Journal of Applied Communications

Volume 81 | Issue 3 Article 2

Concerns Affecting Computer Usage by County Extension Educators in Florida

Kathleen C. Ruppert

Arlene Z. Stewart

Recommended Citation

Ruppert, Kathleen C. and Stewart, Arlene Z. (1997) "Concerns Affecting Computer Usage by County Extension Educators in Florida," *Journal of Applied Communications*: Vol. 81: Iss. 3. https://doi.org/10.4148/1051-0834.1430

Concerns Affecting Computer Usage by County Extension Educators in Florida

Abstract

The Florida Cooperative Extension Service continues to develop and provide information to extension educators and their clientele via computer.

Concerns Affecting Computer Usage by County Extension Educators in Florida

Kathleen C. Ruppert
Arlene Z. Stewart

Abstract

The Florida Cooperative Extension Service continues to develop and provide information to extension educators and their clientele via computer. Recent data that indicate variability in computer-use mean scores of Florida Cooperative Extension Service (FCES) Educators, using the Computing Concerns Questionnaire by Martin (1989), can be largely explained by informational, personal and consequence (self and others) concerns. All of these concerns focus either on how these extension educators interact with the computer or how their computer work affects their clientele. Appropriate in-service computer training begins with an awareness of the abilities and concerns of extension educators about computers.

Introduction

Today, the enormous growth and rapid evolution of computer capabilities are creating tremendous challenges. As communicators we constantly try to keep up with technology, while simultaneously assisting in finding the most accurate and efficacious way to develop and access information for our clientele. We seldom get the opportunity to focus on one of the primary conveyors of this information: the extension

---

Kathleen C. Ruppert, an ACE member, is an assistant professor, Department of Environmental Horticulture, University of Florida. Arlene Z. Stewart is an educational materials designer with the Florida Energy Extension Service, University of Florida. This research was supported in part by the Dean for Extension's Office, University of Florida Cooperative Extension Service. Florida Agricultural Experiment Station Journal Series No. R-05774.

educator (i.e., county agent). Are they really ready to use the computer so that , in turn, they can promote its use and application to their clientele groups? What individual concerns may be inhibiting or encouraging computer use?

Across the country, businesses and educational institutions have tapped into the potential that computers afford them. With estimates of anywhere between 8 and 37 million Internet users alone (Sistrunk, 1996; Treese, 1996), it is logical to see why being computer literate is important. Each year more extension educators have access to computers but many lack the time to learn and use all of the applications available to them (Auburn, 1996).

In the past 10 years, the traditional resource base at Land Grant institutions has been down-sized, reorganized and readjusted in response to financial shortfall and changing academic priorities (Lafontaine, 1995). Field staff face new issues, audiences and program demands; therefore, it is more important than ever for extension educators to use the tools available to their best ability. To do this, extension organizations need to offer training that meets the needs and concerns of extension educators quickly and factually.

Change and learning have never been easy. The benefit gained from the change must exceed the energy expended; otherwise, people will likely choose to maintain the status quo. For example, many educators perceive the Internet to be too amorphous, consisting primarily of frivolous, trivial, extraneous and difficult-to-access information (Rhodus and Hoskins, 1996). For them, why bother to learn it if it will make more work? However, in the 1990s, the need for relevant, reliable and timely information is at a premium (Strategic Planning Council, 1991). Computers are an effective method for transferring information quickly and are becoming a necessary tool for extension educators today.

However necessary computer use is, the single most important factor in any change process is the people who will be most affected by the change (Hord, Rutherford, Huling-Austin and Hall, 1987). The Concerns Based Adoption Model (CBAM) was developed to establish a frame of reference for the understanding, studying and managing of the change process in organizations (Hall and George, 1979). In this model, change is viewed as a personal process emphasizing the impact on the individual rather than the object of the change. Change efforts

https://newprairiepress.org/jac/vol81/iss3/2
DOI: 10.4148/1051-0834.1430

are most likely to be effective when individuals see themselves as more important than the change itself (Wedman, 1988). "Innovation" is defined as any process or product that is new to a potential user, while "concerns" are composite descriptions of various motivations, perceptions, attitudes, feelings and mental gyrations experienced by a person in relation to an innovation (Hall, 1979). The following assumptions are fundamental to the CBAM (Hall and Loucks, 1978):

1. Change is a process (not an event) that requires time to implement and is achieved only in stages;
2. Individuals must be the primary target of change since organizations are comprised of individuals. Organizations cannot change before their members do;
3. The change process is an extremely personal experience, which often is of more importance than the technological dimension;
4. Individuals undergo different stages regarding their personal capability and perceptions about an innovation;
5. A client-centered diagnostic/prescriptive model can aid staff development;
6. Staff attempting to institute change must work in a systematic way, with assessment and reassessment occurring constantly.

Hall and Loucks (1978) identified seven distinct Stages of Concern About an Innovation that an individual is likely to encounter as he or she moves through the change process: 0 Awareness; 1 Informational; 2 Personal; 3 Management; 4 Consequence; 5 Collaboration; and 6 Refocusing. During each stage, the concerns profile may also change. As an innovation is implemented, specific concerns could be addressed.

When encountering an innovation, an individual's initial behavior is primarily influenced by concerns about him or herself (George, 1977). Initially, concerns in Stages 0, 1 and 2 are most intense; however, at each succeeding stage, the preceding concerns tend to decrease (Hall and Loucks, 1978). For example, following implementation of an innovation, management (Stage 3) concerns increase in intensity as Stages 0, 1 and 2 become less intense. Lastly, impact concerns (i.e., Stages 4, 5 and 6) become more intense and management concerns diminish. Concerns shift to focus on the details of the task as these concerns are resolved. Finally,

the individual's concerns shift to the impact of his or her efforts — the individual then strives to optimize his or her effectiveness. Study results indicate that people experience concerns at each stage, but the concerns are relatively intense at just one or two of the stages (Hall and George, 1979). According to James and Hall (1981), implementation of an innovation should be correlated to the individuals' concerns and should change as concerns shift.

Method

One part of CBAM that focuses on the concerns of the individual is called the Stages of Concern (SoC) About an Innovation questionnaire (Hall, 1979). While the SoC questionnaire has been used in other studies such as the implementation of a new instructional model in an elementary school (McEachern, 1990), Martin (1989) developed an instrument based on the SoC questionnaire to specifically address computer concerns. This 32-item, 8-subscale, Computing Concerns Questionnaire (CCQ) was mailed to all 277 Florida Cooperative Extension Service Extension educators who were eligible for in-service training in 1991 (Ruppert, 1992). Following two mailings and a postcard reminder to nonrespondents, the response rate was 94%, representing 261 extension educators. The dependent variable, computer use level, was operationally defined and scored as nonuser (0), novice (1), intermediate (2) or old hand (3) for several computer areas. Mean scores were determined for each subscale of the CCQ based on a scale from 0, "not true of me now," to a maximum 7, "very true of me now."

Results

Overall mean score for computer use by extension educators was 1.01 or novice (Table 1). As Table 2 illustrates, the respondents indicated the consequence (self) stage was their peak stage of concern (mean of 5.22), followed by management (4.03) and informational (4.00). Using the SAS general linear model procedure and the F test, the linear-weighted combination of the eight CCQ subscale scores explained more than 49% of the variation in the computer use mean score (Ruppert, 1992). Informational, personal and consequence (self and others) concerns were significant at $p<.05$, with the dependent variable computer use mean score.

https://newprairiepress.org/jac/vol81/iss3/2
DOI: 10.4148/1051-0834.1430

Table 1

Comparison of Computer Area by Self-reported Use Level (Ruppert, 1992)

Computer Area	Nonuser[1,2] O score	Novice[3] 1 score	Intermediate[4] 2 score	Old Hand[5] 3 score
DEC-VAX[6] n=256	67 26.2%	82 32.0%	81 31.6%	26 10.2%
Word Processing n=257	54 21.0%	50 19.5%	75 29.2%	78 30.4%
Database n=252	116 46.0%	63 25.0%	49 19.4%	24 9.5%
Spreadsheets n=255	159 62.4%	49 19.2%	30 11.8%	17 6.7%
CD-ROM n=256	111 43.4%	75 29.3%	45 17.6%	25 9.8%
Graphics n=257	158 61.5%	60 23.3%	22 8.6%	17 6.6%
Overall Mean		1.01		

[1] Reported by number and percent.
[2] "Have never attempted" or "tried unsuccessfully so didn't try again."
[3] "Can accomplish what I need, but don't feel comfortable yet."
[4] "Can accomplish what I need to, but run into problems when I try to do more than I already know."
[5] "Can accomplish what I need and, if a problem occurs, I can figure things out for myself or know who to call to help solve the problem."
[6] Cluster of digital VAX mini-computers, which acts as central server system for the University of Florida's Institute of Food and Agricultural Sciences.

Discussion

The significant effect of informational and personal concerns (i.e., Stages 1 and 2), on computer use was as expected with a group of novice users. Consequence concerns (to themselves and others), which are generally considered higher levels of concerns, were also significant. These effects may be explained by the fact that extension educators are evaluated by other professionals and their clientele.

Table 2

Mean and Standard Deviation for Computing Concern[1] on Computer Concerns Questionnaire (Ruppert, 1992) (n=261)

Computing Concern Stages[2]	Mean[3]	Standard Deviation
Contextual Related to societal (not individual) use of computers. Includes influence on economic impact, health, and the de-emphasis of the individual and human values.	2.07	1.44
Informational* Denotes interest in learning general information or a specific computing aspect. How computers can be used and how they function is emphasized.	4.00	1.52
Personal* Focus on implications for the individual, uncertainty or anxiety about computing demands and personal ability to meet those demands. Emphasis is on self, personal status, and the opinions others have about oneself.	3.07	1.62
Management Focus on time constraints, limited or inadequate instructional materials, data integrity, availability of resources, and the steps required to complete a computing task.	4.03	1.42
Consequence (self)* Focus on the effect the individual's computer expertise has on self and personal or professional benefits available as a result of having computer know-how.	5.22	1.35
Consequence (others)* Focus on the effect the individual's expertise with computers or a particular aspect of computing has on others. Emphasis surrounds quality of the computer-related work produced by the individual and its impact on people evaluating or using the output.	2.98	1.65

(continued on next page)

https://newprairiepress.org/jac/vol81/iss3/2
DOI: 10.4148/1051-0834.1430

(Table 2 continued)

Computing Concern Stages[2]	Mean[3]	Standard Deviation
Collaboration Related to coordination and cooperation with others or a particular technology application in order to result in greater positive effects of use.	3.56	1.67
Refocusing Focus on the extension of usage benefits in a more universal way. Individual has definite ideas about alternatives to the proposed or existing computer use or a particular aspect of computing, which may include the possibility of major changes and alternatives in the use of the technology.	3.16	1.65

[1] 32 items randomly arranged resulting in four questions representing each stage of concern for a total of eight stages of concern.
[2] Adapted from Martin (1989)
[3] Based on a scale from 0 "not true of me now" to maximum 7 "very true of me now"
* Bolded stages were significant at $p<.05$, with the dependent variable computer use mean score, using the SAS general linear model procedure and the E test.

Based on our research and literature review, it is important to assess your audience before you develop a training program. You need to ascertain who is using the computer, to what extent, in what capacity (word processing, spreadsheets, CD-ROM, etc.) and to identify their concerns. Conduct informal surveys or use instruments such as the CCQ to group in-service learners by their computer concerns and abilities, maximizing resources and providing the least change-resistant environment. You may need to have several trainers on hand to serve these separate groups. Individual groups should be small enough so that each person can receive individual attention, if needed, to lessen informational and personal concerns.

Computer competencies are generally placed into three categories; literacy, hardware knowledge and software applications. Training should likewise be placed in the same categories to reduce informational concerns.

When introducing a new computer program or software package, explain the benefits and the importance of using the new program for both the individual and the organization. Remember that change has the ability to create needs as well as satisfy them (Schlechty and Cole, 1991). To lessen management concerns, the extension educators must feel these changes will provide rewards but they must also understand the initial learning of new programs takes time which normally would be used for other tasks.

To address informational, personal and management concerns, initial computer training of new extension educators should focus on hands-on practice using currently pending tasks to help them become familiar with the equipment, necessary software packages and sources of help. In addition, if the training classes must be offered during nonwork hours, some kind of compensation or reward for enrolling in necessary computer training classes might be offered.

Identify extension educators with experience, interest and knowledge of computers and recruit them to serve as mentors for other agents. These individuals could assist other educators on a one-on-one basis or serve as resources when no other assistance is available. Having a peer available as a resource, with the same subject matter responsibility and thus an understanding of the individual extension educator's needs, can help enhance collaboration and lessen management and consequence concerns. Self-guided training packages may be effective for those individuals with informational, personal and management concerns. Such tutorials allow them to work at their own pace or with a co-worker.

Technology's value wanes unless it can be transferred to a user who can apply the technology to create a tangible benefit (Risdon, 1994). Everyone within the organization needs to realize computer technology is evolving constantly. Consequently, changes in roles and work assignments may need to occur requiring agreement between all personnel and the adjustment of job descriptions. With reduced levels of resources available to the organization, it is important that a focused approach be developed to facilitate the use of computers by extension educators. Training is an essential part of facilitating computer use.

Technology exists in all aspects of both our home and office lives. Rather than focusing on the technology itself, we should

examine the effects of human interaction with the technology. These individual issues will impact the potential success of our training programs.

To date, the FCES has focused its efforts on the development, selection and support of appropriate hardware, software and its subsequent operation. However, the human side of computer use, including the willingness to use a new innovation, needs further development. With this understanding, in-service trainings can be better designed to meet the needs and challenges of the extension educator.

Etter (1989) indicated computers were quickly becoming so essential to organizations that soon computer use would no longer be an issue. Rather, Etter continued, a lack of computer training within an organization will signify the end of the organization. Training designed to accept the concerns of the individual as relevant and important can be even more effective for both the extension educator and the extension system as a whole. Use of the CBAM and CCQ can assist this effort of offering training that meets the needs of both the educator and the system.

References

Auburn, J.S. (1996). Sustainable agriculture on the Internet: Practical uses. *HortTechnology, 6* (4), 325-331.

Etter, R.T. (1989). Integrating microcomputers in the workplace: A case study of Missouri Cooperative Extension (Doctoral dissertation, University of Illinois at Urbana-Champaign, 1989). *Dissertation Abstracts International, 50,* 1896-A.

George, A.A. (1977). *Development and validation of a concerns questionnaire.* Austin. The University of Texas at Austin, Research and Development Center for Teacher Education. (ERIC Document Reproduction Service No. ED 147 314).

Hall, G.E. (1979). The concerns-based approach to facilitating change. *Educational Horizons, 57,* 202-208.

Hall, G.E. & George, A.A. (1979). *Stages of concern about the innovation: The concept, initial verification and some implications.* Austin. The University of Texas at Austin, Research and Development Center for Teacher Education. (ERIC Document Reproduction Service No. ED 187 716).

Hall, G.E. & Loucks, S.F. (1978). Teacher concerns as a basis for facilitating and personalizing staff development. *Teachers College Record, 80,* 36-53.

Hord, S.M., Rutherford, W.L., Huling-Austin, L. & Hall, G.E. (1987). *Taking charge of change.* Alexandria, VA: Association for Supervision and Curriculum Development.

James, R.K. & Hall, G.E. (1981). A study of the concerns of science teachers regarding an implementation of ISCS. *Journal of Research in Science Teaching, 18,* 479-487.

Lafontaine, K.R. (1995). Building external linkages for extension programs. *Journal of Extension, 33* (3) (Electronic journal archived at gopher://joe.org:70/00/joe/1995june/iw2).

Martin, J.B. (1989). Measuring the stages of concern in the development of computing expertise (Doctoral dissertation, University of Florida, 1989). *Dissertation Abstracts International, 51,* 826-A.

McEachern, R.F. (1990). A study of stages of concern of a new intervention (computer-assisted) in an elementary school (Doctoral dissertation, The Florida State University, 1990). *Dissertation Abstracts International, 51,* 2221-A.

Rhodus, T. & Hoskins, J. (1996). The Internet: Changing the way horticulturists communicate. *HortTechnology, 6* (4), 308-314.

Risdon, P. (1994). Transferring technology through the Internet channel. *Journal of Extension, 32* (1). (Electronic journal archived at gopher://joe.org:70/00/joe/1994june/a1).

Ruppert, K. C. (1992). Factors affecting the utilization of computers by county extension agents in Florida (Doctoral dissertation, University of Florida, 1992). *Dissertation Abstracts International, 54,* 2915-A.

Schlechty, P. & Cole, B. (1991). Creating a system that supports change. *Educational Horizons, 69* (2), 78-82.

Sistrunk, L. (1996). Technical horticulturists on the Internet. *HortTechnology, 6* (4), 300-307.

Strategic Planning Council (1991). *Patterns of change.* Washington, DC: National Cooperative Extension Service.

Treese, W. (1996). The Internet index. Number 12, 2 January 1996. WWW distribution address: http://www/openmarket.com/intindex/96-01.htm.

Wedman, J.F. (1988). Increasing the use of instructional media in the schools. *Educational Technology, 8* (10), 26-31.