

# Reactions to an Initial Attempt At Implementing Interactive Videodisc in Extension

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*The study focused on evaluating (a) the computer-directed videodisc technology as a delivery method for Extension, and (b) the effectiveness of using it to teach cash flow planning to farmers/ranchers. Extension agents in 12 states completed open-ended questionnaires explaining how they prepared for the videodisc and how they used it. They also completed anecdotal notes on the participants. Farmer responses were recorded in a computer file when they used the program.*

*Agents used the technology with minimal problems. They relied heavily on personal contacts to recruit participants. Farmers used the technology with few problems and reacted positively to both the technology and the program content.*

The Cooperative Extension Service (CES) must constantly examine new delivery systems to see if they provide economical, strategic, ecological, and/or social benefits. The new technology of interactive videodisc has developed to the point where CES is testing the delivery system. Extension needs to explore if it is economically and organizationally feasible to implement the technology as part of its delivery system.

To explore the potential for using interactive videodisc as an Extension instructional tool, Extension Service-United States Department of Agriculture (ES-USDA) funded a pilot project to design, produce, and evaluate an interactive videodisc program. The program, "Cash Flow Planning for Farmers," assists farmers/ranchers in learning about the topic and in preparing a cash flow plan for use with their business.

## Overview of the Project

"Cash Flow Planning" is a Level III<sup>1</sup> interactive videodisc program and consists of two parts—an instructional and a data entry segment. The instructional segment on interactive videodisc teaches skills for cash flow planning. The data entry segment is a computer-assisted instructional program complemented by the visual reinforcement examples on the videodisc program. A workbook accompanies the program.

The design for the instructional segment consists of the presentation of a concept followed by test questions. Depending on the answers, users either go on to the next concept or go through a remediation loop. The remediation loop may repeat the specific instructional segment or present an altered

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version to explain the concept in another manner. After completing the instruction on the concept, the user returns to the main menu to select the next topic.

When the instructional segment is completed, the user is directed to proceed to the data entry segment which applies the information to the farmer's own specific cash flow plan. The data entry segment returns the user to the instructional videodisc if the user has questions about the process, or if the user forgets how to calculate or enter certain items.

The hardware used in the project is (a) a microcomputer with its own monitor, (b) a videodisc player with a video monitor or television, and (c) a printer. An equipment manual provides instructions for setting up and operating the equipment.

Directors from 18 state Extension services agreed to purchase the necessary equipment to operate the program and involve at least one Extension agent in a selected county to participate as a test site. (Note: The states were Georgia, Idaho, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, South Carolina, Utah, and Virginia. In Nebraska there were 11 test sites.)

### **Program Evaluation**

A study was designed to evaluate the computer-directed videodisc technology as a delivery method for CES, and focused on problems associated with getting the interactive videodisc into operation in an extension office. It then tested the reactions of farmers/ranchers to both the educational program and to the videodisc technology (Rockwell, 1987).

Open-ended questionnaires were used to collect data from Extension agents at the target sites. A total of 25 agents in 12 states reported about their preparation for using the videodisc. A total of 19 Extension agents in 10 states reported on the implementation process. Also, agents in 10 states completed anecdotal notes about individuals who participated in the program.

Questions soliciting clientele reactions were included in the computer program and recorded on a floppy disk. Initial user reactions were recorded from April to July of 1986. The 92 recorded responses were from 48 farmers or ranchers, 13 lenders, 24 Extension agents, and 7 other people.

### **Preparation and Implementation at the County Site**

The majority of the Extension offices where the "Cash Flow Planning" videodisc was tested had the computer-related equipment necessary to run the program but needed to purchase the videodisc player. Only 1 out of 25 test sites indicated having difficulty adapting their existing equipment for the videodisc project.

Most of the Extension agents (89%) indicated the equipment manual was sufficient to prepare them to set up the system. Problems arose when the computer was a different brand than the one described in the manual.

Extension agents at half of the sites (53%) indicated they had problems using the "Cash Flow Planning" program. Over half the problems related to the data entry segment.

Although the computer equipment was available, there was a concern expressed about use of the videodisc program beyond the pilot project:

clientele use of the videodisc might start competing with the time the equipment is needed for office operation. In addition, using the equipment at sites other than the Extension office would necessitate purchasing equipment for each site [Note: Bitney et al. (1986) identified the total cost of all equipment (computer, monitor, printer, videodisc player) at approximately \$3,700 in 1986; Gleason, et al. (1987) place the range for a basic interactive system between \$3,000-\$5,000.]

Most of the Extension agents (89%) indicated that a trial run of the program was sufficient training for them to help clientele use the program. However, the agents suggested a better understanding of the technology and the terminology would be helpful. Therefore, preparation of an orientation videotape that describes the program, the technology, and the equipment set-up might prove to be a very valuable aid to the Extension agent.

### **Utilization at the County Sites**

For the pilot project, Extension agents relied most heavily on personal contact to promote the program and recruit participants. They also used mass media and some agents received good television and newspaper coverage about the project.

Of the 25 test sites, 72% used the cash flow interactive videodisc as a stand-alone program. Another 20% used it as supplemental to other programs, with 8% using it in both capacities.

In 86% of the county sites, the Extension agent was the person who oriented the client about using the computer and the videodisc. The amount of time spent orienting the client ranged from 3 minutes to 30 minutes with an average time of about 12 minutes.

The amount of time farmers/ranchers spent working on the program ranged from 60 minutes to 161 minutes with an average time of 102 minutes. A common complaint was that it took too long to complete the program.

Although there was a workbook developed and provided for use along with the program, only half (47%) of the participants used the reference. Since there was no mention of this supplementary reference material on the videodisc program, it is recommended that supplementary materials be identified and illustrated at the program's beginning. Another option to explore for utilization of supplementary materials might be to store them magnetically and provide a print option.

### **Participant Reactions**

Farmers were allowed to identify up to three reasons why they were interested in participating in the "Cash Flow Planning" videodisc. Their responses included:

- (a) to improve farm management ability—83%
- (b) to increase farm management knowledge—71%
- (c) curiosity about the program—56%
- (d) to learn about cash flow basics—25%
- (e) to develop a cash flow plan for use with lender—23%
- (f) to determine financial position—17%

Out of the 48 farmers, 42% had not used a cash flow plan before. Out of the remaining 28 farmers, 18% had used a cash flow plan for only one year.

Nearly three fourths of the farmers (71%) had very little or no computer experience prior to their work with the cash flow videodisc program; 41 percent had very little or no typewriter experience.

Design factors that program users liked (or would have liked) included:

- (a) a map (as part of the main menu) that showed the structure of the program;
- (b) an escape option so they could exit at any time from a learning segment;
- (c) a quit option so they could quit participation at any point and re-enter again without repeating the instruction;
- (d) an interrupt key so they could stop more frequently;
- (e) immediate feedback on each question so the user knew if the response was correct or incorrect; and
- (f) a remediation loop that specifically addressed an incorrect response.

Out of 46 farmers, 58% worked on the program by themselves and 42% worked as a group. Where one or more additional persons participated in the program, one of the additional persons was the farmer's spouse. Although the individual averaged 97 minutes and the groups averaged 118 minutes working on the program, there was no significant difference between these two figures.

Farmers ( $n=48$ ) and lenders ( $n=13$ ) provided their reactions to the cash flow plan resulting from their participation in the videodisc program. Their responses were:

- (a) 94% of both the farmers and the lenders felt the plan was quite complete;
- (b) 96% of both the farmers and the lenders felt the plan was quite realistic;
- (c) 100% of the farmers and 93% of the lenders felt they would place some or a great deal of confidence in the plan; and
- (d) 71% of the farmers and 85% of the lenders said the plan would have a great deal of influence on the lender's decision to grant a loan.

## Reactions to Videodisc Instruction

Users were asked 16 questions that rated their feelings about the learning experience with the videodisc technology. The questions were slightly adapted from the Bunderson, Olsen, and Baillio (1981) study on an interactive videodisc developed for a college level freshman biology course. Responses for all 16 questions were similar for both groups (Figure 1).

As a group, their responses ranged from agreeing to strongly agreeing with each question. The questions listed according to general categories were:

### *Personal application*

Time passed quickly while I was using this videodisc.

This lesson allowed me to meet my own learning needs and interests.

In taking this lesson I was challenged to do my best work.

This videodisc allowed me to be very actively involved in my own learning.

My interest in developing a cash flow plan has increased because of this lesson.

*Future use*

I would recommend this videodisc to my friends.  
I would take another course with a videodisc.

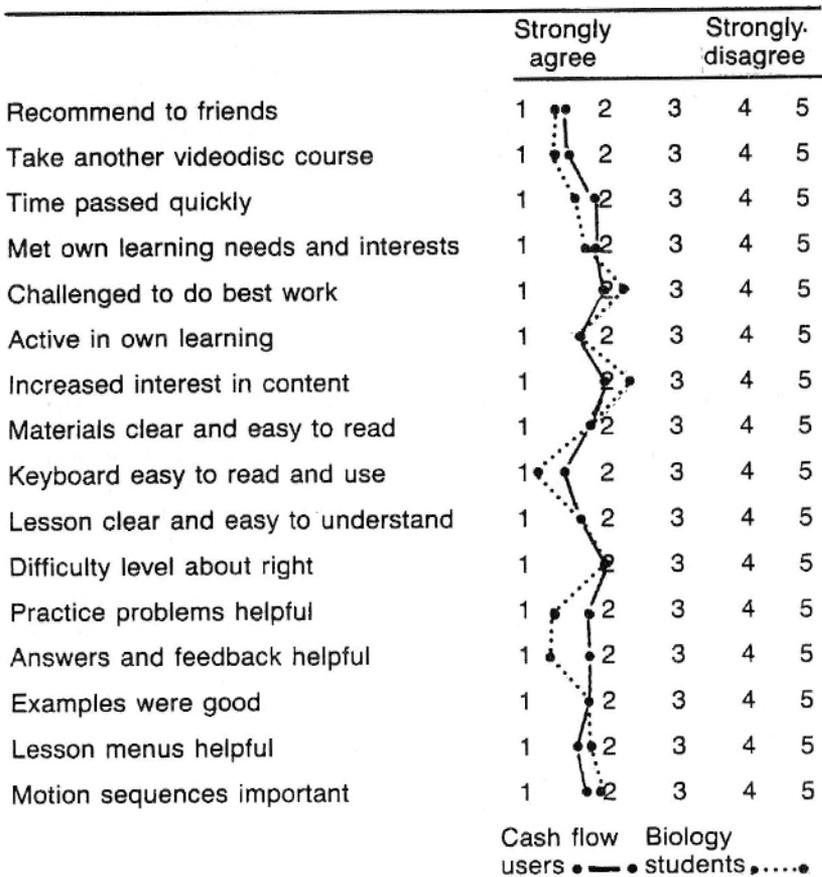
*Use of keyboard and understanding of content.*

The keyboard was easy to read and use.  
The videodisc materials were clear and easy to read.  
The cash flow lesson was clear and easy to understand.  
The content was at the right level of difficulty.

*Instructional techniques*

The cash flow practice problems were very helpful.  
The cash flow answers and feedback were helpful.  
The cash flow examples were good.  
The lesson menus were helpful.  
The motion sequences were important.

**Figure 1. User Reactions to Videodisc Instruction**



## Summary

Initial findings from the field test identified problems related to implementing the technology in the target sites. The problems associated with the uniqueness of the "Cash Flow Planning" program were addressed throughout the implementation phase and adjustments were made in the program. However, the initial cost of the equipment and how it is used at various sites are major problems that need to be carefully assessed as the technology becomes more widely used.

Although Extension agents were able to help clientele use the program after their initial trial run, they expressed a need for a better understanding of technology along with the unique terminology associated with this medium.

Because the new technology was being tested, Extension agents relied heavily on personal contacts to promote the program and recruit participants. However, at most of the test sites, the videodisc was used as individualized instruction or supplemental to other programs. There were also a few attempts made to use the program in group instructions.

With a short orientation session, farmers/ranchers were able to use the technology with few problems. They indicated that they learned about cash flow planning from the videodisc and expressed confidence in the cash flow plan that was developed from the program. Participants reacted very positively when asked about their feelings about the learning experience with videodisc technology.

Using interactive videodisc as an educational tool in CES has profound implications for the future as services and opportunities are provided for adult learners. It has the potential to be a cost effective method of delivering high quality and very technical instructional materials to clientele.

## Footnote

<sup>1</sup>A videodisc can be controlled in three ways which are called levels (Fort, 1984; Florell and Nugent, 1985; Floyd, 1985; Utz, 1984). Level I uses a keypad, such as a television keypad, to control the videodisc player. A user can search for individual video frames or advance to precoded stops. Some programs have divided the disc into sections accessible through the keypad. There is no external computer used, no computer memory, and no capacity for the videodisc to branch interactively on its own.

In Level II, a computer program is loaded onto the videodisc along with the audio and video information. This program informs the videodisc player of the visual and audio arrangement to play. The player runs by itself; it moves to certain sections of the disc or it waits for human input through a keypad. Level II incorporates all the features of Level I and does not use an external computer.

An external computer controls a Level III videodisc. A user can input commands from a keypad, light pen, touch screen, or in some instances voice. A Level III videodisc allows one to superimpose computer-generated graphics and/or text over visual images. Level III discs incorporate both Level I and II features. At Level III, the videodisc player becomes a computer peripheral.

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