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Computer applications in management training programs

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COMPUTER APPLICATIONS IN MANAGEMENT TRAINING PROGRAMS

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CHAPTER I

INTRODUCTION

The Problem

A manager's success depends largely on the ability to analyze many types of data from a variety of sources in order to make effective decisions. Much of management development training is aimed at improving these capabilities.

One frequent criticism of management training is that very little of the learning is directed at providing the practical skills needed to apply the knowledge gained in class to real performance problems on the job (Livingston, 1983). Learning transfer is a concern not only to the training consumer, but to learning theorists as well. The relevance of learning is dependent upon the ability of the user to transfer the information to real situations that they encounter on the job.

Management training programs typically are divided into two categories, technical management skills, often referred to as hard-skill training, and people management skills, sometimes referred to as soft-skilled training (Gordon, 1985).

Technical, hard-skill training includes management duties such as budgeting, finance, and scheduling. As difficult as decision making in these areas might be, they appear to be far more quantifiable than the skills necessary to manage people. However, even soft-skill people management can translate to hard problems if a manager communicates poorly. A question such as is your boss fair, is very subjective but it has very real implications for a company in terms of the effort one will give and for how long one will give it. A manager with a difficult personality can result in high turnover which is an objective, measurable problem for most organizations. Training in both hard-skill and soft-skill areas are important to an organization's success.

In either case the transfer of learning to the job is very difficult to measure with certainty. The challenge for instructional designers is to create training programs that are job specific. To have practical and specific applications to the job, the instruction must be based on the needs of the learner.

Historically, the instructional process has been instructor-centered. The instructor determined the methods to be used, the way in which the subject matter would be broken down, and the order of instruction. One result of this instructor-centered approach has been that much of the training offered is convenient for the instructor but not suited to the needs of the learner.

More recently, instructional design has been examined from the point of view of the learner. Instructional designers are discovering that learner-controlled instruction is very effective. In learner-controlled instruction the learner is given in advance, the criteria he or she must meet to achieve a certain level of competency. The learner controls, to varying degrees, the method of instruction, and the evaluation of his or her own progress. In recent years the development and use of the computer as an instructional tool has had a profound impact on the instructional process not only in schools, but in organizational training programs as well.

Augmenting the learning environment with a computer allows adaptations that accommodate the individual during the learning process by establishing a one-to-one relationship between the learner and the subject matter. This individualized instruction capability is of particular benefit to the adult learner. Individuals have different learning styles and preferences, and the rate of learning varies between individuals. Computer-assisted instruction (CAI) allows the information being studied to be stopped, started, reviewed, slowed down or speeded up to accommodate the learner, and enhance understanding. Computers also play an integral role in the process of interactive video where the user's response actually drives the lesson. In interactive video the sequence and selection of material is determined by the users response to questions. While CAI offers considerable user control, well designed interactive video programs go a step beyond and provide a multitude of branches or paths to additional information often

based upon subtle differences in the way the user responds to questions.

The computer is a medium that can be applied to a variety of appropriate learning situations. The use of computer in the instructional process is present in a wide array of organizational training programs. It is relatively easy to see how computers might contribute to training in technical managements areas, but what about their use in the soft skill area of people management?

The remainder of this paper focuses on questions of how the computer can be used as an instructional medium to address manager's needs to learn and apply skills that increase their effectiveness? Inherent to the discussion is a second but equally important issue concerning the transfer of learning. How does it occur, and what types of computer aided instruction offer the greatest potential for enabling the user to apply the lessons learned to real problems on the job? The intent is to examine four methods of instruction commonly used in CAI; drill and practice, tutorials, simulations, and games; and

discuss their relevance to management training. Attention will also be given to the use of interactive video, to discuss its potential in management training programs.

Statement of the Problem

There seems to be a general consensus that management training, in order to be effective, must provide meaningful learning activities that can be transferred to real situations on the job.

In order to develop computer assisted training programs with a high degree of transfer, it is necessary for the instructional designer to understand: (a) what learning and teaching theorists have to say about adult learners, (b) what managers need to know to be effective of the job, (c) how environmental factors influence the transfer of knowledge gained to behavior on the job, (d) which computer assisted instruction methods are best suited for teaching specific skills.

Statement of the Purpose

The purpose of this work is to examine the various methods of Computer Assisted Instruction

(CAI), and assess their value in management training programs and discuss how they might enhance learning transfer.

Major Research Question

How can the computer be used as an instructional medium to address a manager's need to learn and apply new skills to improve his or her effectiveness? More specifically, what types of CAI offer the greatest potential for learning and transfer in the various management training areas.

Major Hypothesis

CAI and interactive video, perhaps more than any other medium, offer the user the opportunity to explore in simulated reality, a variety of real life options to difficult problems and experience the results of their decisions without real life consequences. The processes of interaction can enhance learning transfer to varying degrees depending upon the type of learning taking place and the method of CAI that is employed.

In addition no method of CAI, or any other method of instruction, will enhance transfer of learning unless the environmental factors present

on the job reinforce the learning. Learners must be encouraged to practice newly acquired skills.

Significance of the Problem

In order for any organization to be successful in accomplishing its mission the members of that organization must share its goals and objectives. They must also have the skills and abilities to carry them out.

In management positions, the manager needs to know how the job is to be done, but just as importantly, how to motivate others to do it. This is a tremendous responsibility, and it usually requires training as the organization changes or grows. Too often the training that is provided is not job or problem specific. In order for training to be effective as an agent of change, it must target the needs of the learner. In addition the environment must be managed to accommodate the desired learning outcomes and promote the transfer of learning.

CHAPTER II

REVIEW OF THE LITERATURE

Learning Theory

In order to understand the potential CAI offers in management training, it is helpful to review what some of the literature on learning theory has to say. There have been countless studies, books, chapters, and articles written on the question, what is learning?

Various authors have defined learning as a change in the individual's behavior. Below are three examples from the same book.

> "Learning involves change. It is concerned with the acquisition of habits, knowledge, and attitudes. It enables the individual to make both personal and social adjustments. Since the concept of change is inherent in the concept of learning, any change in behavior implies that learning is or has taken place" (Crow and Crow, 1963, p.1) (cited in Knowles, 1984).

> "Learning is a change in the individual, due to the interaction of that individual, and his environment, which fills a need and makes him more capable of dealing adequately with his environment" (Burton, 1963, p.7) (cited in Knowles, 1984).

> "...the definition of learning is reflected in a change in behavior as the result of experience" (Haggard, 1963, p.20) (cited in Knowles, 1984).

Others have also defined learning as change, but made a distinction between planned learning and natural growth.

> "Learning is the process by which an activity originates or is changed through reacting to an encountered situation, provided that the characteristics of the change in activity cannot be explained on the basis of native response tendencies, maturation, or temporary states of the organism (Hilgard and Bower, 1966, p.2) (cited in Knowles, 1984).

Still others have defined learning variously as shaping and self-actualization. B.F. Skinner (1968) defined learning as shaping that occurs as a result of controlling stimulus (cited in Knowles, 1984). Maslow (1970) saw the goal of learning to be self-actualization "...the full use of talents, capacities, potentialities, etc." (p.150) (cited in Knowles, 1984).

Gagne (1979) rejected the proposition that learning can be defined as a single process. Instead he identified four domains of learning, each with a separate kind of learning that occurs:

Psychomotor Skills--skills that are learned whose outcomes are reflected in the accuracy, force or smoothness of bodily

movement.

Intellectual Skills--skills that require that learner to solve a problem without previous experience with the problem. Intellectual skills include learning concepts, rules, problem-solving and the ability to discriminate between related and non-related concepts.

Verbal Information--verbal information can be thought of as labeling, or facts where there is basically only one right answer.

Attitudes-- opinions, values or likings that affect a person's behavior toward other people, things or events.

The significance of Gagne's definition is that it attempts to provide a practical foundation for learning theory. To Gagne, the type of learning to take place provides a basis for the design and delivery of instruction. The remainder of this chapter focuses on issues concerning the facilitation of learning. What follows is a

discussion about how adults learn, followed by a review of Gagne's model on the events of instruction.

The Adult Learner

A distinction can be made between theories of learning and theories of teaching. While theories of learning deal with the ways in which an organism learns, theories of teaching deal with the ways in which a person (or medium) influences an organism to learn (Gage, 1972, P.56).

If Gage's perspective of the learning-teaching process is accurate, then obviously, before one is able to design an effective teaching strategy it is necessary to understand the characteristics and motives of the learning audience. Because this work pertains to management training, the focus here will be on what we know about how adults learn.

A majority of the adult education literature describes the adult learner as self-directed and self motivated. Long (1980) described the self-directed learner as an adult who voluntarily participates in learning activities, who is

autonomous and possesses the organization, knowledge, and skills essential to learning effectively. Lindeman (cited in Knowles, 1984), referred to several factors which described the adult learner as motivated by a need to learn, one whose interest in learning is life-centered. According to Lindeman (cited in Knowles, 1984), the adult is a self-directed learner whose experience is his richest resource. He cautioned that adult education must provide for difference in learning style and pace. According to Long (1980) the most common motivation in adults for undertaking a learning project is anticipation of using the skill or knowledge. Knowles (1984) has developed a model of education based on assumptions about the differences in the child and the adult learner.

A review of Knowles (1984) Pedagogical / Andragogical Model reveals the following comparisons. Adults (andragogical) need to know why something is important to learn, how it pertains to their lives. In contrast, children (pedagogical) only need to know what they must learn to pass, not how it applies to their lives.

Knowles contends that for adults, simulations are potent learning tools. As we shall see later, CAI and interactive video create very real simulations and the more realistic the simulation the greater the transfer of learning.

In Knowles' model, the learners self-concept is another consideration. The adult learner's self-concept is one of being responsible for their own decisions. Therefore self-directed learning experiences are important. A child typically has a dependent personality, and as such relies upon the teacher's expertise.

There is also considerable difference in the role of the learner's experience. Adults bring a variety of experience to the learning situation. Therefore, strategies should be designed to capitalize on that experience. Individualized Instruction is one such strategy. According to Knowles, experience is of comparatively little value to the child.

Another factor in the model is readiness to learn. Adults become ready to learn those things they need to know to cope with real life

situations. For a child, readiness to learn is based on the real or implied consequences of failure.

In addition, Knowles describes an orientation to learning. An adult's orientation is life-centered. Information that is presented in real-life ways is better received by the learner. This is another area in which CAI can make significant contributions. A child's orientation is subject-centered, they see learning as acquiring subject matter content.

The final factor in Knowles' model is motivation. Adults are motivated by external factors such as the desire for a better job or promotion, but they are also motivated by internal pressure such as self-esteem, job satisfaction, and the quality of life. Child learners are motivated primarily by external factors such as grades and approval.

Knowles' assessment of the child learner is perhaps subject to debate. However, to do so here is outside the scope of this work. The model does present a description of the adult learner that is

representative of much of the literature on adult learning theory. This treatment, however broad, gives us at least some understanding of the factors contributing to the motivation of our adult manager audience as well as insight into their preferred learning style. Their motivation to learn is usually rooted in real life experiences, and they tend to respond better to a learning experience that has relevance to their lives. A sound strategy in designing instruction for an adult population is to take advantage of their experience.

Teaching Theory/Transfer of Learning

Once an analysis of the audience is complete, the challenge facing the instructional designer is to utilize the information in the design of an instructional strategy. In his model, Gagne (1977) identifies conditions of learning and events of instruction that must be managed by the teacher or medium.

The conditions of learning are said to be both internal and external to the learner. Internal conditions are what the learner brings to the

learning situation. That is, their previously learned capabilities or competencies. External conditions are the stimuli present outside the learner in the learning environment. The significance of these internal and external conditions becomes clearer when one examines Gagne's model for the events of instruction.

Gagne (1984) specified nine components of the instructional situation that must be managed before learning is complete.

1) gaining attention
2) informing the learner of the lesson objectives, these are directions that inform the learner about what will occur
3) stimulate recall of prior learning, reminding the learner of previously encountered information
4) presenting information
5) guiding the learning, essentially this involves directing the thinking of the learner through the use of selected stimuli.

According to Gagne this type of hinting or

suggesting increases the efficiency of the learning experience by reducing the occurance of irrelevant information

6) eliciting performance, inviting the learner to respond to questions

7) providing feedback to the learner

8) assessing performance of the learner

9) enhancing retention and learning transfer

Gagne developed his list of the events of instruction to be used as a guide in the instructional development process. They are not a standardized, routine set of communications or actions to be carried out, but rather the events of instruction should be adapted to the specific learning situation. The model is flexible to allow for placing more or less emphasis on particular events depending upon the type of learning to be accomplished and the learners prerequisite skill. For example, stimulating recall is important in all types of learning, but it is of particular significance in concept learning, principle learning, and problem solving.

While Gagne does not argue the significance of one of these events over another, the one that is most pertinent to this discussion is transfer of learning. Gagne (1974) stated, "The recall of what has been learned and its application to new and different contexts is referred to as the transfer of learning" (p.40).

As indicated earlier, Gagne maintains that both the conditions of learning and the events of instruction must be managed in order for learning to occur. When transfer of learning is crucial, special consideration must be given to arranging for what Gagne (1974) called the "conditions of transfer" (p.132). In management training, arranging the conditions of transfer requires a broad view of the external conditions to include creating opportunities for the learner to practice what was learned both during the instruction and later back on the job.

Many proponents of organizational development (OD) criticise management training programs for providing training to individuals without consideration for contextual factors (Burke, 1982).

For example, a manager may be trained to be more democratic in leadership style but is in turn never asked by superiors for input into decision making. This lack of reinforcement of the learning experience will lead to an eventual failure to practice what was learned, or an unlearning, if you will. It is this author's view that Gagne would not disagree with the complaints of the organizational development advocates. He would see it as a failure to arrange the conditions for transfer in the instructional design process. Gagne (1977) stated, "the external situation needs to be arranged to activate, to support, and to maintain the internal processing that constitutes each learning event" (p.24).

Transfer of learning is a process that takes place on at least two levels in corporate training, and both must be managed before transfer will occur. First, the work environment must encourage and sustain the new behaviors on the job. External events have a significant effect on learning acquistion and retention. These external conditions can obviously have a favorable or

negative effect. It is necessary for the environment to provide feedback and reinforcement in order to provide conditions favorable to transfer of learning. Secondly, the instruction itself requires design considerations that will enhance the learners internalization and integration of the material (Pfeiffer and Jones, 1977). Gagne's events of instruction is a model that provides the learner with an opportunity to experience new behaviors, test those behaviors, receive feedback and transfer the learning experience to new situations.

The computer is a medium that can be applied in a variey of appropriaite learning situations. As we shall see, how prominent a role it plays depends upon the instructional goal.

The Computer as an Instructional Tool

As Stammers and Morrisroe (1986) have pointed out, "There is an inherent danger when discussing any means of communication in training in that the medium can become the message" (p.204). There is a tendency to design and organize training based upon

an available medium such as the computer, video, film, simulators, and so on, rather than to determine which medium is best suited to deliver the instruction. This situation is understandable, particularly when one considers the large investment a company might have in hardware and software. In corporate training, if you buy it there is pressure to use it. The challenge for designers, however, is to make choices that are based upon sound instructional strategies when selecting the medium of delivery.

When it is used, the computer generally functions as part of the instructional process, along with the instructor and other media. How well the computer performs its function, and how prominent a role it has an element of instruction, depends upon the instructional designers ability to make selections concerning the methods that are most appropriate for the learning objectives. The remainder of this section examines four methods of CAI, drill and practice, tutorials, simulations, and games along with interactive video. The

discussion will focus on the usefulness of each in management training.

Drill and Practice

Drill and practice programs are intended to provide practice for skills already learned. Gagne (1984) termed dill and practice "supplementary instruction", (p.17) because it is based upon skills previously held by the learner. Drill and practice programs are not intended to teach; they provide the user practice on items where fluency is required.

It seems reasonable to suggest that drill and practice programs are useful for training in technical hard-skill management areas such as budgeting, finance, and scheduling. One advantage of a drill and practice routine is that they are relatively easy to create. Generic software programs are available that can be adapted to fit a variety of specific needs. Well designed instruction that is organization specific and task specific can be supported and enhanced by drill and practice routines.

A major limitation is that drill and practice does not lend itself to open ended questions on subjective topics. For this reason their usefulness for training in soft-skill people management areas is limited. With drill and practice there it usually only one right answer or one correct way to do something. Because of this limitation, drill and practice routines tend to be better suited to learning which takes place in what Gagne called the verbal information and psychomotor domains. Skill in people management depends largely on the ability to solve problems and make judgements. Learning to perform these skills falls into the intellectual skills and attitude domains of Gagne's moodel. As we shall see there are methods of CAI that are better suited to these pursuits.

Tutorials

In contrast to drill and practice, tutorials are computer programs that teach by carrying on a dialogue with the user. They present information, ask questions, and make decisions based upon user response.

Tutorials are considered to be primary instruction by Gagne (1984) because they teach something new. A tutorial lesson usually consists of a series of segments in which text presentations are followed by questions about the information presented. The user's understanding is checked and the program continues on to ask the next question. A distinguishing feature of the tutorial, and other more sophisticated programs, is it's ability to recognize the learner's response to questions and to determine where to go next in the program. If an incorrect response is given, the program through a process known as branching, may repeat the question or return to that segment of text from which the question was drawn. As the user demonstrates understanding, the program continues through it's various segments presenting text, asking questions, and providing feedback to the user.

Tutorials are more appropriate than drill and practice for certain learning objectives. They are useful for presenting factual information, learning rules, concepts or principles, and for developing

problem solving strategies all of which fall into Gagne's intellectual skills domain.

Because they provide instruction, tutorials have other advantages over drill and practice in management training. For example, a tutorial on balance sheet management would contain the lesson within the software. A drill and practice routine would require some other medium of instruction to precede it. This convenience makes training by computer tutorial more accessible to management because it may not require the help of an instructor or some other medium.

Tutorials are sometimes used for instruction in soft-skill, people-management training. When they are, the program usually provides examples, case studies, and application exercises as their basis of instruction. However, like drill and practice, tutorials require quantifiable responses that make open ended questioning and subjective responses difficult. In spite of it's branching capability, the program is essentially linear and it requires a correct response from the user. It does not recognize situational context or user

judgement. Any deviation from an exact answer and the user's response is considered to be incorrect and the program reacts accordingly. This limitation obviously restricts the programs value in subjective areas such as people-management. Imagine a learner's reaction if his/her response was essentially correct but not exact. At the very least he/she would be confused and the desired learning would very likely not occur.

It would appear that drill and practice and tutorials have potential for training in hard-skill management areas. They have far less value in training in people-management. This is particularly true if the computer stands as the only medium of delivery. However, simulations and games are two methods of CAI that are useful in both areas of training. Because of certain similarities, these two methods will be discussed together.

Simulations and Games

Simulations and games are used to teach new information. Like tutorials, simulations and games provide information, pose questions, and provide

feedback, however, they generally do so within a context that is much closer to reality. Simulations are representations of a system or situation with a relatively high degree of realism. Because learning takes place in a re-created, relevant environment there is greater potential for transfer of learning than there is with drill and practice or tutorials. Even though they often do not, games also have great potential for re-creating reality.

The degree to which a simulation imitates reality is sometimes referred to as fidelity. The more life-like a simulation is, the higher the fidelity. Miller (1984) has referred to this characteristic as validity. He has identified three types of validity required of simulations in order for the program to enhance transfer of learning; instructional validity, content validity, and concurrent validity. Instructional validity according to Miller, dictates that the simulation must conform to the educational objectives. Content validity, like fidelity, is the degree to which the simulation imitates reality. Finally

concurrent validity, as defined by Miller (1984), requires the simulation to measure the user's response against an "expert" (p.40). The degree of variation between the user's performance and the "expert" results in appropriate, life-like consequences.

In discussing games, Alessi and Trollip (1985) indicated that the degree of fantasy ranges from a close representation of reality to a totally imaginary one. The closer to reality the greater the degree of transfer of learning. As was indicated earlier, a major concern in management training is providing practical skills needed on the job.

For that reason, in discussing the relevance of games the focus is on games with a high degree of realism.

Simulations and games have advantages for training in hard-skill management areas. For example, programs can be created that represent competition on the open market. Managers can be engaged in programs that require them to make decisions to meet their organizations needs. They

establish strategies and goals based upon production data, costs, inventory, volume, quality, and marketing information. Users can enter information, manipulate data, and see the results of their decisions. The program allows users to apply concepts in an environment that provides realistic feedback. Months and years can be compressed into one program and the consequences of bad decisions are not real.

Situational simulations and role playing games can be developed that provide training in soft-skill management areas. These programs deal with attitudes and behavior in situations similar to those found on the job. By interacting with the computer, the user can play different roles and explore various approaches to a situation and witness their effect. Because the consequences are not real the user is encouraged to explore alternatives.

Simulations and games offer tremendous potential in management training. They are capable of providing instruction in problem solving in technical hard-skill areas. In addition there are

programs designed to explore the opinions and values of Gagne's attitude domain. These opinions and values form the basis of a manager's ability in people-management.

Simulations and games employ similiar branching techniques found in tutorials, usually on a more sophisticated basis. Even more complex is the branching that is used in a computer aided medium known as interactive video.

Interactive Video

With linear programming the structure, sequence, pacing, and content are the same for every user. Linear programs provide information and test the learners understanding. If the user fails to demonstrate competency the program loops back through the information presentation. This is a common programming feature found in the less sophisticated forms of CAI such as drill and practice. Other methods of CAI such as tutorials, simulations, and games employ an increasingly complex form of branching which requires interaction between user and medium.

A key difference between interactive programming and linear programming is it's response to user input. If the user fails to respond or provide input into the system an interactive program will not advance. In addition, the user's response to questions actually determines which path the program takes. In linear programming not only is sequence and content the same for every user, but it is also possible for the user to move through the program without responding by simply pressing a key to continue.

The sophisticated branching techniques developed for CAI lead to the current development in the marriage of two mediums, computer and video, known as interactive video (Floyd, Floyd, Hon, McEntee, O'Bryan, Schwarz, 1982). Interactive video systems all include four basic pieces of hardware: a video player (either disc or tape); a computer; an interface which allows the computer to communicate with the video player; and a monitor. The role of the computer can be likened to the brain. It receives input from the user, processes it through it's memory, makes a decision and

provides output. The output controls the operation of the video player. The video player then provides a visual response to the user. This visual response can be a much more effective means of providing feedback and of holding the users interest then simply providing words on a page or screen.

As was indicated earlier, improved computer programming techniques have provided the opportunity to develop sophisticated interactive learning activities. However, it must also be pointed out that technological advances have also played a major role in refining the system. Time coded video tape provides addresses on one of the tape tracks that serve as locations for specific video taped responses to user input. The computer is programmed to access a specific location based upon user input, thus creating a program whose path is determined by the user. This process, known as random access, actually allows each individual users learning experience to be unique to their needs. Random access is improved when a video disc is used in place of video tape to provide the video

signal because the disc system uses a digital code and is thereby faster and more accurate. Using a laser disc in place of a contact disc provides an even faster and more accurate access point.

Interactive Learning

Floyd et al, in their book Handbook of Interactive Video (1982), have defined interactive video as "any video program in which the sequence and selection of messages is determined by the user's response to the material" (p.2). To illustrate how the system works in the design of instruction they describe three levels of interaction that can occur: programmed instruction; programmed simulations; exploratory simulation.

Programmed instruction is described as a basic interactive program (Floyd et al, 1982). At this level a pre-test might be given and the user would be asked to answer certain questions. If the response was incorrect the program would branch to a section in which the user did not demonstrate competency and needs training. This procedure

saves the user from going through unnecessary information as they would in linear programming.

At the second level, programmed simulation, the information is not presented in units with pre and post-tests as it is in programmed instruction. Instead, a realistic simulation is presented and a question is posed. The program then branches to another part of the simulation to show the probable outcome of the users input.

At the third level, exploratory simulation, no questions are posed by the simulation itself. Rather the user creates the interaction by posing questions himself/herself at any given time, and the system responds by branching to another section to show possible outcomes.

The levels of interaction are offered for the instructional designer's consideration when making decisions about how the content will be treated. Which level of interaction in chosen should be based upon the instructional goal and objectives. For example, if the subject matter deals with sequentially ordered tasks, which is common in hard-skill management training, then the first

level of interaction may be most appropriate. It would save the user from going through what is already known and would focus on what needs to be learned.

The sophisticated design of the second and third levels can accommodate topics that involve user judgement. In the case of management training, particularly in the area of soft-skill people management where there are no right or wrong answers, the various outcomes of a manager's actions can be explored through the multiple alternative endings available in the program.

The advantages of interactive video as a medium of instruction are actually limited only by the designers imagination. The system is capable of performing well in all of the areas of Gagne's events of instruction, particularly in presenting information, eliciting performance, providing feedback and assessing performance. Because it is a visual medium, interactive video, also improves retention. The realistic simulations that are possible also enhance learning transfer. Finally, because the system is actually driven by the user's

response, it is capable of accommodating the user's knowledge and experience in creating a learner controlled instructional experience.

CHAPTER III

CONCLUSION

The research on adult learning suggests a diversity of motivations, orientations, experiences, and personal knowledge among adult learners. Therefore, it is appropriate to conclude that tightly structured and rigidly paced learning experiences are not suited to such a heterogeneous group.

The characteristics of adult learners assumed by Knowles imply that the adoption of a relatively non-directive approach to course design will work well with a highly motivated adult learner. A learner who will often have personal and professional knowledge, experience and skills to contribute to the learning experience. This would certainly be true for most management training courses.

There are a multitude of things that a manager needs to know to perform effectively on the job. A manager needs to know how a particular job is to be done. This requires knowledge of sequentially ordered tasks which must be performed to produce a

product or service. Just as important is the managers ability to motivate others to do it. Ability in both the hard-skill and soft-skill areas of management must be learned. It is the responsibility of the instructional designer to create the opportunity for learning to occur.

Gagne's model for the domains of learning and events of instruction have been discussed in this work. Together with an understanding of the audience, this model offers the designer knowledge of the type of learning that will occur (domain), and insight into strategies that are useful in enhancing the learning experience (events of instruction).

Transfer of learning is, or should be of paramount concern in management training. Training is of little value if the experience cannot be transferred to real life situations on the job. In order for transfer to occur, the learning experience must be managed on two levels. First, the training itself must target the needs of the learner. Providing training in an area that will never be used or that is already known to the

learner will be irrelevant at best, and could actually have a de-motivating effect. The second area in which the training must be managed is environmental. The learner must be given the opportunity to practice newly learned skills. Practice must occur both within the learning environment and also back on the job. The work environment must be prepared to allow the learner to practice newly acquired skills and to reinforce the new behaviors. Without support, new behaviors will rapidly disappear.

CAI and interactive video, perhaps more than any other medium offer the designer the opportunity to create training experiences with a high degree of realism. For the learner they provide the opportunity to experience in simulated reality a variety of life-like options to difficult problems without real life consequences.

Generally, those programs that offer higher degrees of interaction are of the most value in management training because they are able to recognize what the learner already knows and focus on what he/she needs to learn. In addition,

interactive programs can be designed that accept the learner's judgement and then proceed to explore a variety of potential outcomes of the user's action. In CAI this interaction capability is most likely to be present in simulations and games, and to a much lesser degree in tutorials. Interaction, of course, is an integral feature of interactive video because without user input the system simply will not continue.

There are other advantages that CAI and interactive video offer in management training that should be considered. First, this kind of training ensures that all appropriate personnel are given a chance at the same consistent training. A second consideration has to do with the cost of training. Where salaries are high and downtime for training is costly, CAI and interactive video can actually help to reduce training costs. Training time can be compressed and in some cases the cost for travel can be eliminated. The training can be sent to the learner rather than sending the learner to training. Third, CAI and interactive video are invaluable for training in jobs where the cost of

mistakes is high, for example, damage to expensive equipment, or worse, the loss of life.

Finally, CAI and interactive video have not changed the instructional designers role in creating effective instruction. They are only a medium of delivery. What Floyd et al, (1982) said about interactive video is also true of CAI, "Interactive video has not shifted the emphasis in instructional design; rather it has simply removed some of the hardware barriers that have heretofore existed" (p.45).

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