36 years of teaching experience. In order to better understand the effect of teachers in various stages of their careers, teachers were subgrouped according to number of years of teaching experience. This grouping yielded categories of years of teaching for the participants: 1-10, 11-20, 21-30, and 31 - 40. On the Certified Personnel Data section of

the Georgia Public Education Report Card, teachers are grouped in 10 year increments for years of experience (Georgia Department of Education, 2005). Teachers in this study were categorized accordingly.

Frequencies for years of teaching experience were disproportionately distributed among the four groups for both middle school and high school teachers. The category representing 11-20 years of teaching experience was the largest group for both levels of teachers, middle and high school, 58 and 98 respectively. The second largest group for middle school teachers (50) represented participants who had taught 1-10 years, while the second largest group for high school teachers (68) represented participants who had taught 21 – 30 years. The lowest count was reported for the 31 to 40 years of teaching, 1 and 15 for middle and high school teachers respectively.

One-way ANOVA was used to determine if there were significant differences in teaching leadership standards based on years of teaching experience. Analyses indicated no significant differences on the three leadership standards between any teacher group for middle school or high school teachers.

Conclusions and Discussion

One major finding resulted from this study. Both middle school and high school family and consumer sciences teachers included the common core standards for student leadership development in their teaching.

On the major finding, both groups of family and consumer sciences teachers include leadership standards in their teaching with middle school teachers to a lesser degree than high school teachers. The inclusion of leadership standards related to FCCLA in the family and consumer sciences teachers' instruction suggests that these standards can be achieved through in-class activities. Especially noteworthy was the finding for middle school teachers where the number who included leadership in their instruction almost doubled the number who had affiliated FCCLA chapters; this does illustrate that leadership standards are a part of the regular classroom activities. According to Erickson (1978) and Rotheram and Armstrong (1980), an appropriate time to teach leadership skills is during adolescence when students are enrolled in grades 7 through 12. Furthermore, these authors contend that middle school was an appropriate time for students to begin to develop such skills as character building, creative and critical thinking, interpersonal communication, practical knowledge, and vocational preparation. High school teachers included leadership standards in their teaching at an extremely high rate. That is, two-thirds of the teachers stated the standards were *an important* or *major* objective. Jax (2000) maintained that the profession requires leadership to thoughtfully carry out its mission as it approaches the new millennium and beyond. Furthermore, predictions for the future suggest a need for more emphasis on leadership development for family and consumer sciences (Viegas, Brun, & Hausafus, 1998). Therefore, it is promising that students are beginning to develop leadership skills before leaving high school and entering the world of work or postsecondary education. High school teachers are encouraged to continue promoting and implementing leadership skills in students.

Implications for Practice

FCCLA chapters can give growth experiences to students as well as improve family and consumer sciences programs through goal setting, critical thinking skills, group work, and exploring skills, as well as other activities (Anderson & Wooldridge, 1995). In this study, middle

school and high school family and consumer sciences teachers have affiliated with FCCLA. Teachers are encouraged to make full use of the national programs of FCCLA to achieve leadership standards and strengthen class activities while transforming followers into leaders. The national programs within FCCLA such as Leaders at Work, Power of One, Families First, Financial Fitness, and Student Body provide a structured medium for developing leadership skills and giving both personal and group experiences.

Although it was beyond the scope of this research to determine how teachers integrated the standards into their teaching, it was clear that they were being included. The inclusion of leadership standards in both middle and high school teachers' curriculum suggests an integrated program. An integrated FCCLA, formerly known as co-curricular, is a method of blending classroom and FCCLA activities **(**FCCLA, 2000**).** Professionals in the field have long recognized that promoting personal growth and leadership through family and consumer sciences are central to the mission of FCCLA. For example, family and consumer sciences education and FCCLA are intertwined as illustrated in Virginia's middle school curriculum. Family and consumer sciences teachers in Virginia developed an innovative curriculum that included basic skills, elements of family life education, standards of learning for middle school, and leadership skills through membership in FCCLA (Batten & Feldt, 1989).

This study explored the extent that the common core standards for student leadership development were included in the teaching of family and consumer sciences curriculum as one way to actively engage learners in individual growth experiences. Findings from this study show that family and consumer sciences teachers have placed importance on leadership development and, according to Andrews and Clark (1996), leadership is critical for the profession of family and consumer sciences. It also attests that leadership standards can be achieved through an integrated program of family and consumer sciences and FCCLA. These writers support and encourage an integrated curriculum whereby FCCLA becomes an established part of the teaching of family and consumer sciences content.

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A TECHNOLOGICAL APPROACH FOR PREGNANCY PREVENTION AMONG YOUTH WITH DISABILITIES

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There is a deficit of curricular materials developed specifically for use by educators when teaching self-respect and pregnancy prevention to students with mild intellectual disabilities. A federal grant was secured from the Unites States Department of Education (USDE) to develop an innovative technological strategy that would improve results of education and access to and participation in general secondary curriculum for students with disabilities. National data were collected to determine appropriate content for inclusion in an interactive CD-ROM related to pregnancy prevention.

Although teen pregnancy rates have declined in recent years, they are two times higher in the United States than any other industrialized country (Yampolskaya, Brown, & Vargo, 2004). Every 26 seconds another adolescent girl becomes pregnant resulting in roughly one million teen pregnancies annually in the U.S. (Sarri & Phillips, 2004; School Board News, 1999). In fact, the Center for Disease Control and Prevention (2006) reported 47% of high school students have had sexual intercourse in 2003. There is no national data which provides statistical information on how many teen pregnancies occur in adolescents with disabilities (Jones & Domenico, 2005).

Having a disability places a teen at an increased risk for pregnancy, as the disability itself may lead to factors such as poverty, initial school failure, behavioral concerns, and family problems (Yampolskaya, Brown, & Greenbaum, 2002). Unfortunately, there are many misconceptions about the sexuality of youth with disabilities, the most common being that they are asexual and do not need education about their sexuality (Fritz, 2003). Youth with disabilities need information about values, morals, friendship, dating, love, and intimacy. They also need to know how to protect themselves against unwanted pregnancies, and they need to be educated about positive parenting styles and responsibilities (National Information Center for Children and Youth with Disabilities, 1992).

Teens in the lowest quartile of academic achievement, including those with disabilities, are three times as likely to become parents and leave school prematurely (Manlove & Moore, 2001; Wagner, 1991). Additionally, in a recent report, approximately one third of female students cited the birth of a child as the reason they dropped out of school (Bridgeland, Dilulio, and Morison, 2006). In addition, teens with disabilities experience other challenges that further complicate their pregnancies. Young maternal age coupled with identified disabilities has highlighted the need for support programs focused on teaching teen parents basic child rearing practices (Tymchuck, Hamada, Andron, & Anderson, 1990).

Students with Disabilities

Students with mild intellectual disabilities such as learning disabilities, mild mental retardation, emotional and behavioral disorders, and speech and language disorders were selected

as the target audience for this project because of their high incidence in middle and secondary school populations. The largest and most common group of teens with disabilities is youth with learning disabilities (LD). While youth with LD may have average or above average IQ scores, they experience difficulty in the basic skills of reading, math, and writing. They often have auditory processing and visual perception problems that affect how they receive and process information. In a study of students with mild mental disabilities and their teachers, Brantlinger (1992) reported that only one-third of teachers offered comprehensive sex education or family life programming to their students. Teachers also noted that a limited amount of information was available on sex education in special education classrooms. Youth with emotional and behavioral disorders and attention deficit disorders are also considered high incidence populations. These youth are challenged by impulsivity, inability to attend, and poor organizational skills that impact their ability to learn new information as well as to relate socially (Wenger, Kaye, & LaPlante, 1996).

When given appropriate learning opportunities, students with disabilities can learn the basics of appropriate health management and benefit from discussion and activities relating to personal relationships (Carter, 1999). As students with disabilities are integrated into the mainstream of society, they need guidance and instruction appropriate to their learning needs (May, Kundert, & Greco, 1993). Fritz (2003) supported this notion, stressing that education about human sexuality and sexual behavior for developmentally disabled students must occur at the student's developmental level. Further, interventions for youth with disabilities must include information about responsible decision-making, adult roles, healthy attitudes toward parenting, and positive family attachments (Kirby, 2001).

Students with mild disabilities may receive information that is not adapted to their unique learning needs (Doren, Bullis, & Benz, 1996). Teachers may not recognize the different learning styles of students and, as a result, present information on sexuality, pregnancy, and parenting in the same format to all students. However, teachers impact students' knowledge. Students who reported teachers as primary sources of information for pregnancy prevention received higher scores when tested on accuracy of information (Ansuivi, Fiddler-Woite, & Woite, 1996). In addition, Mauldon and Luker (1996) revealed female students were 33% more likely to use contraceptives after instruction on birth control. Unfortunately, there is insufficient information on whether the educational needs of youth with disabilities differ from those of their non-disabled peers in regards to sexuality, reproductive health, pregnancy, and parenting.

Computer Use with Students with Disabilities

Several studies have determined the effects of computer-based instruction on students with disabilities. Lindstrand (2001) found that computers play positive roles in enhancing the development of language, communication, concentration, and coordination. Students with disabilities who have an opportunity to support their learning using computers retain more, perform better on tests, attend school more regularly, and get better grades and employment than students who do not have that opportunity (Edyburn, 2000; Lewis, 1998; McCoy, 1995; Mechling, Gast, & Langone, 2002). Student motivation and self-esteem are enhanced through the inclusion of computers in an educational setting (Ploeger, 1993). Students with a broad range of disabilities may benefit from technology either for assisting learning or as adaptive hardware and devices to help them gain employment or live independently (Riley, 1997).

CD-ROMs (Compact Disc-Read Only Material) are considered a high-tech teaching strategy. When using multimedia-based computer programs, students with mild disabilities can read at their own pace or with assistance, such as individualized feedback or the pronunciation of difficult words. Introducing text with video allows students to make direct connections between words on the screen and information learned elsewhere, thus making it easier for them to comprehend the meaning of phrases, sentences and passages (National Association of State Boards of Education & Office of Special Education Programs, Office of Special Education and Rehabilitative Services, U.S. Department of Education, 1999). Technology such as CD-ROMs provides different stimuli through which information can be received and it increases self-confidence, allowing users to demonstrate personal proficiency (Lee, McGee, & Ungar, 2001).

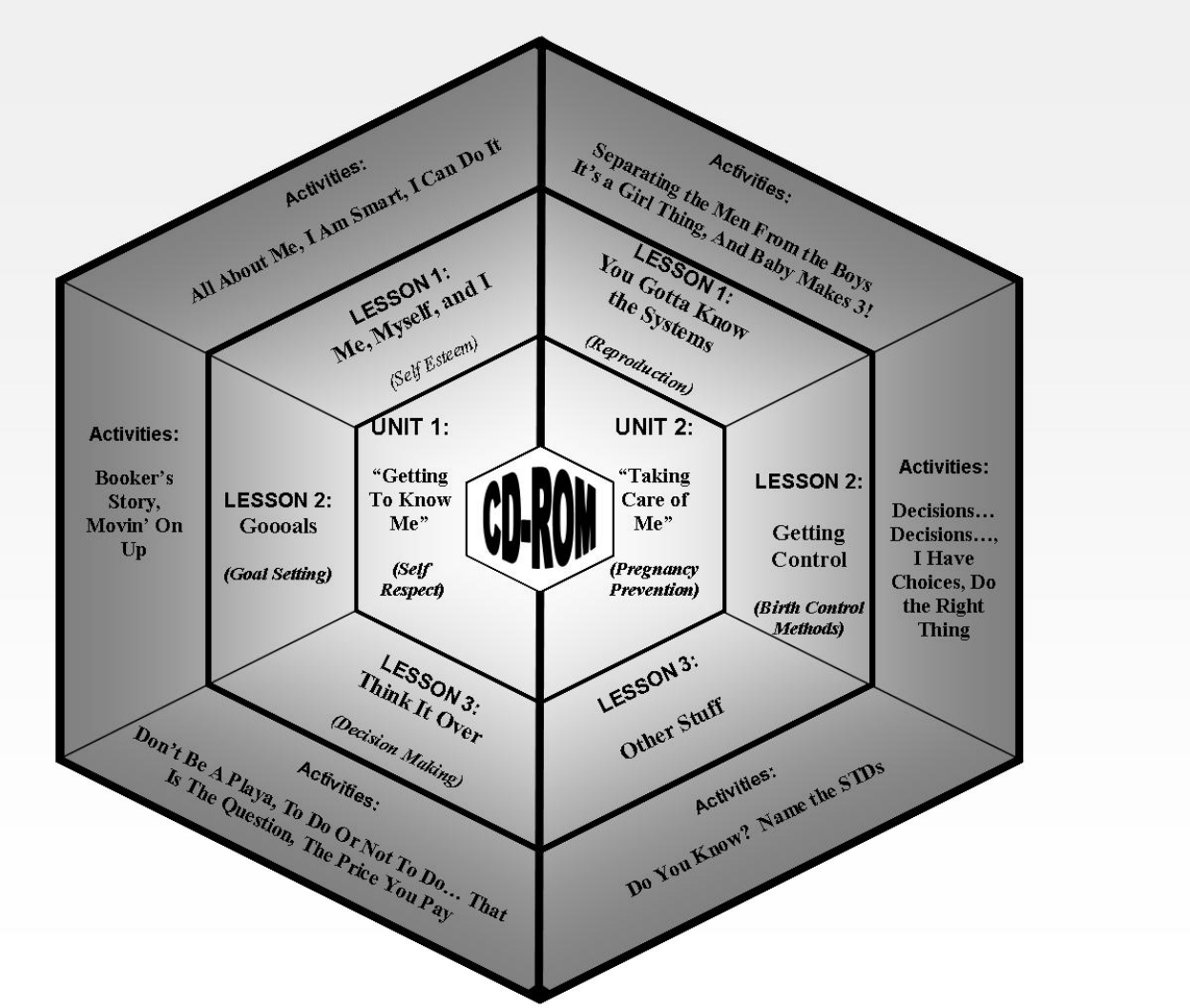
Development of Interactive CD-ROM

Teen pregnancy prevention efforts have emphasized education, skills, abstinence, and access to contraception. However, the definition of what constitutes teen pregnancy prevention is best expanded to include activities that seek to instill teens with confidence and a sense of the future. This speaks to motivation to avoid pregnancy, a critical element in a pregnancy-free adolescence (U.S. Department of Health and Human Services, 2003). There is a lack of information available regarding teaching youth with disabilities about pregnancy prevention; therefore, teachers need curricular materials specifically developed for use with this population. As a result, an interactive CD-ROM was developed to specifically address the learning needs of students with mild disabilities.

Data were collected from 1,015 members of the Association of Career and Technical Education Family and Consumer Sciences Teacher division to determine appropriate content for students with disabilities. Although teachers felt many topics related to pregnancy and its prevention were important for student with disabilities, an overwhelming majority (90%) expressed the need for students to understand their own personal goals and values. This is substantiated by Winter (1997), who stressed the best protection teenage girls have against becoming pregnant is to have life goals. Various other studies provide evidence that having clear educational goals are associated with fewer incidences of teen pregnancies (Manlove, 1998; Stewart, 2003; Yampolskaya et al., 2004). Based on these national survey results, contents of the CD focus on self-respect and pregnancy prevention.

The CD-ROM addresses the topic of pregnancy prevention in real-world settings. The emphasis on real-world scenarios using realistic characters with recorded voices makes the topics engaging by taking participants through a “trip” that identifies intervention strategies for teens with disabilities. Students interact with a variety of learning situations that present knowledge and facts about pregnancy prevention and responsible adult living. There are opportunities throughout the CD for students to make choices and decisions, and then view possible results and consequences based on their decisions. In addition, there are places within some activities where students can obtain printouts from certain activities they complete. Table 1 presents contents of the CD-ROM.

Table 1
Contents of CD-ROM



The CD-ROM contains 2 units, 6 lessons, and 16 corresponding activities. Unit 1 deals with self-respect while Unit 2 focuses on pregnancy prevention. Titles that would catch the interest of teens were selected. For example, the activity on self-esteem is titled "I Can Do It!", the activity on goal setting is "Movin' On Up", the activity on decision making is named "The Price You Pay," and the lesson on reproductive systems is titled "You Gotta Know the Systems." All lessons and activities on the CD are narrated to accommodate students with low reading and/or comprehension levels. Narration and sound allow for individual student use with a headset or for small group settings.

The CD was field-tested in several states: Alabama, Alaska, Georgia, New Mexico, Oklahoma, Pennsylvania, and Virginia. Family and consumer sciences and special education teachers participated in field-testing with students in inclusion settings. Educators field-tested the CD in their classrooms. An evaluation form was completed for each of the activities included in the CD. Teachers provided specific information regarding items such as ease of navigation within the CD, appropriateness of the reading level for their students with disabilities, accuracy

of information, sequencing of narrative and graphics, whether students were interested in the content, and if they completed the activities. Feedback provided from field-testers was incorporated to assure the format, content, and navigation of the CD-ROM was appropriate for the target audience, students with mild mental disabilities.

Conclusion

It is the researchers' hope that family and consumer sciences and special education teachers will implement this CD when instructing students with mild disabilities about pregnancy prevention. Although the target audience for the CD is students with mild intellectual disabilities, students who are academically at-risk or have low reading levels may also benefit from the information provided. Because the content of self-esteem and pregnancy prevention is appropriate for all students, the CD-ROM could also be used with regular education students as an introduction to or a review of this information. Thus, while the CD was created with a focus on one particular group of students, teachers can broaden its use to include many other students within their classes. Additionally, the use of computers is highly effective in engaging all students in academic skills. Through the use of interactive lessons that apply real-world applications, teachers may be able to positively impact the future decisions and lives of their students.

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