Teaching Strategies for Agricultural Distance Educators

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Abstract

College of agriculture teaching faculty are being called upon more often to teach their courses through distance education technologies, but research that allows prescription of successful strategies has been very limited. This paper captures effective teaching strategies from the experiences of agricultural distance educators. Forty-one strategies are organized under Gagne and Briggs' (1974) nine functions of instructional events. Readers of this article are encouraged to review the list of strategies to determine if any of the items could be put to immediate use in their own distance learning courses. In addition, we believe the list of strategies may serve as a stimulus for new ideas that will work in the reader's own situation.

Introduction

Distance education is developing rapidly and is being used more often by colleges of agriculture to extend educational opportunities to previously unserved populations. What is distance education? Willis (1994b) wrote that "distance education takes place when a teacher and student(s) are separated by physical distance, and technology (i.e., audio, video, data, and print) is used to bridge the instructional gap"(p. v).

Distance teaching is very different from the traditional on-campus experience. In fact, Moore and Kearsley (1996) indicate that the difference is great enough to necessitate significant changes in teacher and learner behavior. What makes distance teaching different? Willis (1994a) gives us an idea of how complicated teaching at a distance can be. He noted that faculty must develop an understanding of learner characteristics and needs though their contact with learners is limited. Faculty must also adapt their teaching styles based on the often multiple and diverse needs of their students. Finally, faculty must be skilled in using the technology to effectively present content and facilitate learning.

Perhaps the two key differences between the distance-education setting and the traditional on-campus environment involve technology and learners. Regarding technology, Hillman, et al. (1994) describe how the interaction of students with technology influences learning. This learner-interface interaction must be effectively handled by the student, or it will inhibit their ability to learn the content. Regarding learners, students who enroll in distance-education courses are often very different from those who take courses on campus. Agricultural distant learners tend to be older, have more professional experience to build upon, and are often motivated to enroll in courses because of their immediate utility (Miller and Honeyman, 1993; Miller 1995b).

The uniqueness of distance education will require more effort from college teachers of agriculture in preparing to teach each lesson? Not surprisingly, college of agriculture faculty have shown interest in enhancing their teaching methods. In a national study conducted to identify information and training needs of agricultural faculty related to distance education, Miller and Carr (1997) concluded that faculty were principally interested in learning about teaching strategies for distance education. Faculty interest in effective teaching strategies is well placed. Biner, et al. (1994) discovered that instructor/instruction is one of seven factors underlying student satisfaction with televised courses. They also noted that learner satisfaction was related to learner attrition rates, referrals of new students from those currently enrolled, higher levels of learner motivation, commitment to the program, and better learning.

What strategies can college teachers of agriculture use to enhance learning in their distance education courses? There has been limited research in this area. Jackson (1995) developed a planning model for nationally televised agricultural distance education courses or programs. This model provides general guidance to instructors, but does not provide specific strategies that instructors can apply in specific lessons. Miller (1995a) described teaching practices that students in videotaped courses perceived to be important for their learning. Miller's study focused on practices that are applicable to all educational environments, but did not address strategies uniquely suited to the distance-education environment. Sparkes (1988) recognized that new teaching methods are needed in distance education, but there are few experts on whom we can call. In lieu of conclusive research that allows prescription of successful

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methods, knowledge gained through the experiences of agricultural distance educators should be captured and shared with others.

Methods

The purpose of this study was to identify effective teaching strategies for agricultural distance-learning courses. Databases in education, agriculture, and psychology were searched to identify journals, books, and other materials that might be useful in identifying effective teaching strategies.

Eight agriculture teaching faculty members were interviewed. The faculty members came from eight different academic departments including sociology, agricultural engineering, animal ecology, agronomy, horticulture, biochemistry and biophysics, entomology, and animal science. Seven faculty members were male. Five were professors, two were associate professors and one was an assistant professor. Each of the eight faculty members had taught an off-campus course offered through the college of agriculture in 1995 or 1996. Three faculty members had offered their course by videotape, two had taught using the Iowa Communications Network (ICN), and three had used both delivery technologies.

Each faculty member was interviewed by one of the researchers. Seven of the interviews were conducted face-to-face, and one was conducted by telephone. The key question, "What teaching strategies have you found to be effective in agricultural distance learning courses?" was the focus of the interviews. Follow-up questions were asked for clarification and to probe for deeper understanding of responses. Extensive notes were taken.

Findings

A list of teaching strategies was developed from the review of literature and from responses to the interview questions. The teaching strategies were organized under Gagne and Briggs' (1974) nine functions of instructional events. The teaching strategies were listed under their most likely function, though many strategies can serve more than one function. The nine functions include gaining attention, informing the learner of the objective, stimulating recall of prerequisite learnings, presenting the stimulus material, providing learning guidance, eliciting the performance, providing feedback about performance correctness, assessing the performance, and enhancing retention and transfer. Learners can sometimes accomplish these functions through self-instruction as they interact with materials. "Mostly, however, the events of instruction must be deliberately arranged by a lesson designer or teacher as events which are initiated externally to the learner" (Gagne and Briggs, 1974, p. 123). The list of strategies follows.

Gaining attention

- *Humanize the class by acquainting students with each other and the instructor, perhaps by distributing brief biographical sketches of each student.*
- *Take attendance for each class by asking students at each site how things are going with them.*
- *Use humor to gain attention and to lighten the mood of the class.*
- *Use an audio recording or a brief videotape to gain attention and focus students on the lesson objective.*
- *Learn about students' goals and make the content relevant to them.*
- *Appeal to various students' interests through questions.*

Informing the learner of the objective

- *Provide students with a study guide before beginning the class.*
- *Begin each lesson by informing students of the objective(s).*
- *Establish and communicate the expected operating procedures for the class.*

Stimulating recall of prerequisite learning

- *Give a pretest to determine what, if any, prerequisite material should be reviewed before beginning the course.*
- *When lessons build upon one another, be sure to assess students' level of understanding with one lesson before proceeding to the next lesson.*
- *Provide selected prerequisite information in the course study guide.*
- Use the world- wide web to provide prerequisite information to students.

Presenting the stimulus material

- *Do not overwhelm students by presenting too much information at once.*
- *Avoid engaging in long periods of lecture.*
- *Use a variety of teaching methods to accommodate different learning styles.*
- *Be sensitive to the different communication styles and values of students.*
- *Use local case studies and analogies related to students' experiences.*
- *Answer questions directly and clearly.*
- *Use a variety of visual aids to present information.*
- *Encourage students at all sites to participate in discussions.*
- *When offering a course on-campus and off-campus*

simultaneously, be sure to consider distant learners in planning and to include them in class discussions.

Providing learning guidance

- *Visit the various distance learning sites during the course to meet with students.*
- *Make sure that distant students have access to the instructor through phone calls, E-Mail, etc.*
- *Inform students of learning strategies needed in the distance-learning environment.*
- *Provide study and discussion questions.*
- *Provide learners with an opportunity to interact with the professor face-to-face.*
- *In videotaped courses, insert breaks for students to think, answer questions, or to complete a hands-on activity.*
- *Ask probing questions to gauge students' understanding of concepts.*

Eliciting the performance

- *Provide opportunities for students to practice what they are learning and provide reinforcement to shape appropriate performance.*
- *Provide an opportunity for students to try out what they are learning in a laboratory setting.*
- *Provide learning activities that require students to work in teams.*

Providing feedback about performance correctness

- *Encourage students to ask questions.*
- *Return assignments promptly and provide written feedback.*
- *Provide answer keys to study questions and practice tests that are included in the printed course materials.*
- *Encourage and support student-student interaction about issues related to the course.*

Assessing performance

- *Identify proctors to administer examinations to distant learners.*
- *Use a variety of assessment procedures that provide authentic assessments of what students are learning. Assessment procedures should go beyond paper and pencil tests.*
- *Use multiple questions about the same concept on written exams to enhance assessment reliability.*

Enhancing retention and transfer

- *Provide lots of opportunities for students to apply concepts in different contexts.*
- *Encourage interaction among learners and between learners and the instructor.*

Summary

Research related to effective teaching strategies for distance-education courses has been limited, and sources of information that provide guidance in selecting teaching methods to enhance learning in the distance- education setting have not been readily available. This study identified forty-one teaching strategies found by experienced distance educators to be effective. Readers are encouraged to review the list to determine if any of the items could be put to immediate use in their own distance-learning courses. Perhaps the list may serve as a stimulus for new ideas that will work in the reader's own situation.

The instructors interviewed for this study were primarily experienced in using videotape and the ICN. Videotaped courses represent a very popular asynchronous method of delivery at Iowa State University. Normally instructors distribute a videotaped lecture and printed materials to off-campus students once per week. The ICN is a two-way full motion video and audio delivery system that is linked through fiber-optics. The strategies identified in this paper should have reasonably broad applicability; however, it is recommended that strategies be identified for other emerging distance-education delivery tools including the world-wide web and related Internet applications. Constant improvements in educational technology will require ongoing development of effective teaching strategies.

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BOOK REVIEWS

Landscape Forestry
Stephen G. Boyce, John Wiley & Sons, Inc., 1995, 239 pp., Clothbound.

Landscape Forestry is a joy to read and to contemplate. It is a scholarly work that provides readers with a well-documented summary of historical and contemporary views of the forested landscape while recognizing that these views are likely to change in the future. Preparing students for the latter transition is, I think, the reason for the text.

The author, in fact, devotes considerable time towards explaining the purpose and order of the book. Although this reading at first appears tedious, it helps students understand the complexity of this vast, socioecological topic. He views landscape forestry as a vehicle through which to fulfill the diverse demands from consumers and a way to change the mix of benefits available from the forested landscape over time. Boyce reviews the interface of people and forestry, provides operational definitions of the components of landscape forestry, and describes a host of different management thrusts and different models for them. He specifically analyzes the craggy mountain forested landscape, endangered species, the carbon cycle, and biodiversity within different forestscapes. He discusses modeling extensively, as well as timber, fuelwood and cash flow, public policy and consumer demands. His audience potential ranges from policy makers to members of environmental organizations, economists, practitioners and traditional students. He aims the book at introductory and continuing education courses in conservation and natural resources management. He proposes, correctly, that graduate courses could readily use this text by adding a laboratory involving intensive computer use and modeling to simulate options for real landscape analysis, use and conservation. He makes the delightful comparison of consumer demands being a "basket" of timber, biodiversity, recreation, wilderness, old growth, habitats, and aesthetic valus that must be considered.

Landscape Forestry is clearly, logically, and richly written and documented. It is a text that should be used by all students of nature.

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