THE VALUE AND USEFULNESS OF INFORMATION TECHNOLOGY IN FAMILY AND CONSUMER SCIENCES EDUCATION AS PERCEIVED BY SECONDARY FACS TEACHERS

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This study addressed the value and usefulness of information technology in the Louisiana family and consumer science (FACS) education program. In this study, information technology includes technology such as computers, the Internet, laser discs, and video conferencing. A researcher-designed questionnaire was used to gather data from a random sample of secondary FACS teachers in Louisiana. FACS teachers value information technology, and information technology in program and instructional management is of moderate usefulness to FACS teachers. A low positive relationship exists between how teachers value information technology and the availability of computer technology at home and school. At least half of the FACS teachers have Internet connections. Though FACS teachers value the Internet and other types of information technology, the interrelatedness may yet to be realized. This may be evidenced by the low negative relationship between teachers' perceived value of information technology and whether the individual teacher's school is connected to the Internet.

Many changes have taken place in family and consumer science (FACS) education over the past decade, particularly in the area of information technology. This change is even more important for FACS and other vocational teachers since vocational course students are about twice as likely to use computers as academic students (Heaviside, et al., 1992). How valuable and useful is information technology in family and consumer sciences education programs?

Pomeroy (1990) found that 50% of the vocational teachers in Southern Nevada were not computer literate and 62% of the computer literate vocational teachers indicated that they were self?taught. In addition, 71% indicated that they learned their computer skills after beginning to teach. Daulton (1997) reported that FACS teachers' adoption rate for computer technology had increased from 5% in 1983 to 83% in 1993. She concluded that, "Although the microcomputer had not reached a 100% adoption rate by 1993, the adoption of microcomputers for educational purposes by FACS teachers had dispelled the belief that microcomputers would eventually end in the closet like so many other pieces of audio-visual equipment" (p 59).

In a 1996 study of Idaho teachers, Mathews, Davis and Hamilton found that up to one-half of all teachers never actually used technology for any instructional purpose. Over half rated themselves as novices in all areas studied. In a national study of technology in the classroom conducted for the National Education Association (Princeton Research Associates, Inc., 1993), it was revealed that schools have been slow to replace outmoded technology. One in four teachers had used instructional laser discs/videodiscs, hypermedia/multimedia software, and CD-ROM discs. They also reported a lack of access to essential resources; only 16% had computers in the classroom and only 18% had access to computer networks.

Chin and Hortin (1994) found that

> numerous recent studies have shown that most teachers want to use the newest technology and to prepare their students for the world of technology outside of the school. Apparently, what teachers really need is more time to acquire the knowledge and understanding of technology, and to absorb what instructional technology can do for them. (p. 87).

McCaslin and Torres (1992) found that three factors accounted for over half of the variance in vocational teachers attitudes toward using microcomputers during in-service training: their educational value, confidence in their use, and apprehension about their use. Although no recent research has been conducted regarding the computer anxiety levels of family and consumer science teachers, related studies in agriscience education by Fletcher and Deeds (1994), and Kotrlik and Smith (1989) found that agriscience teachers' computer anxiety ranged from mild to severe with regard to the aspects of computer anxiety measured by Oetting's Computer Anxiety Scale (COMPASS). Teachers anxiety decreased as their computer skills increased.

Technology is a part of pre- and in-service teacher education. Pre-service teacher education has traditionally occurred at the university level, as has a substantial amount of the in-service teacher education. Torisky et al. (1997) described the multimedia technology needed to teach a basic nutrition course at the college level. Her classroom is equipped for presentation of lecture materials from computer, laserdisk player, TV/VCR, document camera, compact disk, or any combination of these features. Although universities often have technology that is much more advanced than the technology that exists in secondary schools, FACS teachers should be moving toward the use of these technologies in their instruction. Threlfall (1998) stated that students of fashion merchandising and clothing design must be prepared on state?of?the?art equipment. Although these are only two examples of how technology impacts FACS programs, it is evident that technology transcends all aspects of FACS programs.

Several studies have been conducted that addressed relationships between selected demographic variables and the use of information technology. Zidon and Miller (1990) found that weak relationships existed between demographic variables such as age, gender, and years of teaching with perceptions of computer use. They concluded that "such demographic variables need not be considered when planning in-service training or planning to include computers in a secondary agriculture curriculum" (p. 237). This opinion was not voiced by other authors and no evidence was found that this has ever been studied with regard to FACS teachers.

In a national study of technology in the classroom, a study for the National Education Association (Princeton Research Associates, Inc., 1993) found that almost two-thirds (59%) of teachers under 35 years of age believed computers in the classroom were essential, while only 29% of teachers over age 55 shared this belief. Half of the teachers in low technology schools had home computers. Low technology schools were those schools that had incorporated the least amount of information technology into their curriculum.

Mathews et al. (1996) found that college degree held was the best predictor of teachers' perceptions of their ability to use technology in preparation of instructional materials, with higher levels of technology use being reported by teachers with the Bachelor's degree than was reported by those with advanced degrees. Fletcher and Deeds (1994), and Kotrlik and Smith (1989) reported that younger teachers were more likely to have higher levels of computer literacy

and that computer anxiety decreased as computer literacy increased. No studies were found that documented a significant relationship between participation in professional conferences and conventions, and the value placed on information technology by teachers. In summary, no recent study had been conducted regarding how FACS teachers value information technology. This study was designed to answer this question for Louisiana's FACS teachers. The results will be useful in planning pre-service and in-service training programs for FACS teachers.

Purpose and Objectives

The purpose of this study was to determine the value of information technology in Family and Consumer Science Education programs as perceived by Family and Consumer Science (FACS) teachers. The objectives were to determine: (a) teachers' demographic characteristics (degrees held, age, gender, ethnicity, years teaching experience, area where school is located [rural, urban or suburban], school level [high school, junior/middle school, or both], participation in professional associations); (b) the value of information technology as perceived by teachers; (c) teachers' perceptions of the potential usefulness of information technology in program and instructional management; and (d) if relationships exist between selected variables and the value placed on information technology by teachers.

Procedures

The population for this study included all 589 secondary (grades 7-12) FACS teachers in Louisiana during the 1997-1998 school year. This study was part of a larger study of secondary vocational teachers in which a stratified random sample was taken of each distinct vocational teacher population. The minimum returned sample size for the FACS teacher population was determined to be 133 using Cochran's sample size formula (Cochran, 1977). The sample size used for the FACS teacher group was 264 teachers because a 50 percent response rate was anticipated. After two mailings and a phone follow-up, responses were received from 141 teachers (53.4% response rate). Of these responses, five were not usable.

The instrument was developed based on the study's objectives. The scales and items used in the instrument were selected after a review of the literature. The face and content validity was evaluated by an expert panel of university vocational education faculty and doctoral level graduate assistants. As a part of the larger study, the instrument was field tested with 40 vocational teachers. Eight of these teachers were FACS teachers who had not been selected in the sample for the study. Minor changes suggested by the validation panel and from the field test results were made. These changes occurred in the wording of items and in the instructions for completing the instrument. Cronbach's (1977) internal consistency coefficient for the "Value of Information Technology in Instruction" scale was .89 and the coefficient for the "Usefulness of Information Technology in Program and Instructional Management" scale was .91.

To determine if the sample was representative of the population and to control for non-response error, the scale means for the two primary scales were considered to be the primary variables in the study and the scale means were compared by response mode (mail versus phone) as recommended by Borg (1987) and Miller and Smith (1983). There were no statistically significant differences between the means for the two scales in the instrument by response mode. It was concluded that no differences existed by response mode and the data were representative of the population. The mail and phone responses were combined for further analyses. Data analyses consisted of descriptive statistics for objectives 1 - 3 and appropriate

correlation coefficients for objective 4 (based on variable type). The alpha level for the study was set a priori at .05.

Findings

Objective one was to determine the demographic characteristics of secondary FACS teachers. When teachers were asked about their level of education, almost half (45.6%) reported they possessed a bachelor's degree, 27.9% had a master's degree, 25.7% had a master's + 30 hours or the education specialist certificate, and 0.7% had doctoral degrees. All (100%) were female. Most of the teachers were white (74.3%), while 22.1% were black. Their average age was 45.0 years (range= 23-60, mode=50) and the average years teaching was 18.1. Most (46.3%) taught in rural areas, 23.5% in urban areas, and 25.7% in suburban areas. Most (65.4%) taught at the high school level, 21.3% taught at the junior/middle school level, 10.3% taught at both the high school and junior/middle school level, and 2.2% taught at other levels. Less than half (44.8%) had attended the state vocational in-service conference convention at least once in the past three years while only 15.4% had attended a regional or national vocational association convention in the past three years. Over half (57.4%) of the teachers' schools were connected to the Internet.

Objective two was to determine the value of information technology as perceived by Louisiana's FACS teachers. The respondents rated each statement on the following scale: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree. The data revealed that FACS teachers placed a high value on information technology by strongly agreeing (M = 4.5) that teachers should know how to use computers and that teachers should have computers available for instruction. The respondents agreed (M =3.5-4.49) that all of the technology listed should be available and also agreed (M =3.5-4.49) with all of the positive worded statements regarding the value of information technology in the instructional program. They were undecided (M =2.5-3.49) as to whether information technology is too expensive to be cost effective, and disagreed (M =1.5-2.49) with all of the other negatively stated value statements. These data are presented in Table 1.

Table 1
Value of Information Technology as Perceived by Louisiana Family and Consumer Sciences Teachers

Value of Information Technology	M	SD
Teachers should know how to use computers.	4.59	.80
Teachers should know how to use the Internet.	4.33	.93
Programs should have the following technology available for use in instruction computers for teachers	4.64	.80
computers for students	4.48	.85
multimedia computers for teachers	4.35	.90
Internet connections for teachers	4.34	.92
multimedia computers for students	4.14	.90
Internet connections for students	3.96	1.03
video conferencing capability for teachers	3.88	1.01
laser disc players for teachers	3.78	1.09
satellite downlink capability for teachers	3.73	.97

compressed video capability for teachers	3.58	1.00
laser disc players for students	3.56	1.05
Information Technology helps individuals apply knowledge.	4.49	.74
adds interest in instruction	4.40	.74
is essential to prepare students for the workplace	4.38	.92
can improve the quality of programs	4.38	.78
is a useful instructional tool	4.37	.80
can improve teacher effectiveness	4.31	.77
is necessary for the success of students in the workplace	4.28	.91
enhances student learning	4.19	.85
allows teachers flexibility in planning their instruction	4.13	.78
encourages teacher innovation	4.13	.77
is important in instruction	4.10	.85
promotes self-directed learning	4.02	.80
is too expensive to be cost effective	2.61	.97
will limit student-teacher interaction	2.32	.98
makes learning too mechanical	2.30	.89
will isolate teachers from one another	2.22	1.02
creates problems for the teacher	2.22	.91
has an adverse effect on teachers	2.14	1.05
causes more problems than it solves	2.13	.90
has little value in vocational education	1.72	.93

Note. N for the study was 136; all items had at least two missing responses although all 136 respondents completed most of the questionnaire; therefore, the N for each item ranged from 132 to 134. The respondents rated each statement on the following scale: 1=strongly disagree, 2=disagree, 3=undecided, 4=agree, and 5=strongly agree. The negatively stated items were interspersed throughout the scale.

Objective three was to determine Louisiana FACS teachers' perceptions of the potential usefulness of information technology in program and instructional management. The respondents rated each statement on the following scale: 1 = not useful, 2 = low usefulness, 3 = undecided, 4 = moderately useful, and 5 = highly useful. The data revealed that FACS teachers perceived that information technology was moderately useful (M =3.5-4.49) in each of the ten program and instructional management areas listed in the scale (Table 2).

Table 2
Usefulness of Information Technology in Program and Instructional Management as Reported by Louisiana Family and Consumer Sciences Teachers

Usefulness of Information Technology	M	SD	n
Instructional Management (Grade Reports, Student Records)	4.38	.81	132
Instructional Planning (Lesson/Unit/Curriculum Planning)	4.27	.78	132
Instructional Evaluation (Testing, Assessment)	4.24	.84	131
Program Planning, Development and Evaluation (Examples: youth organization activities, program reports, budget, equipment/maintenance, long-range planning, funding requests, fund raising, instructional material, equipment	4.24	.83	124

purchases, etc.)			
Student Guidance and Career Development	4.14	.79	131
Professional Role and Professional Development	4.11	.87	132
Student Vocational Organizations	4.05	.86	130
Instructional Execution (Presentation of Instruction)	4.03	.85	130
Coordination of Cooperative Programs	4.01	.87	132
School Community Relations (Public Relations)	3.97	.86	132

Note. The respondents rated each statement on the following scale: 1=not useful, 2=low usefulness, 3=undecided, 4=moderately useful, and 5=highly useful.

Objective four sought to determine if relationships existed between selected variables and the value placed on information technology by Louisiana's FACS teachers. The data in Table 3 show that one variable (availability of computer technology at home and school) had a low positive relationship and one variable (whether the school was connected to the Internet) had a low negative relationship with the value of information technology.

Table 3
Relationships between Perceived Value of Information Technology and Selected Variables

Variable	Corr.	Interpretation[a]
Availability of computer technology at school and home[b]	.14	Low
Teaches at both junior/middle and senior high school level (0=no, 1=yes)[c]	.02	Negligible
Whether school is connected to the Internet (0=no, 1=yes)[c]	-.10	Low
Numbers of regional or national AVA Conventions attended during past three years[b]	.07	Negligible
Teaches at the junior/middle school level only (0=no, 1=yes)[c]	.03	Negligible
Degree held (1=bachelor's, 2=master's, 3=above master's)[e]	-.08	Negligible
Number of state vocational conferences attended during past three years[de]	.04	Negligible
Age[b]	-.08	Negligible
Years teaching experience[b]	.01	Negligible
Teaches at high school level only (0=no, 1=yes)[c]	-.06	Negligible

Note: The scale used for the value of information technology is shown in Table 1. n=131.[a]Correlation coefficients interpreted according to Davis (1971): .01-.09=negligible association, .10-.29=low association, .30-.49=moderate association, .50-.69=substantial association, .70 or higher=very strong association. [b]Pearson Product Moment Correlation Coefficient. [c]Point Biserial Correlation Coefficient. [d]Respondents received one point for each source of training and an additional point if training was received within the last three years. [e]Spearman Correlation Coefficient *p<.05

Conclusions, Recommendations and Implications

Conclusions

Louisiana's FACS teachers value information technology. Information technology in program and instructional management is of moderate usefulness to FACS teachers. A low positive relationship exists between how teachers' value information technology and the availability of computer technology at home and school. At least half of the FACS teachers have

Internet connections. Though FACS teachers value the Internet and other types of information technology, the interrelatedness may yet to be realized. This may be evidenced by the low negative relationship between the teacher's perceived value of information technology and whether the teacher's school is connected to the Internet.

Recommendations

Since low or negligible correlations existed between teachers' perceived value of information technology and the demographic variables selected for this study (age, degree held, years experience, school level assignment, professional conference participation), it appears that universities and other teacher preparation entities do not need to incorporate these demographic variables into decisions regarding the planning of information technology training. Further investigation of teachers' perceived value of information technology is recommended. Even though the relationship was low, further research that addresses the low negative correlation between teachers' perceived value of information technology and whether they are connected to the Internet is warranted. Although teachers value information technology, this study did not address their information technology skills levels. Further research is needed to determine these levels and how these levels impact the quality of FACS programs.

Implications

This study documents the fact that FACS teachers value information technology. FACS programs must prepare students for the workplace and society, both now and in the future. Teachers must continue to value information technology and seek ways to connect program and instructional management with appropriate information technology, especially the Internet. This is essential if they are to be successful in its use and transfer to their students. Certainly, this information technology foundation is a necessity for all teachers and students.

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