Use of a High Involvement Instructional Method to Enhance Students' Learning of Distribution Concepts

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An innovative instructional method using high student involvement was employed to improve the teaching of distribution concepts. Student groups conceptualized and developed a videotape case study examining components of a firm's distribution activities. Students were better able to learn distribution concepts with a videotape project than with a more traditional written report.

The purposes of this article are to describe the use of student-produced videotapes in an undergraduate marketing distribution or logistics course and to report whether producing a videotape was more effective than a traditional written project in increasing students' understanding of fundamental course concepts and their interrelationships.

A basic task of education is to teach students fundamental principles, generalizations, and/or theories (Bellenger and Bernhardt 1977). This is especially true in introductory or overview courses, but can also apply in more advanced or specialized courses. Methods of instruction may include lecturing, textbook reading, outside readings, small and large group discussions, guest lecturers, case studies, computer games or simulations, films, and/or videotapes (Berdine 1987; Cadotte and Rinehart 1986; Cohen 1988).

Typically, passive methods of instruction (i.e., those using low levels of student involvement) are less effective than active methods (i.e., those using higher levels of student involvement). This article describes an innovative active instructional method featuring high student involvement employed to improve the teaching of principles, generalizations, and/or theories. The specific method required students to conceptualize, develop, and present a videotaped case study that overviewed one or more elements of a firm's distribution system.

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The use of educational media is not new, and media have proven to be effective in presenting various educational material in the classroom setting (McLuhan 1967). Traditionally, however, students have been passive recipients. Use of audiovisual materials and the like has only involved presenting films, slides, transparencies and/or videotapes to students, although at times use of such media has been made more active through discussions, role playing, question-and-answer sessions, or other activities.

The unique feature of the approach reported here is that the students actually produce the educational media—specifically, the videotape presentation. While the project increases the workload on the instructor and students, active involvement of students is maximized, with the objective being to increase students' learning of fundamental principles, generalizations and/or theories.

Although the classes used in this study included upper division undergraduate students, there is no reason to believe that the approach would not be effective for lower division undergraduates as well as graduate students. The only constraining factor is the amount of time required of the instructor and students; the workload might limit this method

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of instruction to classes of up to 30 students. However, if adequate videotape equipment and personnel are available and lead time and instructor planning are sufficient, the approach could be used at all levels of instruction and in a variety of courses.

PEDAGOGICAL ALTERNATIVES

Although there is no one best method of instruction, the instructor should be versatile enough to select techniques and methods suitable to his or her personality, the students in the class, the subject matter being taught, and the instructor's educational objectives.

In the university setting, several methods of instruction are traditionally used to teach distribution topics. These methods include lecturing, textbook reading, outside readings, group discussions, answering or solving various questions and problems, guest lecturers, and case studies. The lecture is the predominant method of teaching, with textbooks and outside readings used to furnish additional information. The purpose of these methods is to bridge the gap between the students' experiences and knowledge and the concepts they are attempting to master. However, these methods do not allow students the opportunity to interact or question.

Group discussions can be a creative method of problem solving, can enhance understanding, and can be used to present committee reports or findings of student research. When a group freely discusses a topic, the group's combined thinking uses many skills, insights, and backgrounds. Cases allow students to communicate the details of studies of an individual situation, institution, decision, or issue. They are useful because they provide insights into complex problems and opportunities to synthesize the theory and principles taught with the practices and experiences represented by the business world.

Educational media can also be used to enhance learning by increasing student motivation and information retention, and can support other traditional teaching methods. For example, overhead transparencies can present information in a systematic, developmental sequence with the presentation rate controlled by the instructor. A slide series is similarly versatile, and can result in colorful, realistic reproductions of original subjects. However, a limitation of both methods is their inability to show motion. Film and videotape meet the need for motion and may more clearly illustrate the relationship of one idea to another, build a continuity of thought, or create a dramatic impact.

At many institutions, videotaping is used instead of motion picture production because production equipment and staff are available and because the medium can incorporate other visual forms such as graphics, art work, still photography, slides, and motion pictures into the final product. Videotapes can be used to show practical industrial examples when field trips are not possible, and can be used to supplement lectures or as review tools. Furthermore, the medium involves several senses simultaneously and requires viewer participation or involvement. Thus, the unique characteristics of videotapes can be used to promote more active participation of students in the communication process and thus enhance teaching effectiveness.

METHODOLOGY

Marketing instructors have made extensive classroom use of commercially available and independently produced videotapes (*Marketing Educator* 1988). However, the production of videotapes by students enrolled in a course as part of the instructional process is still uncommon, especially in distribution or logistics courses.

The course used for this study was titled "Logistics Management" and was described in the university's undergraduate course catalog as covering "the physical supply and distribution function in business management, including channel selection, transportation, facility location, and materials management; concentrates on the analytical and managerial methods necessary for the development and control of an integrated logistics system."

Two undergraduate upper-division marketing classes were evaluated. No statistically significant differences were found between the classes on the dimensions of class size, gender mix of the students, or declared academic major. Both classes were offered in

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the morning and met twice each week. Course requirements included a midterm and final exam, completion of a group term project (videotape or written paper), and group presentation of a case study from the text. One class served as a control group, where traditional methods of instruction were used and no videotape project was assigned; the other class was instructed in the same way but was assigned a group videotape project. Course content, examinations, text, instructor, and method of instruction were kept as similar as possible in both classes. In the non-videotape class, students were assigned a more traditional written group project or paper. The topics that could be selected by students in both classes were identical. Students could choose to overview the entire distribution operation of a firm (retailer, wholesaler, or manufacturer) or examine a specific component such as order processing, transportation, or warehousing.

Groups in the non-videotape class were allowed to select a topic from options provided by the instructor and the groups used library reference and magazine materials to develop the written paper. The instructor provided guidance and direction to the student groups throughout the term as they conceptualized, outlined, researched and prepared their written term paper projects. Students in the other class were assigned a videotape term project as identified in Exhibit 1.

EXHIBIT 1

STUDENT ASSIGNMENTS AND PROJECT DESCRIPTION

Team Member and Functions	
Coordinator	Administrator for the team. Acts as liaison between the instructor, the instructional media center, and the private company. Works with team in developing script.
Technician	Conducts videotaping with instructional media personnel. Makes two or more visits to the private company. Works with team in developing script.
Editor	Has final responsibility for editing the videotape. Works with team in developing script.
Researcher	Obtains information from secondary sources and from private company to be used in developing script. Works with team in developing script.
All team members	Prepare typewritten paper (including script) to be turned in on day of presentation. Participate in classroom presentation and/or discussion.

Specific Guidelines:

1. Each team will meet with the instructor every two weeks to provide a status report and to solve problems, discuss progress, etc.
2. Approximately two visits to the private company will be required. The first visit will include the instructor, all team members, and a technician from the instructional media center and will be a tour of facilities, question/answer session, and data gathering visit. The second visit will include the instructor, the team member responsible for videotaping the facility, and a technician from the instructional media center.
3. All team members will work together to develop the script for the videotape and to provide suggestions to the editor for final editing.
4. The assignment includes the completion of an edited videotape of the topic selected, a paper (including script) summarizing the topic, and a presentation in class (narrating the videotape and coordinating any discussion and/or question-answer session).
5. The assignment is due on the day on which the team presents the videotape in class.

In the videotape project class, students were placed into teams of five to seven persons and required to develop a 30-minute videotape presentation, including narration, on a particular distribution topic, concept, or principle. Topics or subjects selected by students included warehousing activities of a major appliance manufacturer; order processing procedures of a large food wholesaler; transportation activities involved in retail grocery distribution; warehousing of small parts inventory for an agency of the federal government; materials handling and warehousing activities of an automated food

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distribution center; distribution operations of an oil field supply distributor; and transportation operations of a regional motor carrier operating in several states.

Companies within the immediate area were used as subjects. All technical aspects of the videotaping were performed by professional staff of the instructional media center at the university, but students had full responsibility with respect to subject matter, narration, items selected for videotaping, and any other material relevant to developing the videotape presentation. The specific tasks and responsibilities for each student team are identified in Exhibit 1.

Teaching effectiveness in both classes was measured by an evaluative instrument called "IDEA." The IDEA form is a somewhat unusual student evaluation instrument because it rates effective teaching differently from most other rating forms: "For the IDEA system, instructional effectiveness is defined as reports by students of their progress on those teaching objectives which the faculty member specified as relatively important for that particular course" (Cashin et al. 1976).

The instructor identifies essential or important objectives for the class, and those objectives are then correlated with student responses on the IDEA form which measure their progress on those and other objectives. Students are not aware of which objectives were rated highly by the instructor, nor are they aware that the instrument is even measuring achievement of course objectives. The IDEA form also measures many other components of teaching, including involving students in the class, communicating content and purpose, and creating enthusiasm.

RESULTS

The testing of the primary hypothesis involving teaching effectiveness was preceded by tests to determine whether students' perceptions of themselves, the course and the teaching methods were equivalent across the two classes. Table 1 lists measures used in these assessments and presents a comparison of the classes.

Students were asked to evaluate course workload, difficulty of subject matter and content integration using a five-point scale. Also measured were students' perceptions of their progress in the course compared with other courses taken. Aspects of the instructor's teaching methods were examined and included factors such as making the subject matter significant, making clear how each topic fit, explaining course material clearly, enthusiasm about subject matter, and stimulating students to higher intellectual effort. Students provided a self-rating of their behavior and attitudes in the class on issues such as whether they worked hard, had a strong desire to take the course and improved their attitude toward the field.

The amount of work in the videotape class was rated by students, on average, as greater than that in the non-videotape class. However, where students were required to develop a group videotape project, learning effectiveness increased markedly. While students involved in the videotape project reported that they worked harder than their counterparts in the non-videotape class, they also reported that they were better able to relate the course material to actual business situations (students were reporting on the overall class content rather than just the material in the videotape or written project); were stimulated to higher intellectual effort; and improved their attitude toward the field or discipline to a greater degree.

The number of comparisons made in testing the equivalence of groups (see Table 1) supports the notion that the two classes were essentially equivalent, and that differences which occurred were attributable to the use of the videotape project. The primary hypothesis that the videotape project would enhance the learning of distribution concepts was tested by comparing mean ratings for each class on student assessment of progress on learning fundamental principles, generalizations or theories (where 1 = lowest 10% of courses taken; 2 = next 20% of courses; 3 = middle 40% of courses; 4 = next 20% of courses; and 5 = highest 10% of courses).

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TABLE 1

TEST OF EQUIVALENCE OF CLASSES

(Item from IDEA form instrument)

Item	Mean for Videotape Class	Mean for Non-Videotape Class
Course		
Amount of other work (non-reading)	3.76[a]	3.17[a]
Difficulty of subject matter	3.16	3.33
Content integration	4.24	4.00
Teaching methods		
Demonstrated significance of subject	4.60	4.26
Made clear how each topic fit	4.24	4.26
Explained course material clearly	4.17	3.84
Related material to real life situations	4.58[b]	4.16[b]
Seemed enthusiastic about subject matter	4.76	4.56
Stimulated students to high intellectual effort	3.52	3.16
Students' self ratings		
Worked hard	3.72	3.28
Strong desire to take course	3.28	3.27
Improved attitude toward field	4.16	3.72
Student progress		
Learning fundamental principles, generalizations, or theories	3.96[b]	3.58[b]
Learning to apply course material to improve rational thinking, problem solving and decision making	3.84[b]	3.42[b]

[a]P-value of .05 or less.

[b]P-value of .10 or less.

Scales for items were as follows:

Course: 1 = much less than most courses; 2 = less than most; 3 = about average; 4 = more than most; 5 = much more than most.

Teaching methods: 1 = hardly ever; 2 = occasionally; 3 = sometimes; 4 = frequently; 5 = almost always.

Students' self ratings: 1 = definitely false; 2 = more false than true; 3 = in between; 4 = more true than false; 5 = definitely true.

Student progress: 1 = low (lowest 10% of courses I have taken here); 2 = low average (next 20% of courses); 3 = average (middle 40% of courses); 4 = high average (next 20% of courses); 5 = high (highest 10% of courses).

Results of a comparison between the two classes showed a marked difference between student perceptions of progress on learning of principles, generalizations, and/or theories (p-value of .10 or less): mean response for the videotape class was 3.96 and for the non-videotape class, 3.58. Also, students in the videotape class indicated that they were better able to apply course material to improve their rational thinking, problem solving, and decision making (mean response of 3.84 versus 3.42) (p-value for mean difference of .10 or less). Individual student comments provided on the IDEA form instrument supported the conclusions of the statistical tests that persons assigned a videotape project had increased their learning of distribution concepts relative to those not assigned a videotape project.

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Selected student comments are provided below:

> The group experience was meaningful; the nature of the project forced participation and led to more understanding of the subject, plus it tied together different aspects of distribution in a way that was clearly understood.
>
> I learned things about distribution that I never could have learned from books or lectures. It was a new kind of project for me to be involved in and I found it exciting.
>
> Doing this was better than writing a paper! It gave a more practical application and enabled the students to learn more than the typical case study or research project. It takes a lot of time, but it was more enjoyable to do.
>
> I learned immensely what real distribution and marketing are all about from a firsthand experience. Taught me a lot more than any research paper would have.

IMPLEMENTATION OF A VIDEOTAPE CASE STUDY IN CLASS

As mentioned previously, a non-standard method of instruction may require additional effort from both students and faculty. Given the results obtained, however, this project appeared to involve a favorable cost-benefit tradeoff to the student and faculty member.

The instructor will expend most of the effort before the term begins. Primary items that the instructor must address include identifying firms that are candidates for videotaping; obtaining permission from each firm for its participation in the project; determining approximate times when visits to the firm can take place (for initial orientation and subsequent videotaping); scheduling the use of personnel and equipment from the instructional services center (or equivalent); and developing specific instructions for conducting and completing the project.

Once the term begins, the instructor must ensure that students fully understand the purpose and scope of the videotape project as well as the time commitment that will be required. Given the additional effort required of students to conduct and complete the project, it is advisable to give reasonable grading weight to the project, probably 30-40% of the course grade. As the term progresses, the instructor should periodically monitor the progress of student teams; biweekly meetings with students seem to be adequate.

The videotape assignment must be made early in the term, particularly if the university is operating under a quarter system. Student teams should be formed within the first two weeks of class and the initial visit to firms scheduled as soon as possible thereafter, but no later than the end of the fourth week of the term. Student teams should be provided with background information about the company they will videotape prior to their initial visit. Most firms have a variety of materials that can be duplicated and used for that purpose.

The instructor should accompany each student team during the initial visit to the firm. It is also advisable to have the technical support personnel attend the first meeting with the firm to identify opportunities and difficulties for the actual videotaping that will take place later.

The actual videotaping of the firm's activities should occur no later than approximately two-thirds of the way through the term because sufficient time must be allotted to viewing, editing and narrating the videotape project. Because these activities must be performed near the end of the term, equipment and facilities must be scheduled to minimize possible problems. Demands on instructional media centers are typically greatest at the end of a term, so scheduling is very important.

The performance of student teams can be evaluated using two measurement devices. First, students should provide the instructor with peer evaluations of each student member of the team. Such evaluations are not mandatory, but are recommended to ensure that each student in the group participates equally. Second, the videotape should be evaluated by means of a written instrument, known to the students beforehand, which includes specific factors. The instrument used in this experiment included the factors of clarity (understandability) of the videotape presentation (20%); logical flow of materials presented (20%); quality of the analysis (superficial versus in-depth) (40%); and ability to hold the interest and attention of the audience (20%).

An additional activity not used in this experiment, but one which could prove useful,

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would be to invite representatives of the videotaped firms to the class presentations. In these projects, firms were provided with a copy of the videotape, but a representative's presence during the class when the tape is shown could serve as an excellent vehicle for class discussion. If possible, the same persons who were contacts at the various firms should come to the class where their firm's videotape is shown.

VIDEOTAPE APPLICATIONS

Videotapes generally, and the videotape project specifically, have advantages that make this method of instruction attractive to teachers.

General Applications of Videotapes in the Classroom

Use of videotapes can mean a better use of classroom time. If videotapes are used to present guest lectures, the teacher will know exactly what the speaker will say and can prepare discussion questions, exercises, and other class activities to enhance the presentation prior to the showing of the videotape. Use of videotapes can also eliminate the scheduling problem of trying to coordinate the appearance of a speaker with course topics. From the perspective of distribution practitioners, better educated students mean better prospective employees for their firms. Videotapes can help in the presentation of facts, principles, and theories, and can enhance students' understanding of how to integrate course material (Cohen 1988).

Universities could develop audiovisual libraries of distribution slides, films, and videotapes for in-house use in various courses. The libraries could serve as resources for other instructors and students seeking to visualize how various distribution principles, theories and concepts are implemented in the business world.

Specific Applications of the Videotape Project

If the videotapes created by the student groups were prescriptive as well as descriptive in scope, participating firms could be provided with recommendations for improvements, modifications or other changes in their distribution systems. Such discussions could serve to further enhance the relationship between the students, the classroom and the firm and increase the relevance and significance of the videotape learning experience for all parties.

Videotape projects prepared by students during one term can also be used by the instructor in subsequent terms in lieu of field trips, which are sometimes difficult to schedule and conduct owing to weather conditions, student absences, and class conflicts. Videotapes can maximize the use of both instructor and student time by eliminating the travel, setup, and preparation normally required for off-site visits.

An additional benefit of student-produced videotapes is that they typically include materials that are relevant to other students. Faculty perspectives of course material and content often differ from student perspectives, and videotapes created by students usually contain examples, illustrations, and discussion that other students find interesting and pertinent. As a result, the learning experience can become more relevant and meaningful to those individuals viewing the videotapes in subsequent terms and/or classes.

CONCLUDING COMMENTS

In summary, videotapes can be used effectively in the classroom to increase learning, and their use will probably increase in the future. However, obtaining the benefits discussed above requires effort from both academicians and businesspersons in terms of time, money, personnel, and equipment. Instructors assigning videotape projects will spend large amounts of time "shepherding" student groups through the projects and acting as the liaison between the company, student group, and audiovisual personnel. Furthermore, the university must make available the necessary personnel, equipment, and expertise required to carry out a videotape project from beginning to end. In addition, VCRs and other equipment needed to present videotape material in the classroom must be

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available. Such equipment is not inexpensive and requires a continuing commitment from the university budget.

In addition, commitments are required from the business community, which must be available to faculty members and their classes for videotape projects. A large amount of audiovisual material exists in industry, but much of it presently is not catalogued. It would be helpful if practitioners would make such resources available for educational purposes. Additionally, financial support from various firms and industry groups would be helpful, since most universities do not have the funds necessary to develop, maintain, and expand their videotaping capabilities. Gifts and/or grants on a one-time or ongoing basis would enable universities to obtain the required equipment, facilities, supplies, and personnel.

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