PERCEPTIONS REGARDING INSTRUCTIONAL METHODS USED IN ADULT AGRICULTURAL EDUCATION PROGRAMS

Robert A. Martin, Associate Professor
Mahmoud H. Omer, Post-Doctoral Associate
Iowa State University

A review of the literature suggested that there is a continual need for evaluation of instructional methods and technology in adult education (Brundage & Mackeracker, 1980;Charters and Associates, 1981; Cox, 1955; Cross, 1984; Ehrenberg, 1983; Phipps, 1980; Wilson & Goerke, 1978). Pucel, De Vogel and Persico (1988), in a study to identify needs in post-secondary and adult vocational education in the year 2000 and beyond, found that respondents believed that a variety of methods will be used to deliver knowledge and skills, including demonstrations, on-the-job instruction, computer-assisted instruction, simulations, reading, cooperative learning and lecturing. Pucel, et. al., also found respondents predicting that a wide variety of learning resources will be used to implement instruction. These resources included the following items in order of perceived priority: job-related tools and equipment, goods and materials, videotapes, teacher constructed instruction sheets, interactive video, learning modules, manufacturer's manuals, telecommunications, textbooks, computers, transparencies, slides, audio-tapes and journal articles (Pucel, De Vogel and Persico, 1988).

If the foregoing information represents future practice, what is the current educational practice in adult education in agriculture? While there is a general recognition that educational practice is important to the education of adults, few studies have been conducted that have placed an emphasis on instructional methods used in adult education in agriculture. Adult educators in agriculture need to determine the profile of their current practice. Comparisons should be made between where adult education in agriculture is regarding its methodology and where it should be, especially in view of the results of recent studies (Pucel, De Vogel and Persico, 1988).

As a result, a number of questions become increasingly relevant:

1. What perceptions do adult/post-secondary and extension educators have regarding principles of teaching/learning?

2. What methods and teaching tools are perceived to be the most appropriate and effective in delivering agriculturally related educational programs to adults?

3. To what extent are selected methods/teaching tools used in delivering agriculturally related educational programs to adults?

The rationale for conducting studies related to instructional methods in adult education in agriculture becomes clear when we consider that..."most instructors in adult education programs are expert in the content they teach, but they usually have little preparation in the process of helping adults learn" (Knox, 1986, p. xi).

Purpose and Objectives

The purpose was to identify the current methods of delivering agriculturally related educational programs to adults as perceived by agricultural extension professionals and post-secondary agricultural instructors in Iowa. The specific objectives of the study were as follows:

1. To determine the level of agreement of the respondent groups regarding selected statements on the principles of teaching/learning as they relate to methods, procedures and educational tools used in adult educational programs in agriculture.

2. To identify methods, procedures and educational tools used and their frequency of use in delivering adult educational programs in agriculture.

3. To determine the perceived effectiveness of the methods of instruction used by adult educators in agriculture.

Journal of Agricultural Education
Volume 31, Number 2, pp.2-6
DOI: 10.5032/jae.1990.02002

Procedures

The study was designed to collect descriptive data to identify the instructional methods being used in educational programs for adults involved in agriculture. The study focused on post-secondary agricultural education programs and Extension education programs. The population consisted of the 100 post-secondary agricultural instructors employed at the community colleges in the state of Iowa and the 100 state specialists and administrative staff of the Iowa Cooperative Extension System. These individuals were the leaders of adult education in agriculture in the state. Their input regarding appropriate instructional methods was deemed important in order to improve adult education in agriculture.

Data were collected by self-administered mailed questionnaires, sent to a randomly selected group of agricultural extension professionals (50) and post-secondary agriculture instructors (50) in Iowa. Half of the population was sampled because of the need for a critical mass from which information could be collected. Following three separate contacts with respondents the total response rate was 76% or 38 agricultural extension professionals and 84% or 42 post-secondary agricultural instructors. Given the response rate, there was no formal follow-up of non respondents. The questionnaire included the following components: (a) perceptions regarding principles of teaching and learning; (b) use and effectiveness of methods/teaching tools; and, (c) biographical information. A panel of experts made up of Extension educators and teachers of agriculture not included in the population, reviewed the questionnaire for content validity, ease of completion and appropriateness.

Likert-type scales were as follows: (a) for the level of agreement regarding principles of teaching/learning, 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, and 5 = Strongly Agree; (b) for the level of effectiveness of methods/teaching tools, 1 = Not Effective, 2 = Of Little Effectiveness, 3 = Somewhat Effective, 4 = Effective, and 5 = Very Effective; and, (c) for the extent of use of methods/teaching tools, 1 = Not Used, 2 = Seldom, 3 = Occasional, and 4 = Frequent Use. The data were analyzed using means, standard deviations, t-tests. frequencies, and percentages, all of which were deemed appropriate for the data collected. The reliability of the survey instrument was tested (Cronbach Alpha = .97) for the entire instrument on the principles of teaching/learning scales and the use and effectiveness of methods/teaching tools scales.

Results

Principles of Teaching/Learning : The respondents were asked to indicate whether they agreed or disagreed with 15 selected principles of teaching/learning (Table 1). Nine principles received a rating of 4 (agree) or higher. The six remaining principles were rated between 3.05 an 3.93. The highest rated principle was, use a variety of instructional methods (4.50).

The t-test was used to determine if any significant differences existed in the responses of the two respondent groups (Table 2). The data indicated that post-secondary agricultural instructors and the agricultural extension professionals differed significantly ($p < .01$) in their level of agreement for the principles of teaching/learning: (a) use problem solving which involves predominantly mental activity; (b) emphasize problem solving situations which involve predominantly physical activity; (c) prepare instructional plans to provide desirable experiences; and, (d) identify and utilize selected models of teaching. Post-secondary agricultural instructors indicated higher levels of agreement with each of these principles than did agricultural extension professionals.

Use and Effectiveness: The respondents were asked to indicated the extent of use of 63 selected instructional methods and tools on a four-point scale where 1 indicated not used and 4 indicated frequent use. The following instructional methods and tools were rated most highly by the respondents: (a) lecture-discussion (3.77); (b) overhead projector (3.68); (c) slides (3.50); (d) lecture (3.26); (e) problem solving (3.24); (f) chalkboard (3.05); (g) group discussions (3.03); (h) individualized instruction (3.00).

The respondents were asked to indicate the level of effectiveness of the methods and teaching tools on a five-point scale where 1 indicated not effective and 5 indicated very effective. The following methods and teaching tools were rated most effective by the respondents: (a) lecture discussion (4.43); (b) problem solving (4.27); (c) individualized instruction (4.23); (d) overhead projector (4.11); (e) slides (4.06); (f) group discussions (3.93); (g) summarizing (3.87); (h) chalkboard (3.87); (i) questioning (3.79); and (j) video-tape and television programs (3.72).

Table 1
Composite Means, Standard Deviations, and Rankings Regarding Principles of Teaching-Learning as Perceived by Post-Secondary Agriculture Instructors and Extension Professionals

Rank	Principles	Mean	SD
1	Use a variety of instructional methods.	4.50	.59
2	Apply a variety of methods and techniques in assisting learners in developing skills.	4.32	.56
3	Identify and use educational principles and procedures in teaching adults.	4.30	.66
4	Utilize nonformal teaching methods and techniques for particular situations.	4.28	.77
5	Utilize group instruction dealing with the problems common to specific groups.	4.23	.64
6	Develop and use a definite and specific interest approach to enhance the learner's motivation.	4.16	.70
7	Design a plan to evaluate the product of teaching-learning situation.	4.12	.62
8	Design a plan to evaluate the teaching learning process.	4.12	.68
9	Prepare instructional plans to provide desirable experiences.	4.10	.76
10	Use individualized instruction to help adults solve problems.	3.93	.97
11	Use on-farm agribusiness instruction to deal with individual problems of participants.	3.91	.88
12	Use problem-solving which involves predominantly mental activity.	3.68	.93
13	Identify and utilize selected models of teaching in planning adult instruction.	3.59	.80
14	Involve clientele in the preparation of instructional/learning materials.	3.32	.94
15	Emphasize problem-solving situations which involve predominantly physical activity of clientele.	3.05	.92

The findings indicated that post-secondary agricultural instructors and agricultural extension professionals differed significantly ($p < .01$) concerning the extent of use of 26 of the 63 selected instructional methods and tools. Major differences were in the use of the following instructional methods and tools: group discussions, buzz groups, comparing, role playing, brainstorming, and debating. Post-secondary instructors indicated higher levels of use of these methods and tools than did Extension professional except in the use of two of the techniques. Extension professionals tended to use symposiums and radio programs to a much higher degree than did post-secondary instructors.

A comparison of the level of effectiveness regarding selected instructional methods and tools indicated that the respondents differed significantly ($p < .01$) concerning the following instructional methods and tools: buzz groups, symposiums, problem solving, assignments, chalkboard, videotape and television programs, and radio programs. With each of these instructional methods and tools, post-secondary instructors indicated higher levels of perceived effectiveness and radio programs. These two methods (symposiums and radio programs) were rated high by the agricultural extension professionals.

Comments written on the questionnaires indicated that Extension professionals in agriculture are recognizing a need to develop competence in various methods and tools of instruction. Knowledge in the use of these various methods will enable Extension professionals to enhance their presentations and increase audience participation. One respondent indicated that this need has come about because of the increased use of satellite linkages and television and videotape presentations. Technology has created a need to use a variety of instructional methods and use them in innovative ways.

Table 2
A Comparison of the Level of Agreement Regarding Principles of Teaching-Learning as Perceived by Post-Secondary Agriculture Instructors and Extension Professionals

Principles	Instructors n	Mean SD	Extension n	Mean SD	t-value	Prob.
Use individualized instruction to help adults solve problems	42	4.11 0.91	38	3.73 0.10	1.78	.079
Use on farm/agribusiness instruction	42	4.11 0.83	37	3.67 0.88	2.30	.024
Identify and use educational principles	42	4.47 0.55	38	4.10 0.72	2.58	.012
Use a variety of instructional methods	42	4.59 0.58	38	4.39 0.59	1.52	.133
Utilize nonformal teaching methods and techniques	41	4.34 0.85	37	4.21 0.67	0.71	.477
Use problem-solving which involves predominantly mental activity	42	3.95 0.98	38	3.39 0.79	2.77**	.007
Develop and use a definite and specific interest approach	42	4.33 0.68	38	3.97 0.67	2.35	.021
Emphasize problem-solving situations which involve predominantly physical activity	42	3.35 1.00	38	2.71 0.69	3.37**	.001
Involve clientele in the preparation of instructional/learning materials	42	3.47 0.86	37	3.16 1.01	1.49	.141
Prepare instructional plans to provide desirable experiences	42	4.35 0.57	37	3.81 0.84	3.31**	.002
Identify and utilize selected models of teaching	42	3.85 0.78	37	3.29 0.74	3.25**	.002
Design a plan to evaluate the teaching-learning process	42	4.19 0.74	38	4.05 0.61	0.90	.370
Apply a variety of methods and techniques	42	4.35 0.48	38	4.28 0.65	0.53	.598
Utilize group instruction	42	4.33 0.61	38	4.13 0.66	1.41	.161
Design a plan to evaluate the product of teaching-learning situation	42	4.19 0.59	38	4.05 0.65	0.53	.327

**Significant at .01 level. Scale: 1 = not important; 5 = very important.

Conclusions and Recommendations

Post-secondary agricultural instructors tended to indicate a higher level of regard for the principles of teaching and learning than agricultural extension professionals in this state. Although these respondents placed a very high priority on use of a variety of instructional methods they tended to rely on one method. The most utilized method reported was lecture-discussion. Agricultural extension professionals considered radio programs to be very effective and commented that television broadcasts and satellite programming were being put to good use but regardless of the media used, presentation style and competence need to be enhanced.

Based on the findings it is recommended that adult educators in agriculture should be offered up-dated instruction in the identified methods and principles of teaching and learning, and should be encourage to carefully match instructional methods and tools to the subject matter content and audience needs. Further research is needed on the appropriateness of instructional methods and tools in delivering educational programs to adult learners in agriculture.

Implications to Practice

Post-secondary agricultural instructors and Extension professionals believe that competence in various instructional methods for adults is necessary to effectively deliver and transfer technology in

agriculture. However, many of these agricultural educators indicated they do not feel fully equipped to use all of the technologies and strategies, even though they may believe them to be effective. Information from agricultural educators at the post-secondary and extension professional levels indicates and supports the general need as evidenced by the literature (Knox, 1986; Pucel et al, 1988) for enhancing the use of appropriate and effective instructional methods and tools in conducting adult education programs in agriculture.

References

Brundage, D. H. and Mackeracker, D. (1980). Adult learning principles and their application to program planning. Toronto: Ontario Institute for Studies in Education, Ontario Ministry of Education.

Charters, A. N. and Associates (1981). Comparing adult education worldwide. San Francisco: Jossey-Bass Publishers.

Cox, Charles A. (1955). Methods of instruction used in adult farmer classes in Virginia. M.S. Thesis. Iowa State University, Ames.

Cross, P. K. (1984). Adults as learners. San Francisco: Jossey-Bass Publishers.

Ehrenberg, L. M. (1983). "How to ensure better transfer of learning." Training and Development Journal.

Knox, A. B. (1986). Helping adults learn. San Francisco: Jossey-Bass Publishers.

Phipps, L. J. (1980). Handbook on agricultural education. Danville, Illinois: Interstate Printers and Publishers, Inc.

Pucel, D. J., De Vogel, S. H. and Persico, J. (1988). Visions for change: the context and characteristics of post-secondary vocational education curriculum in the year 2000 - implications for policy. St. Paul, MN: Minnesota Research and Development Center for Vocational Education, University of Minnesota.

Wilson, D. L. and Goerke, G. (1978). Education for new times: the video cassette revolution. International Journal of Instructional Media, 6(1), 1-11.