

INTERACTIVE TECHNOLOGY-BASED TELEVISION DELIVERY

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Family and Consumer Sciences adult educators are using a variety of modes to deliver their programs to adult learners. In Iowa, a distance education system has been established to facilitate adult education throughout the state. The Iowa Communications Network (ICN), using two-way, full-motion interactive fiber-optic telecommunications, provides this system. Therefore, it is critical for adult educators in Family and Consumer Sciences to recognize the need to use the ICN as an instructional tool. This study assesses the attitudes of adult educators and gathers indications of their knowledge and interest in distance education and the ICN, resulting in implications for inservice programming.

The education of adults is a diverse and complex process affecting many people from all walks of life (Verduin, Miller, & Greer, 1977). Diversity is present not only in the types of programs and courses, but also in the types of individuals who provide instruction for adult learners. Educators represent various educational backgrounds, training and experiences. Therefore, when adults teach adults, a re-examination of the educators' beliefs and values is needed--beliefs and values that are related to chosen mental models of past educational experiences. Although learners often perceive traditional instructional delivery methods as the preferred way to influence learning, these methods are rapidly being augmented as new technologies develop (Simonson, Smaldino, Ablright, & Zvacek, 2000).

In the development and implementation of educational programs, adult educators have a wide latitude from which to choose when selecting appropriate instructional delivery methods. Many methods are available and accessible. However, educators must first understand themselves and their own self-development prior to the selection of an instructional delivery method.

A review of literature shows that prior research studies conducted on how adult audiences should be taught and how they learn best have focused on a generalized population rather than within specific subject areas. Seitz (1988) recognizes that the greatest growth in adult learning has occurred in subject areas related to social life, recreation, and personal and family life. Olson (1996) suggests that adult education in the area of family life skills is critical because of social and economic changes in the country. Thus, the profession of Family and Consumer Sciences (FCS) has much to contribute to adult education in recognizing instructional delivery methods that encompass learning, work, and leisure. However, little is recognized in relation to how technology can be used to reach adult audiences interested in the above mentioned subject areas.

Distance education is one such approach involving technology. Iowa's approach to distance education is based on the belief that live, two-way interaction is fundamental to effective learning (Simonson, 1995). This interaction is made possible within the state by the

Iowa Communications Network (ICN). This fiber optic system provides live, two-way interaction that allows both the educator and the audience to interact simultaneously from multiple sites, regardless of the distance.

Perceptions of distance education continue to reinforce a different model where little interaction occurs between educators and learners. Some feel that the traditional values of education and increased use of technology are incompatible with one another (Simonson & Schlosser, 1995). Moreover, cited literature indicates that the ICN was available for use throughout the state before it was adequately supported.

Innovations are adopted at different rates. The completion of its diffusion process depends on the possession of what Rogers (1995) refers to as elements. These elements include the innovation, communication, time, and social systems. Keeping these elements in mind and recognizing the need for continuous growth of adult learners, adult educators in FCS continue to encounter technological innovations such as the ICN. However, the rate at which the ICN is diffused depends in part on the educators' willingness to incorporate its use as a means of instructional delivery.

At the present time, the use of fiber optic telecommunications has not been widely incorporated by adult educators in Iowa distance study programs for FCS subject areas, but the opportunity exists. For FCS programs, telecommunications has the potential to be a vital tool when planning course materials for distance study.

Research can be helpful to further opportunities for adult FCS educators who are both professionals and paraprofessionals in this newly defined form of distance education. This study explored issues related to ICN use by addressing the following major research questions:

- Are scales for knowledge, interest, and attitudes regarding distance education and the ICN inter-related?
- Do demographic characteristics influence scores on knowledge, interest, and attitude?
- Do knowledge, interest, and attitudes of professional FCS adult educators differ significantly from those of paraprofessional FCS adult educators?

Methodology

To accomplish the proposed objectives, the instrument was designed by the researchers using the organizational style and format from an instrument developed by Torrie (1993). The instrument was based on a Likert-type scale consisting of a knowledge and interest section, an attitude section, and a demographics section.

Items in section one were based on a scale from 1 to 5, with 1 representing "not having any knowledge" and 5 representing "knowing enough" about the given concept. Additionally, respondents were also asked to rate their level of interest in the same concepts. Items were again based on a scale from 1 to 5, with 1 representing "having no interest" and 5 representing "very interested." Items contained concepts about distance education, distance education in Iowa, the Iowa Communications Network and the ICN classroom.

Section two was also based on a 5-point Likert-type scale. Respondents were asked to rate their attitude about nontraditional vs. traditional education, face-to-face instruction vs. separation of the educator and learner, and possible implementation of distance education practices using the ICN as an instructional tool.

Section three recognized demographic characteristics such as the respondent’s current position, age, gender, ethnicity, and educational background. Respondents were also asked about their experience with the Iowa Communications Network.

A sample of Iowa adult educators in Family and Consumer Sciences related occupations was used to obtain responses. The sample was purposively selected from the Iowa Cooperative Extension Service. Respondents represented four positions within the organization. However, for this study, the respondents were categorized either as professionals (county extension educator, extension field specialist for families, or extension field specialist for youth; n=84) or paraprofessionals (EFNEP program assistant; n=19). Out of 164 questionnaires mailed, 103 were returned and usable for a response rate of 62%.

The respondents were asked to record their responses directly onto the questionnaire. The responses were transferred from the questionnaires and stored in a computer data file. Analysis was done using SPSS version 4.0. Frequency counts, means, and standard deviations were calculated for each item. Cronbach’s alpha was used to test the reliability of the scales. One-way ANOVA and t-tests were used to determine statistical differences among selected variables.

Results and Discussion

Demographic Characteristics

A sample of adult educators in Family and Consumer Sciences work related occupations was selected to obtain responses. Eighty-two percent of the respondents were professionals and 18% were paraprofessionals.

Years of experience in the current employment position ranged for respondents from first year to 16 years and over. The distribution revealed that 4 percent were first year, 19 percent were 1-3 years, 15 percent were 4-6 years, 14 percent were 7-9 years, 7 percent were 10-12 years, 10 percent were 13-15 years, and 31 percent were 16 or more years.

Ninety-four percent (98 respondents) were white female and 6% were white male. Less than 1% represented blacks, Hispanics, and Asians or Pacific Islanders. Respondent’s ages were reported in five groups from under 30, to 60 and over. The highest percentage, 53% represented respondents 41-50 years of age. Reported educational background indicated that all respondents held at least a high school diploma. In addition, 66% held a graduate degree and 22% a bachelor’s degree as their highest degree.

FCS specialty areas were indicated for those respondents holding at least a bachelor’s degree. The highest percentage in a FCS specialty area was found in food and nutrition at 25%. Both of the specialty areas of child and family life development, and education represented 22% each. Over half of the respondents were 41-50 years of age and had earned a master’s degree.

Table 1.
Respondents’ Demographic Characteristics

Characteristics	N	Percent
Position		
Professional	84	82
Paraprofessional	19	18
Years of Experience		
1st year	4	4
1-3 years	20	19
4-6 years	16	15

7-9 years	14	14
10-12 years	7	7
13-15 years	10	10
16 and over	32	31
Gender		
Female	97	94
Male	6	6
Age		
Under 30	2	2
31-40 years	22	21
41-50 years	54	52
51-60 years	23	22
60 and over	2	2
Ethnicity		
White, not Hispanic	98	95
Black, not Hispanic	1	1
Hispanic	1	1
Asian or Pacific Islander	1	1
Educational Background		
HS Diploma	8	8
Associate Degree	3	3
Bachelor's Degree	23	22
Master's Degree	66	64
Doctorate Degree	2	2
FCS Specialty		
Education	23	28
Food and Nutrition	26	32
Child Development	5	6
Family Life & Human Development	17	21
Family Resource Management	11	13

Knowledge, Interest, and Attitude

Respondents were asked to rate their level of knowledge and interest for concepts related to distance education, distance education in Iowa, the ICN, and the ICN classroom. Scales were computed to determine the degree of knowledge, interest, and attitudes for the total group. Cronbach's alpha reliability coefficients were calculated for each scale. The alpha reliability coefficients were .97 for the knowledge scale, .97 for the interest scale, and .76 for the attitudes scale. Then, a second analysis compared scores for the paraprofessionals with the professionals.

Statistics showed that as a whole, the group had "little" to "some" knowledge (mean=2.5) regarding concepts related to distance education and the ICN. In comparing the two groups, the professionals knew "little" to "something" (mean=2.6), although the paraprofessional's knowledge ranged from "not knowing anything" to "knowing little" (mean=1.7). As a whole, respondent's interest level ranged from having "some" interest to being "quite" interested (mean=3.1) in knowing about concepts related to distance education and the ICN. The professionals were more interested (mean=3.2) than the paraprofessionals (mean=2.9).

For the attitudinal section, respondents indicated their level of agreement with 20 opinion statements regarding distance education and the ICN. The responses ranged from “disagree” (mean=1.71) to “strongly agree” (mean=4.6). When comparing the two groups, both the professionals and the paraprofessionals indicated that they “agree” (mean=3.8) with the statements.

To examine the interrelationship of the scales for knowledge, interest, and attitudes, Pearson product-moment correlations were computed. The knowledge about distance education scale and the interest in knowing about distance education scale used the same 35 items. Nevertheless, the correlation coefficient indicated only a small positive relationship between the two scales ($r=.278$). No relationship ($r=-.025$) was found between knowledge and attitude. A moderate positive relationship ($r=.390$) was found between interest and attitude.

Demographic Characteristics by Knowledge, Interest, and Attitude

T-tests (at the .05 level) were used to identify whether there was a significant difference in knowledge, interest, and attitudes of professional and paraprofessionals with varied educational backgrounds. A t-test was also used to identify differences between groups who had either experienced the ICN as a learner or had experienced the ICN in both roles, as an educator and a learner.

Among the respondents who had earned a bachelor’s degree or less and those who had earned a master’s degree or more, results showed a significant difference ($p<.05$) between the two groups in terms of knowledge. However, no significant differences existed in terms of interest ($p>.05$) and in terms of attitudes ($p>.05$).

Table 2.

T-test Results of Knowledge, Interest, and Attitudes by Educational Background.

Characteristics	N	M	SD	t-value	Probability
Knowledge					
Bachelor’s and under	34	2.08	.59	-4.42	.00
Master’s and over	69	2.65	.63		
Interest					
Bachelor’s and under	34	3.00	.89	-1.74	.08
Master’s and over	69	3.30	.62		
Attitude					
Bachelor’s and under	34	3.80	.43	.84	.40
Master’s and over	69	3.70	.36		

Among the respondents who had experienced the ICN as a learner and those who had experienced the ICN as both an educator and a learner, results showed a significant difference ($p<.05$) between groups in terms of knowledge. There was no difference between the groups in terms of interest ($p>.05$) and attitudes ($p>.05$).

Table 3.

T-test Results of Knowledge, Interest, and Attitudes by ICN Experience.

Characteristics	N	M	SD	t-value	Probability
Knowledge					
As a learner	41	2.32	.52	-4.17	.00

Educator and learner	50	2.81	.58		
Interest					
As a learner	41	3.32	.68	.56	.57
Educator and learner	50	3.23	.70		
Attitude					
As a learner	41	3.84	.38	1.01	.31
Educator and learner	50	3.80	.41		

One-way ANOVA and Scheffe post hoc tests (at the .05 level) were used to identify whether there were significant differences between age groups of under 40, 41-50 years, and 51 years and over. The same procedure was used to identify whether there were significant differences between professionals in specialized areas of Family and Consumer Sciences.

Results showed no significant difference ($F=.73$, $p=.49$) between those under 40, 41-50, and 51 years and over in terms of knowledge. In terms of interest, results showed no significant difference ($F=1.03$, $p=.36$) between the three groups. No significant difference ($F=.21$, $p=.81$) existed between the three groups in terms of attitude.

Table 4.

ANOVA Results of Knowledge, Interest, and Attitudes by Age.

Characteristics	N	M	SD	F-Ratio	Probability
Knowledge					
Under 40 (A)	24	2.50	.51	.73	.49
41-50 years (B)	54	2.52	.69		
51 & over (C)	25	2.32	.75		
Interest					
Under 40	24	3.20	.68	1.03	.36
41-50 years	54	3.20	.66		
51 & over	25	2.90	.91		
Attitude					
Under 40	24	3.79	.43	.21	.81
41-50 years	54	3.78	.34		
51 & over	25	3.73	.48		

In terms of knowledge, results showed a significant difference ($F=7.58$, $p=.001$) between those respondents specializing in Family & Consumer Sciences Education, Food & Nutrition, and Child Development & Family Resources. Scheffe analysis showed no difference between Family & Consumer Sciences Education and Child Development & Family Resources, however, results showed a difference between Family & Consumer Sciences Education and Food & Nutrition, and a difference between Food & Nutrition and Child Development & Family Resources. Results showed no significant difference ($F=.93$, $p=.40$) between the three groups in terms of interest and no difference between the groups in terms of attitude.

Table 5.

ANOVA Results of Knowledge, Interest, and Attitudes by FCS Specialty.

Characteristics	N	M	SD	F-Ratio	Prob.	Scheffe
Knowledge						
FCS Education (E)	23	2.8	.54	7.58	.00	E>F
Food & Nutrition (F)	26	2.1	.76			C>F
Child Development & Human Resources (C)	33	2.6	.56			
Interest						
FCS Education	23	3.4	.64	.93	.40	Not performed
Food & Nutrition	26	3.1	.94			
Child Development & Human Resources	33	3.3	.57			
Attitude						
FCS Education	23	3.8	.39	.19	.83	Not performed
Food & Nutrition	26	3.8	.45			
Child Development & Human Resources	33	3.8	.32			

Summary and Conclusions

Adult education has relied upon distance education methods for delivering family and consumer sciences content for many years. The ICN two-way full-motion interactive fiber-optic telecommunications tool is a recent innovation in distance education delivery. This study examined Iowa FCS adult educators' knowledge, interest and attitudes related to distance education and the ICN. A questionnaire was developed for the specific needs of this study. Reliability analysis indicated that the scales were internally consistent with alpha coefficients above .75. Correlation coefficients indicated that the scales were operating independently. Therefore, the answer to the first research question, "Are scales for knowledge, interest, and attitudes regarding distance education and the ICN inter-related?" is no.

Demographic characteristics of respondents included age, educational background, experience using ICN, and FCS specialty. Answers to the second research question, "Do demographic characteristics influence scores on knowledge, interest, and attitude?" indicated that adult educators holding a graduate degree had significantly higher knowledge scores than adult educators with only a high school or bachelor's degree. In addition, those who had experienced the ICN only as a learner had significantly lower knowledge scores than those who had used the ICN in both roles of educator and learner. Finally, for professional adult educators who indicated a FCS specialty area, those indicating food and nutrition scored significantly lower in knowledge of distance education than either FCS education or child development and human resources.

For the last research question, "Do knowledge, interest, and attitudes of professional FCS adult educators differ significantly from those of paraprofessional FCS adult educators?", no significant differences were found. Examination of mean scale scores showed that professional educators had slightly higher scores on knowledge and interest, and similar scores on attitude.

Implications can be drawn when planning inservice workshops for FCS adult educators. First, inservice providers should allow attendees with limited ICN experience to have additional ICN experiences to increase their knowledge and interest. In addition, attendees with prior

knowledge and experience with the ICN need opportunities to enhance their proficiency using the system.

Distance education seems like a *bandwagon* with new *riders* getting on everyday. It is critical for adult educators in Family and Consumer Sciences to recognize the need to use emerging distance education technologies as an instructional tool.

Although several adult educators in Family and Consumer Sciences have already begun to use the ICN as an instructional tool, results of this study will help other educators in addressing concerns related to whether to accept or deny its use. In order to use the ICN as an effective instructional tool, agencies and organizations that provide learning opportunities for adults, need to continue to explore the ways to deliver instruction through this technology.

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