Responses to a First Time Use of Internet Inservice Training by Agricultural Extension Agents

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ABSTRACT

The Internet is a powerful tool for distance education. When used for extension inservice training, it provides the benefits of lower training costs due to lack of travel requirements and the ability for agents and specialists over a large geographic region to exchange information and ideas. The Internet was used exclusively for a regional county extension agent inservice training titled “Current Issues in Cotton Fertility Management.” The first objective was to determine if Internet distance learning could effectively be used to teach a technical agricultural topic for extension agent training over a wide geographic region. The second objective was to determine the acceptance level for learning via the Internet by first-time users of asynchronous instruction. The inservice training material for the 3-wk session was posted on the World Wide Web. Eight university specialists from North Carolina, South Carolina, Georgia, and Alabama and over 50 extension agents from the same states engaged in Internet discussions focusing on the Web material and personal experiences. Responses to a posttraining questionnaire from agents who had never previously participated in an Internet training revealed that they were strongly receptive to this form of training. The questionnaire also clearly showed that the Internet can be an effective way to implement an inservice training within the U.S. Cooperative Extension Service.

One of the most recent methods of distance education to be explored is asynchronous, interactive instruction exclusively via the Internet. In 1990, only a few academics had heard of the Internet. By 1997, an estimated 57 million people were using it. If the estimate includes those who used the Internet only for email, the estimate increases to 71 million users (Matrix Information and Directory Services, 1997). This type of instruction is now possible in many areas because of the increasing availability of computers and Internet services in the home and workplace. Compared with other methods of distance learning such as video courses or live satellite instruction, Internet courses provide three distinct advantages: (i) Internet instruction allows for constant personal interaction between the students and instructors; (ii) Internet instruction allows much greater time flexibility than a televised, real-time instruction where students must meet at a designated facility for scheduled instruction; and (iii) it expands resource opportunities through access to the World Wide Web and the potential to communicate with specialists throughout the world (Mayadas, 1997).

Each state in the USA has a network of extension agents. Extension agents provide the latest research information to farmers and homeowners based on the data provided through their Land-Grant University. They provide timely information via newsletters, TV and radio interviews, and newspaper articles. For a more direct approach, they answer telephone inquiries, speak with farmers who stop by the extension office, make personal visits to farms for on-site trouble shooting, and organize demonstration field days on growers’ farms or at university experiment stations (ECOP and CSREES, 1995, p. 3–5).

University specialists provide research and extension support information for agents. Training sessions are usually offered by specialists for agents in a traditional classroom setting. Training may be offered in a 1- or 2-d session at various locations across a state, and it requires the agent to be away from the office for the duration of the training.

The Internet approach to instruction has tremendous potential for agricultural extension agent inservice training. Agents can log-on to the computer as their demanding and unpredictable schedules permit. Since agents are located throughout each state, Internet training eliminates the need for travel to a specific location in a state or region, thus saving time and money. Most county extension offices now have—or are in the process of acquiring—Internet access to the World Wide Web and email, which makes this a very attractive training tool for asynchronous distance learning.

A 3-wk internet inservice training course was offered to county extension agents in North Carolina, South Carolina, Georgia, and Alabama for a regional training titled “Current Issues in Cotton Fertility Management.” The training was originally planned for a 2-wk period, but during the instruction, many agents asked that the course be extended for an extra week due to conflicts with other professional commitments. One hundred-eight county extension agents from South Carolina, Georgia, North Carolina, and Alabama registered for the course; eight specialists from the same states participated in the Internet discussion. Since participation was optional and there was no fee required, some who registered for the training may not have ever actively participated. More than 50 agents participated in the discussions on the Listserv or responded to the posttraining questionnaire.

TRAINING OBJECTIVES

There were two main objectives for offering an on-line inservice training. The first objective was to determine if Internet distance learning could effectively be used to teach a technical agricultural topic for extension agent training over a wide geographic region. The second objective was to determine the acceptance level for learning via the Internet by first-time users of asynchronous instruction.
Instructions regarding how to access the Web site and to use the Listserv were sent to the agents by email. The Listserv is a means of electronic communication similar to an email distribution list. All specialists and county agents were subscribed to the Listserv by the senior training coordinator. An email message sent to the Listserv username went to all participants who were subscribed to this address. A reply to the Listserv likewise went back to all members of the list. It serves as a slow motion conversation or as an electronic bulletin board. Access to the Listserv software was provided by the university computer center.

The Web page was created by a graduate student programmer who incorporated text, photos, and graphics through the direction of the senior training coordinator. Labor costs for the programmer were the only appreciable expenses incurred for the course. When the Web page was near completion, the senior training coordinator subscribed registered agents to the Listserv by using their email usernames. No one had any difficulty using the Listserv, even though several participants had never previously used a Listserv (Table 1).

The URL (Web address) for the training can be found at: http://hubcap.clemson.edu/~blprrt/cotton.html

### TRAINING CONTENT

To make this training successful, it was important to choose a topic of high interest, to create an appealing and logically designed Web page, and to ensure that the users would encounter as few problems as possible utilizing the necessary Internet skills. Before offering the Internet training, several agents were randomly surveyed via email and asked to suggest topics of interest as well as the preferred time of year for the training. The title “Current Issues in Cotton Fertility Management” was selected. Late January was designated as the best time for most of the agents to take the training. The training was approved for Certified Crop Advisor (CCA) credits. The CCA program was established to give agricultural professionals a standardized certification of competency in various areas (ASA, 1997). Members must take CCA approved training each year to retain certification (http://www.agronomy.org/cca/).

### METHODOLOGY

The training was for 3 wk from 19 Jan. to 6 Feb. 1998. The Listserv was relatively quiet the first couple of days as agents reviewed the posted material. It became quite active as agents and specialists began raising questions, sending responses, and sharing experiences across state lines. Some interesting discussions also occurred between specialists who had different perspectives on various issues. The answers and comments were available to all participants to read since they were sent out on the Listserv. The Listserv questions and responses were saved to a file where they could later be reworked into an extension fact sheet and incorporated in future training sessions on this topic.

A questionnaire, which had the option of anonymous response, was included on the Web page. It could be filled out on-line, and the responses were sent back electronically to the senior training coordinator. Two appeals were made on the Listserv at 2-wk intervals for the agents to submit their responses to the questionnaire. Finally, all agents who had not sent in a questionnaire with their name identified were individually emailed asking for their input. There were 44 agent responses. Seven agents indicated on the questionnaire that they had previously taken some form of Internet instruction and their responses were excluded from the following summary tables.

The amount of the Web text read by agents during the training was as follows: 0% (1), 40% (3), 60% (1), 80% (10), and 100% (22). The number of responses for various Internet skills learned as a result of the training were: accessing new Web pages (17), bookmarking Web pages (8), searching topics on Net Search (7), and using the Listserv (21).

Table 1 shows the personal assessment of the agents’ Internet skills before taking the training. Table 2 shows their impressions of the usefulness of the training material and its organization. Overall, almost all agents agreed or strongly agreed that the training material was useful, which positively affirmed our first training objective described earlier. Approximately 45% of the respondents, however, were “not sure” about the likelihood of working in this program area.

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### Table 1. Previous Internet skills assessment (n = 37).†

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>B</th>
<th>I</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous knowledge of Web use.</td>
<td>1</td>
<td>12</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Previous knowledge of a Listserv</td>
<td>12</td>
<td>17</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Keyboard typing skills</td>
<td>0</td>
<td>7</td>
<td>29</td>
<td>1</td>
</tr>
</tbody>
</table>

† Response key: N = none, B = beginner, I = intermediate, E = expert.

### Table 2. Responses to the usefulness of the training material (n = 37).†

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>This training provided a good background about cotton fertility issues.</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>29</td>
<td>4</td>
</tr>
<tr>
<td>Major issues such as N management, K and B nutrients, use of poultry litter, and conservation tillage were addressed.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>10</td>
</tr>
<tr>
<td>The information was presented at an understandable level.</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>The specialists were helpful explaining the material via the Listserv.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>29</td>
<td>6</td>
</tr>
<tr>
<td>I am likely to work in this program area as a result of this training.</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>I found the training to be valuable for me.</td>
<td>0</td>
<td>2</td>
<td>26</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

† Response key: SD = strongly disagree, D = disagree, N = neither agree nor disagree, A = agree, SA = strongly agree.
When questioned about the effectiveness of Internet training for this topic (the second training objective), there was a strong majority who agreed or strongly agreed in favor of this method for instruction (Table 3). The only exception was the responses to the question, “The use of the Internet can provide a learning experience as effective as a face-to-face class.” Among 37 respondents, 6 were neutral, 9 disagreed, and 4 strongly disagreed. A questionnaire for future trainings could be refined to target this question in particular and try to profile the agents in more detail to discern the reason for such a varied response.

The questionnaire also provided space for open-ended written responses to four specific questions. When asked “What advantages do you see with Internet inservice training?” several agents replied: flexibility (17) and convenience (4). More specifically, some agents replied not having to travel (5), easy access to current information (3), and access to the Web page after the training is over (2). Seventeen agents reported that the regional approach to the training was a benefit for them since, through the Listserv, they could learn about agent experiences in other nearby states and have access to information from many knowledgeable specialists.

Responses to the question, “What disadvantages do you see with Internet inservice training?” included the greater likelihood of asking questions in a face-to-face situation than through the Listserv (8), the problem with office distractions taking them away from instruction time (6), the influence of how the Internet method of instruction affects the way questions and answers are handled (6), and lack of time (3).

To the question, “What would you like to see changed next time if another inservice training was to be offered on the Internet?” 9 agents responded “no changes,” 3 wanted the training at a different time of the year, and 2 wanted a longer training period. The responses to the question, “What was the most important thing you learned as a result of this training?” were quite consistent. Thirteen agents described specific information they learned about cotton fertility. Eleven agents noted the differences they discovered among state recommendations for cotton fertilization and were surprised at the differences in specialists’ opinions within the region.

A 40-question multiple-choice exam, required for CCA accreditation, was created by contributions from several specialists and posted on the Web. Agents submitted the completed exams directly to CCA headquarters for grading. Nineteen agents took the exam and all passed by giving at least 70% correct answers.

**DISCUSSION**

According to the agents’ experiences and questionnaire responses, the strongest advantages for an Internet training are flexibility in instruction time and lack of travel. Many also liked the regional aspect of the training that allows them to access a wide variety of specialists’ opinions. The prevalent overall disadvantages are the problems with constant office disruptions during Internet use and problems previously noted with lack of face-to-face exchange of information. No one mentioned computer access as a limitation.

In personal conversation with some agents, they noted that for a conventional classroom style inservice training, they would have to be away from the office for a day or two. Similarly, in the future, they would need to set aside some time each day when they could bar disturbances so they could participate in uninterrupted Internet training. This would, however, require individual office arrangements and motivation on the part of each agent.

Williams and Merideth (1996) offered a course where all communications between students and instructors were done via a Listserv and email. They documented four types of discussions between the students: (i) initial testing to see if the Listserv and email worked; (ii) informal chatting; (iii) technology-related questions, which dropped off as the students became proficient with this form of communication; and (iv) questions related directly to the course content. We observed only questions related to the course content for this inservice training. Since many agents were already comfortable with email, we observed no discussion pertaining to problems using the Listserv. Likewise, there was minimal informal chatting observed on the Listserv since the instruction was kept to a 3-wk time period. Perhaps there would have been more informal comments between the agents, which Williams and Merideth (1996) encouraged, if the training had lasted for a significantly longer time. One agent mentioned how he enjoyed reading the kidding that went on between two specialists over some differing opinions.

Some agents felt that it would be safer to ask a possible “dumb question” in a traditional classroom setting than to post it on the Listserv. This may be due to the perceived permanence of a question that can be read by everyone and stored. Romiszowski and de Haas (1989) pointed out that a benefit of computer conferencing is that students can think over their questions or look up other resources before asking a question, but they also noted that some people don’t trust their thoughts in print. If an agent is afraid of asking a “dumb question” on the Listserv, it can easily be addressed to one or two specialists of choice who could then respond via the Listserv by reiterating the question and excluding the
person of origin’s name. These types of questions can also be sent to the senior training coordinator who can then edit the email to delete the identity of the person of origin and forward the question back through the Listserv for a response. Some of the new Listserv software also have an anonymous option to conceal the sender’s identity. Other agents pointed out that a specialist’s response to a question on the Listserv may not be immediate or can be ignored altogether. This was also reported as a Listserv disadvantage by Romiszowski and de Haas (1989).

**SUMMARY**

The crucial question to be answered by this experiment with inservice training of extension agents is whether a high-tech approach that has no face-to-face interaction could be a feasible method of training with professionals who have traditionally depended on a more personal approach to communication. Responses to the posttraining questionnaire affirm that this type of training can work and, in fact, can engage enthusiastic participation by extension agents. Several agents explicitly mentioned how they were glad to be involved with this form of training and saw it as a viable method for future inservice training. For agents who had never experienced this method of training, they seemed to enjoy the novelty of this form of communication and being able to utilize their newly acquired Internet skills. For many, this was a course not only about cotton fertility but also about using the Internet as a learning tool.

It is important to emphasize that this approach to inservice training requires considerable planning in anticipation of possible problems. The two Internet tools used for this training—i.e., email/Listserv and finding information via the World Wide Web—have been pointed out by Cairncross (1997, p. 104–107) as the two functions the Internet does best. We avoided potential problems among novice Internet users by excluding certain skill requirements in the training. These included downloading software from the Web to read certain texts, e.g., Acrobat Reader, or using chat rooms, which can be a major problem if the remote server is down at the appointed chat time or if agents have poor typing skills. The Web page should be kept as user friendly as possible with easy to read text and helpful links. A few moments of frustration at a computer terminal can readily convince novice Internet users that this style of learning is not feasible, at least for them.

Future Internet inservice trainings will continue to follow the previously described structure since the agent responses shows that it is an effective method of instruction. New technology tools, such as Web video clips, will be incorporated if they can enhance the learning material. A few international specialists will be invited to participate with the Listserv discussions to give U.S. agents an international perspective. The Internet trainings will continue to be evaluated by the participants to give insights for further refinement and continued effectiveness.

**REFERENCES**


