

Effectiveness of Correspondence Instruction in an Extension Vegetable Gardening Program

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From its inception, the task of the Cooperative Extension Service has been to help people through educational programs to use technology and information to improve their quality of life. Technically competent extension workers must become familiar with basic educational concepts and learn how to apply them in practical situations. Additionally, extension workers must become skilled in a wide variety of teaching methods, so they can select the best single one or a combination of several that will get across a particular message to an individual or a group in the most efficient and effective manner possible (Prawl, Medlin and Gross, 1984).

Throughout history, Extension has relied heavily on result demonstrations to disseminate information. From the first result demonstration in 1903 until present time, this method of teaching has proved time and time again to be invaluable in transferring knowledge to the intended audience. In conjunction with the result demonstration, other early forms of extension teaching that are still valuable are educational meetings, workshops, seminars, group discussion, correspondence instruction, telephone conversation, and farm visits (Boyle, 1981; Gantt & Terrell, 1986; Kristiansson, 1981).

The efficiency and effectiveness of extension educators will be enhanced if the best delivery systems are used. As communities and clientele change and budgets become tighter, a knowledge of system effectiveness becomes increasingly important. The focus of this study was two program delivery methods: correspondence instruction and illustrated lecture.

Correspondence instruction is a method of individualized instruction where the mail is the means of communication between the learner and the instructor. Houle (1965), specified the

following components of correspondence instruction:

 specially prepared materials, written in self explanatory fashion and arranged in a series of lessons; supplementary printed and other material relating to the course; a series of lessons to be worked out by the student; the evaluation of these exercises by a competent instructor with the learner being informed of the evaluation. (pp. 544-545).

The types of correspondence programs offered through the Cooperative Extension Service are as varied as the clientele it serves and include subjects such as nutrition, home vegetable gardening, home furnishing, home canning, estate planning, water conservation, and community hygiene (Bradshaw, 1988; Dorschel, 1981; Kristiansson, 1981; Gantt & Terrell, 1986; Goeting, 1981).

Illustrated lecture is a method of group instruction in which an informative talk is delivered to a class using illustrations in the form of examples, booklets, pictures, diagrams, and so forth to help clarify the lecture content (Newcomb, McCracken & Warmbrod, 1986).

Correspondence instruction was selected for study because it is a method of teaching that allows many people to be reached economically. Once developed, the teaching materials can be used repeatedly with very little contact time with the extension agent. Correspondence instruction was compared with illustrated lecture because illustrated lecture is a more traditional teaching approach and requires considerable teacher-student interaction.

Purpose and Objectives

The primary purpose of this study was to determine the effectiveness of two program delivery methods (illustrated lecture and correspondence instruction) in relation to the amount of knowledge gained by participants in a home vegetable gardening program. The secondary purpose was to determine if there was an association between method of instruction selected and the attitudes and descriptive attributes of program completers.

Specifically, the null hypothesis states that there will be no difference in the amount of knowledge gained between the program delivery methods of illustrated lecture and correspondence instruction pertaining to an extension home vegetable gardening program.

In addition to the primary hypothesis, the effectiveness of the two program delivery methods, two additional objectives of the study were as follows:

to determine if the attitudes of participants about the program with respect to complexity, coverage, understanding, organization, practicality, interest, print size, usefulness, desire to learn more, enrollment ease, instructional ease, meeting of needs, learning aids, and illustrations were associated with the teaching method selected.

To determine if the attributes of program participants with respect to age, race, income, education, sex, residency status, employment status, number of dependents, resident county, transportation, area of residence within Pinellas County, and previous training in horticulture were associated with the teaching method selected.

Procedures

The design used in this study was a nonequivalent self-selected comparison pretest-posttest design. Unlike the true experimental design where the researcher has full control through the use of randomization, this design uses intact groups and allows for the realization of

neither full control over scheduling of experimental conditions or the ability to randomize.

The sample for this study consisted of participants in either a correspondence instruction or an illustrated lecture series of a home vegetable gardening program offered through the Pinellas County Cooperative Extension Service in the spring of 1989. The spring 1989 participants were considered to be a sample in time of participants. A comparative analysis between spring 1989 and fall 1988 participants was conducted in an effort to support the argument that spring 1989 participants were representative of all participants for the year. This analysis revealed that they were in fact demographically similar. The one difference was that previous participants tended to have a higher gross income level.

In order to obtain the required information, a pretest and a posttest were developed to ascertain the level of knowledge gained in both program delivery methods. Questions were developed by the researchers based upon an analysis of the content included in the instruction. All questions were multiple-choice in format. In addition to assessing the knowledge gained by the vegetable gardening program participants, the demographic characteristics of the population with respect to age, sex, education, race, income, number of dependents, residency status (part-time or full-time), employment status, transportation, resident county, area of residence within Pinellas County, and previous training in horticulture were collected as part of the pretest. The perceptions of the participants concerning the program's content, structure, and implementation were collected on the posttest.

The instruments were field tested on beginning Master Gardeners who were enrolled in the home vegetable gardening program and had no prior experience with the program. Based on the results obtained from a field test, the pretest and posttest questionnaires were revised to improve clarity, content, and ease of use. A Kuder-Richardson 20 statistical reliability analysis indicated an internal consistency of .92.

The questionnaires were administered through the mail for the participants in the correspondence instruction, "Vegetables Galore: Grow Your Own," and were enclosed in the first and last phase of the correspondence instruction

along with a brief statement concerning the importance of the study. A limitation was the inability of the researchers to control for cheating.

For participants in the illustrated lecture "Vegetable Gardening", the same questionnaires were used as in the correspondence study series with the exception that the pretest was administered prior to the beginning of the first class and the posttest was administered at the close of the last class. The illustrated lecture series and the correspondence series contained identical information. There were 64 potential program completers and 64 (100%) of the participants actually completed the series. The correspondence instruction had 106 potential program completers and of these participants 61 (58%) actually completed the series by July, 1989. Of the 61 program completers, 43 (71%) responded to the posttest questionnaire after follow-up procedures were completed.

A comparison of the 43 respondents to the noncompleters and nonrespondents revealed that they were similar on all demographic characteristics. Additionally, the two groups were not significantly different on the pretest.

Item responses were descriptively analyzed for frequencies, percents, and means. Comparisons were made between selected attitude factors and demographic characteristics using Chi-square statistics. A t-test was used to determine if there was a difference in the overall mean change for the two methods of teaching. The decision level for all statistical tests was $p < .05$.

Findings

Table 1 summarizes the pretest and posttest scores for participants in the illustrated lecture and correspondence series. For the illustrated lecture group, pretest scores ranged from 0 to 93 and posttest scores ranged from 54 to 100. For the correspondence group, pretest scores ranged from 0 to 93 and posttest scores ranged from 57 to 100.

Table 2 summarizes the change scores for the two groups. Change scores for the illustrated lecture group ranged from less than 0 to 96. The overall mean change score for the illustrated lecture group was 33.4. Change scores for the correspondence group ranged from less than 0 to

82. The mean change score for the correspondence group was 17.9.

A t-test was used to test the null hypothesis that there will be no difference in the amount of knowledge gained between the two methods. The

Table 1. Summary Statistics for Pretest and Posttest

Raw score	Illustrated Lecture		Correspondence	
	Pre	Post	Pre	Post
0	4	-	2	-
1-10	10	-	-	-
11-20	4	-	-	-
21-30	1	-	-	-
31-40	4	-	1	-
41-50	7	-	4	-
51-60	5	5	3	1
61-70	13	9	9	3
71-80	10	18	11	5
81-90	5	18	11	19
91-100	1	14	2	15
Mean	46.4	79.8	69.9	86.2
SD	29.5	12.1	16.7	10.8
N	64	64	43	43

Table 2. Summary Statistics for Change Scores

Change score	Illustrated Lecture	Correspondence
	N	N
< 0	8	4
0	2	3
1-10	9	8
11-20	9	13
21-30	5	7
31-40	9	5
41-50	4	1
51-60	3	-
61-70	4	-
71-80	5	-
81-90	4	1
91-100	3	-
Mean Change Score	33.5	17.9
SD	31.5	20.1
T=2.91, $p < .004$		

results indicated that there was a significant difference ($t=2.91$, $p < .05$) between the mean change scores for the illustrated lecture (33.5) and correspondence (17.9) groups. The null hypothesis was rejected.

It should be noted that even though the illustrated lecture group had significantly higher gain scores, the correspondence group scored significantly higher on both the pretest and the posttest.

Objective One

Objective one was designed to determine if the participants in the correspondence instruction and illustrated lecture differed concerning their attitudes about the content and delivery of the home vegetable gardening program. Each of the program attitude questions was answered yes, no or undecided. A total of 18 questions were asked relative to program content, program structure, and program implementation. Specifically, these questions related to complexity of program content, ease of understanding program content, coverage of program content, organization of the program content, practicality of the program content, interest held by the program content, desire to learn more about program content, usefulness of the program content, degree that program content met needs, instructional ease, ease of enrollment, helpfulness with problems and/or questions, and attitudes about program implementation.

Findings indicated that there was an association between the degree to which participants wanted to learn more about vegetable gardening and teaching method selected ($\chi^2=25.46$, $p<.05$). The illustrated lecture respondents were more likely to want additional information. There was also an association between the respondents perceptions of Extension's helpfulness and method of teaching selected ($\chi^2=49.18$, $p<.05$). Illustrated lecture participants were more likely to believe that the extension office is responsive to questions. There was not an association between teaching method selected and other attitude questions.

Objective Two

The purpose of objective two was to determine if there was an association between program delivery method and the following demographic variables: age, race, income, education, residency status, sex, employment status, number of dependents, transportation, resident county, area of residence within Pinellas County, and previous horticultural education.

Findings indicated that there was an association between teaching method selected and race ($\chi^2=5.23$, $p<.05$) with nonwhites more likely to enroll in illustrated lecture.

There was also an association between educational level and method of teaching selected ($\chi^2=9.67$, $p<.05$). The correspondence respondents tended to be more highly educated. There was not an association between method of teaching and sex, age, residency status, income, and number of dependents.

As noted earlier, even though the illustrated lecture group had significantly higher gain scores, the correspondence group scored significantly higher on both the pretest and the posttest. The fact that the correspondence group tended to be more highly educated may partially explain this finding.

Conclusions

The illustrated lecture method yielded a higher change in scores between the pretest and posttest than did the correspondence method.

Both methods of program delivery appeared to be effective in reaching the public as evidenced by higher posttest scores for both groups. The correspondence group had the highest mean test score.

Respondents in each of the two program delivery methods possessed essentially the same attributes, however, respondents in the correspondence study tended to have a higher level of education and were primarily white, while nonwhite respondents tended to participate in the illustrated lecture series.

Illustrated lecture respondents had a greater interest in learning more about home vegetable gardening than did correspondence instruction respondents.

More illustrated lecture respondents believed that the extension office was responsive to questions or problems than did correspondence respondents.

Recommendations

Based on the findings and conclusions drawn from this study, the following organizational and further study recommendations are considered appropriate :

The results of this study should be made available to extension administrators, extension agents, and other individuals responsible for planning and providing educational programs to assist in selecting appropriate method of delivery.

Extension educators should consider utilizing correspondence instruction as a method to deliver programs.

Similar studies should be conducted in other programming areas and in other counties throughout the state.

Further study should be conducted on this home vegetable gardening program, including the video program, to further determine the effectiveness of various delivery methods.

A study should be conducted to determine why more nonwhite potential participants are not participating in the series.

Based upon the demographic differences found in this study, further study should be conducted to define the population that the Pinellas County Cooperative Extension Service is actually reaching through various delivery methods. This information could assist in selecting the most appropriate teaching methods.

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