A Planning Model for Teaching Agricultural Distance Education Courses and Programs

Gary B. Jackson

Abstract

The purpose of this study was to develop a conceptual planning model for teaching agricultural distance education courses and programs. The objectives included identifying instructional planning behaviors required for effectively teaching distance education courses/program. A Delphi technique was used to collect data from a panel of 20 agricultural distance education experts. Panelists indicated 20 behaviors that were important to effectively planning distance education courses and programs. The panelists also indicated a high or low ability to perform each instructional behavior. Based on the findings, the researcher developed a planning model required to successfully teach a distance education course or program.

Introduction

Distance education has evolved from individual student correspondence study to telecommunications modes of instruction utilizing video and audio teleconferencing. This evolution is changing the way faculty teach and disseminate information to the public and provides educational institutions with the ability to deliver high quality programs that meet the contemporary needs of society.

The potential of providing agricultural instruction through distance education programming is tremendous. Many educational institutions are taking advantage of telecommunications technology by developing and delivering distance education conferences, workshops, courses, and programs. The increasing availability of telecommunications within educational settings has also provided agricultural faculty and extension educators with unique opportunities to plan and deliver courses and programs at a distance.

According to Kelly (1990), the transition from resident classroom teaching to distance education requires some educators to develop new skills in course planning and delivery. To be effective, such educators must confront issues involved with planning and preparing a course or using methods in distance education. The central issues relate to methods of

Jackson is an assistant professor in the Department of Agricultural Education and Experimental Statistics, P.O. Box 9731, Mississippi State University, Mississippi State, MS 39762

Editor's Note

Distance education will rapidly expand as technology gets less expensive and excellent teaching talent can be provided to a wider and wider dispersed classroom without walls. It seems to this editor that how the classroom without walls is filled, managed, and administered is a crucial part of the distance education. We need definitive studies regarding users(students) and the user institutions or systems that list distance education classes in their curricula and somehow have enough lead time to inform prospective students and enroll them and verify that they have learned at the expected level. If the broader understanding of agriculture in higher education is going to be a part of the distant education growth(like the rapid grown in Engineering), we must know how to make the system respond so prospective students have time to consider their personal growth needs by enrolling in distant education courses for credit. Case studies of the failures and successes from the viewpoint of the user institutions and their students are needed to augment our view of the developing distant learning process.

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instruction, teaching techniques, student motivation, timing, teacher/student interaction, feedback, printed supplement materials, and evaluation. Wolcott (1993) indicated that distance educators should develop a course syllabus and plan the entire course or program before delivery. Wolcott also indicated that distance educators should place primary interest on content rather than process when planning.

Over the past two decades, models for planning distance education programs have evolved primarily from those institutions that only teach via distance education. Students at the British Open University obtain college credit by attending various regional centers within Great Britain. The courses and programs are downlinked into the centers at various times and dates. Self-paced resource materials are prepared by instructors and given to students to use throughout a particular course. The study and completion of these materials become the responsibility of the student who has no direct contact with the instructor. Academic support, advising, and teacher/student conferences are provided by trained tutors

at the regional centers. However, this type of distance education course is prepared by a team consisting of the instructor, course designers, technologists, editors, and telecommunications specialists. According to Kelly (1990), the British Open University model will probably not be appropriate in institutions that offer (1) a range of courses, (2) different entry requirements and, (3) deliver both on and off-campus courses. These institutions must rely on strong interaction between the instructor and students that can be achieved in a variety of ways such as two-way audio and video instruction and discussion, occasional face-to-face meetings, and/or electronic mail.

Schieman (1990) summarized general guidelines inherent in several models used to plan distance education instruction. The broadly conceived guidelines include:

1. stating the purpose of the course or program.
2. outlining the content to be taught.
3. allocating time for the units or elements,
4. deciding on the appropriateness of the instructional plan for the intended audience,
5. listing the skills and the procedures to be developed,
6. producing the instructional materials, and
7. devising evaluation procedures.

However, Schieman (1990, pp. 68-69) indicated that the above mentioned plan will vary from instructor to instructor because the "how" of the instructional process is the "creative endeavor brought to the development by the individual educator." In some cases, the type of course and its content will call for an instructor to prepare in a different way or pose a major problem when using distance education.

Wolcott (1991) investigated how university faculty planned live instruction for adult learners in a telecommunications-based distance education setting. She found that three features characterize the preactive planning process: (1) faculty engaging in course planning as a "front-end" activity (before instruction), (2) planning being driven by content and centered on the selection and sequencing of subject matter, and (3) distance education focusing on the development of an extended syllabus. Time constraints, the medium of delivery and faculty beliefs and concerns toward distance education were the predominant factors that influenced instructional planning (Wolcott, 1991).

According to Edling and Paulson (1992), telecommunications technology makes educational information permanent, accessible, and different. These three functions are important to the distance educator because they provide alternative methods of instructing students. For example, student information and assignments can be mailed electronically to students or support materials can be arranged in any form to address various learning styles. Winn (1990, p. 55-56) indicated that "with an increase in recording, accessing and altering educational information came the need for much more attention to be paid to instructional decision making, planning and management."

Winn (1990, p. 60) noted that for "distance educators, it also requires a comprehensive repertoire of methods that are effective in spite of the constraints that result from the priori imposition of delivery technologies." To formulate a "repertoire" of instructional methods for distance education, the instructor must determine what prior knowledge and skills a student must possess before a course can be designed. This pre-assessment is essential because new knowledge and skills must be taught in the context of what students already know.

Distance educators must also stimulate discussion and prepare exercises, questions, and visuals before the instruction occurs. Satterlee (cited in Benedetti, 1992) indicated that "a lot of work" goes into the preparation of a telecommunications course. He said, "The satellite format requires high quality (instruction). We make our own short videos and use color slides to enhance the instruction." The materials should be carefully planned to help the student reinforce new information and clarify points made during the sessions. Students must also have the opportunity to respond to the instruction and/or ask questions.

Based on today's telecommunications technology, video teleconferencing can be used to deliver effective instruction. However, Schieman (1990) reported that the emergence of technology which is adaptable to instruction has been both a blessing and a curse for educators. The blessing has come from providing advanced technology at lower costs, thus giving distance educators options to make instruction more interesting and effective. The curse has resulted from the inability of instructors to carefully plan comprehensive instruction, despite the capability of providing interaction between the instructor and students.

Purpose and Objectives

The purpose of this study was to develop a conceptual model to enable agricultural faculty and extension educators to effectively plan distance education courses and programs. Constructs of the model include those important instructional planning behaviors related to effective satellite teleconferencing. The objectives required to fulfill the purpose of the study were to:

1. Identify important instructional behaviors related to effectively planning agricultural distance education courses and programs.
2. Identify instructional behaviors that agricultural faculty and extension educators have a high or low ability to perform while planning distance education courses and programs.

Methods and Procedures

The total population for the study consisted of 15 college of agricultural sciences faculty and 150 extension educators from 42 universities, which were members of the Agricultural Satellite Corporation (AG*SAT) as of January 1, 1993. A jury of experts purposively selected a Delphi panel of 20 agricultural distance educators from a verified list supplied by the AG*SAT. The panel consisted of 10 agricultural faculty

and 10 extension educators who had produced a nationally televised credit course or extension program via the AG*SAT network. Ten panelists were selected to represent each group because there were only 15 agricultural faculty who had planned and delivered a credit course via AG*SAT at the time of the study. Panelists representing each group were selected based on: (1) their experience in planning and delivering a nationally televised agricultural distance education course or program via the AG*SAT network; (2) recommendations from the AG*SAT program manager and academic program council members; (3) national reputation and recognition for planning and producing a quality distance education course or program; and (4) geographical location in the United States.

A Delphi technique was utilized to generate a conceptual planning model for an agricultural distance education course or program, which consisted of instructional behaviors. The Delphi technique was chosen because of its capacity to elicit and refine group judgments about a subject through a series of questionnaires that provide anonymous responses, iterations, controlled feedback, and statistical group response. However, as a result of the panel members' variations in their familiarity with educational methodologies and accompanying terminology, the Delphi approach was modified to refine and narrow an initial list of planning behaviors, which were developed from related literature by the researcher and jury of experts. This modification mean that two rounds or iterations of questionnaires were used rather than the usual three iterations. Data were collected over a period of three months in 1993. Nineteen of the 20 panelists responded to both rounds of the study.

In Round #1, the panel of experts responded to the first questionnaire that contained the original list of statements developed from literature that included behaviors related to the planning stages of an agricultural distance education courses or program. The panel members were asked to rank each item according to importance and their ability to perform. In Round #2, they reevaluated those planning behaviors that did not receive a consensus rating in Round #1.

Table 1. Behaviors Panelists Deemed Important to the Planning of Distance Education Courses and ProgramsDuring Round #1

Frequencies Planning Behaviors	Not Important 1	Somewhat Important 2	3	Moderately Important 4	Very Important 5
Identify the subject matter content.	1	0	1	2	14
Develop course or program objectives.	0	2	1	7	9
Sequence subject matter.	1	2	1	6	8
Determine delivery methods.	1	2	1	6	8
Develop evaluation procedures.	1	2	1	6	9
Become familiar with telecommunications equipment.	3	3	3	3	7
Allocate instructional preparation time.	1	0	0	7	11
Select new and up-to-date information.	1	0	1	3	14
Develop the program syllabus or outline.	0	2	1	6	10
Plan for possible time constraints.	1	2	2	6	8
Plan for discussion.	0	1	4	4	10
Select instructional methods for different learning styles.	2	1	5	7	3
Identify prior knowledge and skill levels of participants.	2	3	4	4	6
Prepare program exercises.	2	1	3	10	3
Prepare questions.	2	1	4	7	5
Prepare visuals (transparencies, slides, etc.).	3	0	0	4	12
Develop group methods of learning.	0	3	4	6	5
Produce printed instructional materials	0	3	5	10	0
Develop an interest approach for each topic/session.	0	2	4	7	5
Develop problem situations for participants.	0	4	2	3	9
Produce pre-recorded action segments.	2	0	5	4	8

Data derived from both questionnaires were analyzed using the frequency distributions of the ranked statements. Consensus was determined by placing the five point Likert-type scale ratings into 'high' (rating of 4 or 5) and 'low' (rating of 1 or 2) categories. Those items where 53% or more of the panelists selected a 'high' or 'low' categorical rating were determined to be a consensus by the jury of experts and researcher because it represented a majority of the respondents.

Results

Panel members identified 20 planning behaviors that they considered were 'very important' (rating of 5) or 'important' (rating of 4) to effectively planning a agricultural distance education course and program. They further indicated that allocating instructional preparation time, selecting new and up-to-date materials, identifying subject matter content, and developing course or program objectives were the most important planning behaviors (highest rankings) (See Table 1).

The panelists also indicated a high ability to perform 15 of the 20 planning behaviors that were identified as important to effectively planning a distance education course or program. The panelists had a low ability to perform the five remaining behaviors, which included developing problem-solv-

ing situations for the participants, allocating instructional preparation time, planning for time constraints, identifying the prior knowledge and skill levels of the participants, and developing evaluation procedures for the course or program.

Conclusions

Research related to effectively planning agricultural distance education courses and programs has been limited. Agricultural distance educators do not have a developmental model that will enable them to effectively plan agricultural distance education courses and programs. The findings of this study identified 20 instructional behaviors that are important to effectively planning a nationally televised agricultural distance education course or program. Additionally, the study determined a panel of distance education experts' ability to perform the important planning behaviors, which were identified. Based on these findings, the researcher and jury of experts developed a conceptual model of important instructional behaviors to help agricultural faculty and extension educators plan distance education courses or programs. The 20 ranked behaviors were divided into three process phases, which are preplanning, instructional design, and instructional format. Figure 1 indicates the model's process phases and important planning behaviors. The model also identifies those important behaviors that the panelists had a low ability to perform. Based on the panelists' low ratings, these behaviors may require more faculty development and preparation for effective distance learning courses and programs. Agricultural faculty and extension educators must have a clear understanding and perspective of the role of an agricultural distance educator, the values that define effective planning and delivery of distance education programming, and the way to more efficiently address the needs of contemporary society. This model has resulted from those effective planning behaviors that have been utilized by agricultural faculty and extension educators who have planned and delivered a nationally televised distance education course or program. These identified behaviors also support Schieman's (1990) summarization of several models used to plan and deliver distance education courses and programs.

The implementation of the planning model requires a team of instructional designers and telecommunications specialists (support staff) that can provide the necessary technical expertise required to effectively plan and deliver a course or program. However, the overall effectiveness of the model process rests with the course instructor or program coordinator who eventually performs each planning behavior within the appropriate phase. The agricultural faculty and extension educator should also develop a high ability to perform each behavior to achieve overall effectiveness.

Figure 1. A Conceptual Planning Model For Teaching Agricultural Distance Education Courses/Programs.
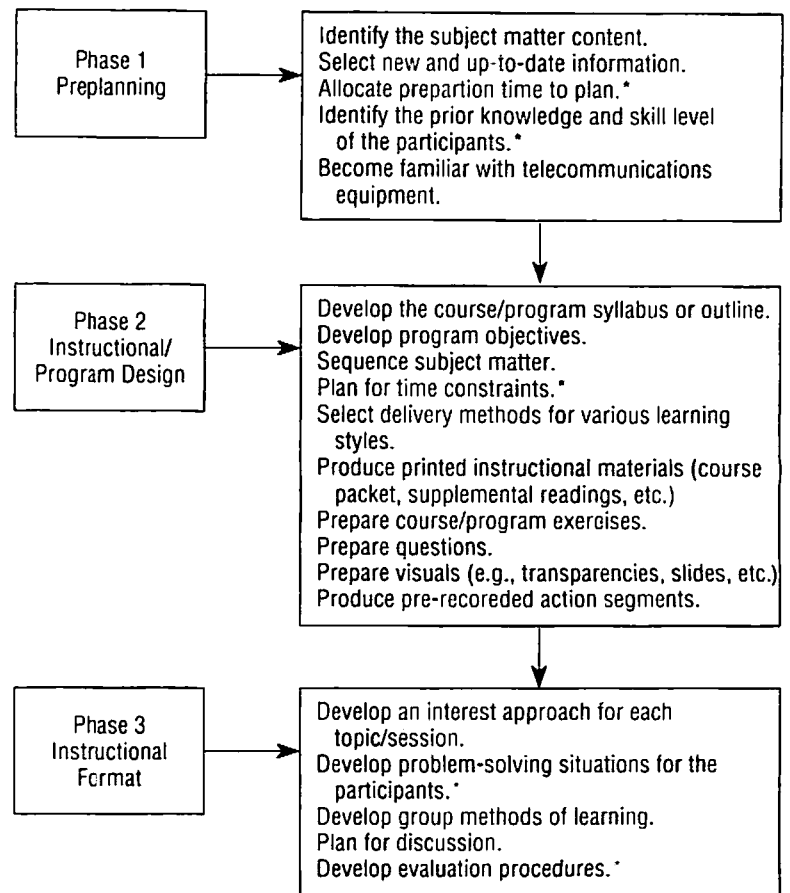
* Identifies important planning behaviors that the panel had a low ability to perform.

DeLoughry (1992) also indicated in *The Chronicle of Higher Education* that university and college administrators are being urged by various groups to help expand the use of technology on college campuses. With this rapidly changing technology, educators will be expected to disseminate extensive amounts of information being produced. They will also be expected to expand their resident classrooms and information centers to larger and more diverse audiences. This planning model is designed to provide the necessary guidance and knowledge needed to successfully plan an agricultural distance education course or program.

Recommendations

Based on the study's results and conclusions, the following recommendations are made:

1. Further research should be conducted to test the development model for effectively planning agricultural distance education courses and programs.
2. Further study is needed concerning those five planning behaviors that agricultural distance educators had a low

ability to perform. which are critical to effective instruction.

3. Agricultural faculty and extension educators who use distance education should place special emphasis on allocating instructional preparation time, identifying the prior knowledge level of the participants, and evaluation procedures for distance learning.

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