

# A NEW DIMENSION IN MANAGEMENT TRAINING: A VIDEO-AUDIO- PARTICIPATIVE (VAP) SYSTEM

*simulation and response  
as part of an approach  
to improve the quality  
of learning*

The increasing variety of modern training methodologies and learning resources is a prime factor contributing to the difficulties of designing effective learning environments and providing high quality training programs. In one respect this variety makes the task easier because more capability is available. Yet, there is the complex problem of selecting the best elements and optimally using the variety.

This article first describes an approach for achieving better management of this variety. One application of the approach resulted in the conception, development and implementation of a novel system for teaching and learning – the Video-Audio-Participative (VAP) system. The article also describes this VAP system which is the combination of several video and audio teaching methods and learning resources including participative elements which promote active participation in the learning process by every learner.

The particular VAP system developed was designed to train potential managers in the basic principles and concepts of management. Research and development activities originated in the Management Department, College of Business Administration, University of Georgia.

## MANAGEMENT APPROACH TO DESIGNING LEARNING SYSTEMS

The results-oriented approach, which was conceived to design learning systems by better management of the variety, places prime emphasis on selecting the appropriate combination of learning resources. Video, audio and participative learning resources are combined to capitalize on the synergistic effect of their individual advantages in the design of learning environments.

This way of managing the variety of teaching techniques and learning resources focuses on the type of learning and the learning environment required for specified performances. The conditions or environment for learning differ with the type of learning, as Gagne

notes.<sup>1</sup> He cites two model examples. It is inappropriate to design the same instructional systems to teach both the use of a key punch machine and how the mechanisms of the machine operate. Also, in learning a foreign language, to have identical instructional systems for pronouncing words as for understanding spoken sentences is inappropriate.

The type of learning with which management training often deals is principle and concept learning. The pattern of events in this kind of learning are:

1. Gaining, maintaining and controlling attention
2. Providing cues or hints to guide learning efforts
3. Learning activity
4. Stimulating recall
5. Providing feedback in the form of reinforcement or knowledge of results
6. Establishing conditions for remembering and transfer of learning to situations of application
7. Assessing overall outcomes and effectiveness

Learning is impaired when all of these events are not present and are not properly ordered.<sup>2</sup>

If various types of learning require different conditions of learning, it follows that the method for designing learning environments should include a process for allocating available learning resources so they are interrelated to provide the optimal conditions of learning, thereby maximizing the probability that learning will occur.

In designing these conditions of learning, the instructor or trainer may prefer to think of himself as a manager of learning resources. He strives to maximize specified objectives with the resources available to him. The concept of instructors as managers is not wholly new. Although they have acted as managers in the past, the managerial task is expanding and increasing in importance due to the growing variety of teaching techniques and learning resources.

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## EXPLORATIONS IN TEACHING METHODS AND LEARNING RESOURCES

The initial thinking about the design of the VAP system centered around two premises. One, that learning can be enhanced if the learner has frequent, meaningful interaction with a relevant, realistic environment. The second proposition influencing the design of the VAP system was that active participation by the learner in the teaching-learning processes was an ingredient vital to learning.

From these propositions the VAP system evolved by exploiting knowledge of the variety of teaching methods and resources currently available. Previous research in teaching methodologies, media and equipment which was ultimately reflected in the design of the VAP system will be summarized.

### SIMULATION

Simulation is a multi-purpose process which has particular utility in training. The prime advantage of simulation in training is summarized by Gagne:

It appears as though, when properly used for training, simulators (simulations) are able to capture, and consolidate into practical skills, knowledge which would otherwise be forgotten before it could be used in an actual operational situation. It is the particular success of simulators (simulations) that they are able to build useful performances out of the raw material of initially acquired knowledge. Teachers of technical subjects are all too familiar with the student who "knows the books," or who "understands the theory," but who may exhibit a poor performance when asked to "apply his knowledge." When direct job experience and on-the-job learning can be provided immediately, the change in such a student's performance may be considerable. And for many kinds of operations, simulated job experience can have an effect which is equally beneficial. For this is exactly what the simulator (simulation) is designed to do, as its name implies: to provide practice in representative aspects of the real situation.<sup>3</sup>

This advantage is minimized in some instances because, for example, when the task for which one is being trained is simple and little danger is involved, on-the-job training can be relied on.<sup>4</sup> But complexity does exist in the job for

which the manager is being trained; danger is frequently involved in the sense that irreversible, costly decisions are likely to occur in on-the-job training. In fact, the greater the complexity and danger associated with the job of the manager, the greater is the advantage of training in a simulated environment. For this reason simulation is a major feature of the VAP system designed to create an effective environment in which to learn management principles.

One type of simulation is the management game. Research in the use of such games has clear implications for designing a learning environment. For example, Raia<sup>5</sup> compared the effectiveness of a simple management game with a complex one, and evaluated both games relative to a third non-gaming approach which included assigned readings with a review and a critique required in writing for each. Of special interest are Raia's findings related to the learner's acquisition of knowledge and skill. As expected, the empirical evidence confirmed the belief that simulation with management games is superior to assigned readings in increasing the student's knowledge and skills of management. But, the findings also indicate that complexity of the game is not an essential condition for achieving high levels of knowledge and skills. This result relates to the degree of complexity designed into an environment for simulating the realistic activities of a manager.

### ROLE PLAYING

Other research in role playing highlights several other aspects in the design of the VAP system.<sup>6</sup> Adult participants may view role playing as a childish method for serious learning. For meaningful learning to take place, the learner needs to be led to accept role playing as a useful and mature way of learning through simulated experiences. Thus, learning from role playing also varies directly with the realism and relevance of the situation to be acted out and portrayed.

Research on the acquisition of experience from complex management games<sup>7</sup> centered on the learning process and kinds of learning associated with simulation. One of the findings related student interest and motivation as a function of the position he held as a game participant. The role played, such as president or production manager, was a dominant factor in the level of interest and motivation. Thus, designing learning conditions for training managers demands care in characterizing the kind of roles to be played and in matching trainees to appropriate roles.

### CASE METHOD

The case method can also be used to simulate management activities. This technique presents the student with historical data of a business firm. The information may be presented in written form, on film or by other media. From this information the student can gain experience in identifying problems, utilizing tools of problem analysis and developing solutions. Use of the case method provides the student with experience which, although neither spontaneous nor direct observation, can enhance learning. It also allows limited interaction with a business environment and its organizational structure.

### SOUND MOTION PICTURES

Research related to media for learning, indicates that the medium which is often a key element in learning is sound motion pictures. Because much research has been done on the use of film in the teaching-learning process, only that which is especially relevant to the film aspect of this VAP educational system will be summarized.

When the subject matter being taught demands demonstration of small objects or parts, the use of film is advantageous.<sup>8</sup> Although this finding is not directly related to the learning of management principles, it does infer that film is useful when such things as facial expressions or patterns of work provide crucial cues for the learning process. The effec-

tive application of certain management principles frequently depends on the non-verbal reactions of the people involved. These, of course, can be effectively portrayed on film.

Several research studies have concluded that learning from film is not confined to details but may include the learning of concepts.<sup>9</sup> Management training and executive development deal with details, concepts and general abstractions. The research and development effort described in this article emphasizes concepts and principles of management.

Comparing color film to black and white, experimental results secured during the 1950's do not provide evidence to warrant the added expense of color, except where color is essential to learning.<sup>10</sup> Based on limited research findings the decision to produce black and white films was indicated, even though this was counter to the intuitive feeling that color would improve realism and thereby enhance the effectiveness of the film.

When using film as an element in the learning environment, supplementary materials may be used also to increase learning.<sup>11</sup> These may include not only printed outlines of film presentations, but other materials which would make the film more meaningful to the learner.

Films are usually designed with insufficient repetition, especially repetition with variations, for most students to approach mastery of knowledge and skills. Succinct treatment, commonly employed in many films, has been found far from adequate for teaching.<sup>12</sup> Findings on repetitive viewing of films show that two viewings are far better for learning than one.<sup>13</sup> However, there is little or no gain after one repeat showing.<sup>14</sup>

#### **KNOWLEDGE OF RESULTS**

Other research indicates that when using film, learner participation increases learning.<sup>15</sup> However, participation merely in the form of taking notes during the film is not effective.<sup>16</sup> Rather, learning from film is enhanced when

participation is in the form of student responses with feedback related to the responses.<sup>17</sup> Immediacy of the feedback affects learning. It has been found that immediate knowledge of results is more effective than delayed knowledge of results, even when the delay is only until the next class meeting.<sup>18</sup> Further, the knowledge of results has less effect when the student is simply indicated whether he is right or wrong than when the correct answer is also presented.<sup>19</sup>

#### **PROJECTIBLES**

Research on visuals other than sound motion pictures also had some implications on the design of the VAP system for teaching principles of management. Overhead projection of visuals has been found to improve some types of learning with significant savings in instruction time.<sup>20</sup> Research has found tentatively that overhead projection of visuals is superior to instruction with conventional chalkboard.<sup>21</sup> These findings were extended to the use of 35mm slides.

#### **VIDEO-AUDIO-PARTICIPATIVE (VAP) SYSTEM**

In planning an effective learning environment, there is a need to reach out from current practice and available technology. Accordingly, the VAP system was designed by selecting a particular combination of teaching techniques and learning resources from the existing variety. The combination was interrelated with the objective of providing maximum contribution towards ideal conditions for learning.

#### **COMPONENTS**

The VAP system includes several key physical components. The first is a sound motion picture which provides the mechanism for simulating business experience. Film and the case method are combined into a filmed case. This film is used to create a business environment with which the learner could interact as a role-playing participant.

The second component in the VAP

system is an electronic response system. This allows all learners to participate concurrently. Such equipment enables students to respond to questions and comments directed to them by the film characters, and to questions from the instructor. A large selection of these latter questions was projected from slides, which became the third component of the VAP system.

#### **REALISM**

The case method is an important feature in the VAP system. An effort was made to exploit the advantages of the case study, and perhaps extend its capability through the use of film. The filmed case is used to increase the realism of the events portrayed, rather than merely reading the case materials. The film allows presentation of information more realistically than in written cases and also brings the learner into the environment. For example, tone of voice and facial expression sometimes convey more information than the words which are spoken. The learner has the opportunity to view a situation and make his own observations and judgment rather than simply reading about it. Unlike the written case, the student is not given written information to read, re-read, and study. However, film segments are viewed a second time after the students carefully review the relevant information presented initially. Like the written case, the film case allows the student to gain experience in identifying problems, applying tools of managerial analysis and developing problem solutions.

The story-line or theme of the filmed case is based on actual events which transpired in one of the major airline companies. For the film to show these events as realistically and authentically as possible, the script was written in a way which accurately described the actual events. The primary purpose of the film is to provide a life-line environment so the learner might be given an opportunity to apply theory to reality and gain experience in a business context.

## ROLE PLAYING

The film is designed so the student plays a role in the simulated environment and this has some strong implications for learning. Meaningful learning in role playing situations is dependent upon the student's willingness to accept the role. Research in role playing also indicates that the role which the student plays is as crucial to his acceptance of it as the realism and relevance of the environment. The role selected for this VAP system is a position which the student is likely to occupy early in his business career. He is a new employee in a staff position in the firm's in-house consulting department. He attends film simulated meetings and responds to various questions posed to him by the film characters. He is active in defining the problems to be solved, suggesting additional information to be collected, making on-site observations and analyses, synthesizing alternative courses of action and recommending problem solutions.

## FILMING TECHNIQUE

In filming, the subjective camera technique was used so the student could more easily accept role playing. The filming was predominantly accomplished with the camera's lens in the position of the student's eye. The camera was positioned where the role-playing student would be if he were actually in that environment. The film characters talk to the camera, i.e., the role playing student, not just to another film character. This technique was utilized to increase the likelihood of gaining and maintaining the student's attention.

## SIMULATION

At the outset of the simulation exercise the student is asked to assume that he has interviewed with the airline company and has received and accepted an offer of employment. This sets the stage for the first film segment which further creates and reinforces the illusion of being a new employee.

As the simulation begins the employee arrives for his first day on the job. The

film starts with the camera's eye approaching and entering an opening door where the employee is greeted by a secretary. She welcomes him and directs him to the office of the manager for whom he is to work. After a few comments spoken directly to the role-playing student, the manager holds a folder out to him which contains a "welcome aboard" letter from the company president, an organization chart, a definition of objectives and goals of the firm, and a summary of duties and responsibilities of key personnel.

## FILM SUPPLEMENTS

At this point the film is temporarily interrupted and each student is handed a personalized folder containing the above mentioned information as one of the kinds of supplementary materials. Research in the use of film has indicated that supplementary materials such as these often increase learning. Similar materials of this type are also provided at other strategic points.

Supplementary materials also include outlines of events and information portrayed and presented in the film. After scenes where an abundance of well organized information is succinctly presented, as is often the case in a business conference, the students are given an outline of that information, but only after they are allowed the opportunity to recall, discuss and interpret what they had heard and seen. In stimulating recall, clues and hints are given in the form of objective questions presented on screen with a slide projector.

## STUDENT RESPONSES

The student participation built into the VAP system emphasizes student responses to varied stimuli presented in the simulated environment. The learner responds first to queries presented by the film characters. This initial response is spontaneous and written in brief essay fashion. This forces the student to respond in much the same way that he might in a real business situation.

Next, the learner responds to several ob-

jective questions related to each film segment viewed. Some of these questions are designed to stimulate the learner's recall of information and events depicted on film. Others provide hints to guide his learning. Still other questions are used to stimulate thinking and generate discussion. Finally, others are used to reinforce concepts previously discussed.

Simultaneous response by all students is preferred to sequential responses. When responses are sequential, each successive response is influenced by previous responses to that same question. The electronic response equipment used to achieve this immediate and simultaneous response provides each student with a four-choice responder. When a question is presented, students simply discriminate from among the multiple choices to select what they consider to be the best response.

## COMPREHENSION MONITOR

The response system includes a special purpose computer which indicates the percentage of students responding to the various choices of each question. The instructor is provided with instantaneous appraisal of learner responses, enabling him to monitor the level of comprehension. If the percentage of students who responded favorably is sufficiently high, the instructor moves to other concepts thereby avoiding laborious discussion of ideas already satisfactorily comprehended. With a low proportion, of correct responses, the instructor reiterates, discusses, and clarifies those points not well understood. This comprehension monitoring has at least two advantages — efficient use of time and better learning.

The VAP response system is designed to provide information not only to the instructor but, perhaps more importantly, to provide immediate feedback to the student to reinforce learning. The instructor indicates to the learner whether his response is right or wrong. In addition, and of greater consequence to the learning process, the instructor dis-

cusses the best responses, why they are best and why other responses are less appropriate. This provides reinforcement for the learner who responded favorably, and extinction through explanation and clarification to the student whose response is inappropriate. Immediacy of the feedback to the learner is important, and the response system permits this immediate feedback.

### SITUATION ANALYSIS

At various points in the simulated environment students are required to make decisions. At these decision points the film is stopped and students engage in an analysis of the situation to gain experience and practice in the methods of making decisions. They examine alternative courses of action, consider the merits and shortcomings of each and anticipate the likely effect of implementing each alternative. The various alternatives are developed by recalling and applying principles and concepts of management previously studied. When several alternatives have been evaluated, the students select the best course of action to be taken. This selection dictates the events to occur next in the filmed environment.

### DECISION BRANCHING

A key feature in the VAP system is the branching capability. The branching technique built into the film allows selection of that segment of film which best describes the implementation of the chosen alternative and the consequences most likely to result from it. Branching is crucial in creating an important condition of learning. It provides feedback to the students to indicate their proficiency in applying principles and concepts of management to life-like situations. The branching technique accomplishes this in the following manner.

A segment of film can be produced to correspond to each possible alternative. Depending upon the solution selected by the student, the instructor branches to and shows the appropriate segment of film. If the student's solution is an

appropriate one, the branched film segment reinforces the decision. If, on the other hand, the choice is an ineffective solution, the branched segment provides feedback showing that the problems still exist and/or that new problems have arisen — perhaps problems of greater magnitude than the original one.

For purposes of economy the film may contain only two branches at each decision point. One branch could be designed to show the consequences of a "good" solution. This implies that students do not have to develop one particular best solution. This branches segment would be applicable for *any* good solution. The other branch produced would be for an inadequate solution.

Limiting the number of branched segments requires flexibility in each branch. Regardless of the specific nature of the "good" or "bad" solution, the branched film could be applicable by relating the implementation and consequences in a non-specific manner.

### PROCESS ITERATION

The process of gaining experience in a simulated environment, is sequential and iterative in nature. The student first views a segment of the film. The film is interrupted to allow spontaneous student responses, first in essay fashion, then to objective questions. The situation viewed on film is then discussed in depth by the students with the coordination of the instructor. This pattern of film, response, and situation analysis continues until a decision point is reached.

In making the decision, students evaluate alternative solutions and select one for implementation. The film segment viewed next is one which shows implementation of the recommended solution and its consequences. This cycle of (1) viewing a film segment, (2) responding to the stimuli, (3) analyzing the situation, (4) developing alternative courses of action and selecting one and (5) viewing its implementation and consequences, continues throughout the simulated exercise.

### BACKTRACKING

At any point, backtracking allows viewing of a film segment to show the consequences of some alternative other than the one selected. If each possible alternative at each decision point was followed by a series of filmed events likely to ensue, the result would be an expanding decision tree with many branches. For economy, each branch in the film was designed to converge back to the main theme in the chain of events.

### SUMMARY

The aim of VAP system is to improve the quality of the learning experience. The content of the program was carefully selected to include management theories and concepts most applicable to the needs of the learner, focusing on the more recent advances in management thinking.

In addition the VAP system is designed to reinforce the student's understanding of principles and concepts. This is accomplished in two ways. Students engaged in simulated experiences in which they apply modern concepts to current business situations. Secondly, all students continually respond to a variety of stimuli, including filmed incidents and objective questions, with the aim of generating thinking and probing analysis.

The VAP technique is a systems approach for learning relevant material in a relevant format and is designed for intense participant involvement in the learning process.

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Trainers new to the training and development field can now seek financial assistance for attending national ASTD educational programs.

The Training Opportunities Projects (TOPS) is providing a limited number of scholarships to help trainers improve their skills and enhance their professional development. The scholarship consists of the registration fees to a program of the applicant's choice and up to \$200 for traveling and living expenses. The scholarship is for persons who could not attend an ASTD program without financial aid.

To qualify for a scholarship, an individual must meet the following requirements:

- He must have held a full-time training position for not more than two years.
- His gross annual income must not exceed \$8,000.
- His superior or personnel officer must declare that his organization is not able to provide funds for attendance at the program.
- He must be a national ASTD member.

The TOPS scholarship program emerged from the ASTD Minority Group Action

Plan which was developed late in 1969 to help make the Society more responsive to the needs of its minority members. This plan provides for allocation of funds from the TOPS project to defray the cost of attendance at ASTD programs who could not otherwise attend.

Since scholarship funds are limited, interested persons should apply immediately. For more information and applications, write Program Department, ASTD, P.O. Box 5307, Madison, Wis. 53705.

If TOPS funds are available at the time of application and if the application is approved, ASTD's national office will immediately confirm registration in the program desired and will determine what additional funding for travel and living expenses can be granted.

Though TOPS funds are now available for a limited number of scholarships, the number of scholarships awarded in the future upon the growth of contributions to the TOPS fund.

For a list of ASTD institutes and seminars being offered during the coming months, see the inside cover of the **Journal**.