Distance education: The re-emergence of the telecourse

Sarah Hanuske

University of Northern Iowa

Copyright ©1992 Sarah Hanuske

Follow this and additional works at: https://scholarworks.uni.edu/grp

Part of the Education Commons

Recommended Citation

https://scholarworks.uni.edu/grp/2491

This Open Access Graduate Research Paper is brought to you for free and open access by the Student Work at UNI ScholarWorks. It has been accepted for inclusion in Graduate Research Papers by an authorized administrator of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.
Distance education: The re-emergence of the telecourse

Abstract
The year 2000 is expected to have a fifty percent increase in total world population over 1970 (Clarke, 1974). Most of the growth is occurring in developing nations. Even though the rate of growth is less dramatic in developed countries, the social implications are just as important. The expanding numbers of school children, university and vocational-technical students, and others seeking additional training and education are straining the resources of existing traditional educational structures everywhere.
This Research Paper by: Sarah Hanuske
Entitled: Distance Education: The Re-emergence of the Telecourse

has been approved as meeting the research paper requirements for
the Degree of Master of Arts in Education.

December 2, 1992
Date Approved

Robert R. Hardman
Director of Research Paper

December 2, 1992
Date Approved

Sharon E. Smaldino
Graduate Faculty Advisor

December 2, 1992
Date Approved

Sharon E. Smaldino
Graduate Faculty Reader

December 2, 1992
Date Approved

Peggy Ishler
Head, Department of Curriculum and Instruction
### Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
</tr>
<tr>
<td></td>
<td>Background</td>
</tr>
<tr>
<td></td>
<td>Purpose</td>
</tr>
<tr>
<td></td>
<td>Definition of Terms</td>
</tr>
<tr>
<td>II</td>
<td>Review of Literature</td>
</tr>
<tr>
<td></td>
<td>History</td>
</tr>
<tr>
<td></td>
<td>The Instructional Design Process Applied to Distance Education</td>
</tr>
<tr>
<td></td>
<td>Analysis</td>
</tr>
<tr>
<td></td>
<td>Needs Assessment</td>
</tr>
<tr>
<td></td>
<td>Content Analysis</td>
</tr>
<tr>
<td></td>
<td>Learner Characteristics</td>
</tr>
<tr>
<td></td>
<td>Goals and Objectives</td>
</tr>
<tr>
<td></td>
<td>Instructor Characteristics</td>
</tr>
<tr>
<td></td>
<td>Design</td>
</tr>
<tr>
<td></td>
<td>Instructional Strategies</td>
</tr>
<tr>
<td></td>
<td>Media Design</td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
</tr>
<tr>
<td></td>
<td>Learner Evaluation</td>
</tr>
<tr>
<td></td>
<td>Formative Evaluation</td>
</tr>
<tr>
<td></td>
<td>Summative Evaluation</td>
</tr>
<tr>
<td>III</td>
<td>Conclusion</td>
</tr>
<tr>
<td></td>
<td>References</td>
</tr>
</tbody>
</table>
CHAPTER I

Introduction

Background

The year 2000 is expected to have a fifty percent increase in total world population over 1970 (Clarke, 1974). Most of the growth is occurring in developing nations. Even though the rate of growth is less dramatic in developed countries, the social implications are just as important. The expanding numbers of school children, university and vocational-technical students, and others seeking additional training and education are straining the resources of existing traditional educational structures everywhere.

As the numbers of people seeking an education or a better education are rising throughout the world, there has been an accompanying acceleration in the growth of knowledge available. In 1967, the Director of UNESCO summarized these trends by stating, "Mankind is passing through a profound mutation caused by three explosive factors: the increase in population, the speed at which certain knowledge becomes outdated and technical progress advances, and political emancipation. As a result, education must also undergo a radical mutation on a scale which can hardly, as yet, be fully appreciated. Many more people have to be educated for a continually increasing span of their lives so that they may absorb an ever expanding and changing body of knowledge. It is impossible to conceive that these tasks can be undertaken without major changes
in education. Fortunately, the need for such changes arises at a
time when the media of communication, radio, television and film,
and new methods and techniques of instruction, such as programme
learning have come on the scene" (Clarke, 1974, p.11).

The United States took the lead in developing educational
television, but, according to Willis (1991), twenty-five years later
much of the leadership in the area of distance education and its use
of instructional technology has come from Australia, Europe, and
Canada. The first students entered the United Kingdom's (UK) Open
University in 1971, and in 1972, Canada's Athabasca University was
given a mandate to integrate technology and homestudy techniques.

Now a renewed interest has occurred in the use of telecourses
in the United States. It is thought that this method of instruc­
tional delivery can help alleviate current strains on the American
school system: the lack of science and math teachers in rural
areas, the demands for courses and training by older non-traditional
students, and the call for the restructuring of schools.

Purpose

Since the late 1950s, the medium of television has been used to
deliver instruction in the United States. Hudspeth and Brey (1986)
recall the first program broadcast in 1956 from TV College, an
extension of the City Colleges of Chicago. "The history of this
project reflects the changes that have occurred throughout the
country - from the 'talking head' series used at a single college to
a system of highly developed and integrated materials designed for national distribution" (p.12).

This paper's intent is to examine the effective practices used in producing successful video-based telecourses for distance education. The question to be answered is why after 30 years is this field considered to be reemerging (Willis, 1991a). Jefferson and Moore (1990) concur that there is a growing interest in distance education delivered by video. "We believe the promise of distance education learning will likely be fulfilled in the decade of the 1990s" (p.7).

This paper's examination will have to be limited in scope. A framework is needed which can analyse the best of the diverse and interrelated components of a telecourse. Both Garrison (1989) and Willis (1991a) agree that the emerging field of distance education has many conceptual and technological complexities because of the wide-ranging characteristics of student participants, the choice of communication technologies available and their integration possibilities, and the different types of distance learning programs. Garrison (1989) suggests a model which is open to all methods of organizing the educational transaction and utilizing communications technology. This is the instructional design approach which is described as "a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human
learning and communication and employing a combination of human and non-human resources to bring about more effective instruction" (p.91).

The instructional design model is credited for the significant advances that educational technology has made in recent years. With the range and capability of communications technology that exists, media is not the issue. The issue is identifying and understanding instructional design and communication principles to meet the learning needs of the students. This directs the decision away from choosing the media product in vogue to the promotion of the process of learning. It is a holistic approach that places considerable emphasis on front-end analysis (Garrison, 1989).

The instructional systems design model is a planning process for instruction. It identifies general classes of activities which need to be addressed in the design process. In this paper the components of instructional design: analysis, design, and evaluation will be used as the framework to review the literature. Media selection is part of the design process; however, not until after the designer has dealt with issues related to the instruction itself, the audience characteristics, the goals and objectives, etc. Several effective practices, examples, and/or research will illustrate each component of the model.
Definition of Terms

Correspondence education/study

The instructor and student are separated by a physical distance (non-contiguous). The communication between student and instructor is in writing using the mail system. Originally the instruction and text was only print based. The student studies at home; hence, sometimes correspondence education is referred to as homestudy.

Distance education

Like correspondence study the instructor and student are non-contiguous; however, communications technology is used to mediate instruction and feedback. Instruction is transmitted through a variety of media. The home or viewing/computing rooms may be used. The student may have to adhere to a schedule or be autonomous depending on course requirements.

Instructional design

Instruction is developed based on the systems approach to assure successful student performance. The process includes analyzing needs, content to be mastered, learner and instructor characteristics, establishing goals and objectives, developing instructional strategies, selecting media, assessing learner performance, trying out and revising the instruction in terms of learner achievement. The focus of instruction is learner-centered.
Telecourse

An integrated learning system that uses television and other technologies including print to present an education unit to a student at home or other situation (Hudspeth & Brey, 1985).

Television

It is considered here as broadcast television meaning that the program is transitory and does not offer the student control of the subject matter. It is a one way form of communication.

Video

Learners have access to information that is stored on tape or disc. Video instruction is controlled by the students at their own schedule, sequence, and pace. The learners have the opportunity to use the video at home or in a viewing room.
CHAPTER II

Review of Literature

History

The use of video-based technology as the medium of instructional delivery must be viewed in the broader context of distance education. The origin of distance education is correspondence study. The postage stamp claims distinction as the first medium to deliver instruction at a distance (Garrison 1989). Correspondence education has gradually changed to include multimedia apart from the original printed texts and written communication. Willis (1991b) notes that a vast assortment of technological options are available for distance education including audio and video recordings, radio, telephone, satellite uplinks, and computer communications.

Distance education is a term that has only gradually been accepted according to Holmberg (1986). In 1982, the International Council for Correspondence Education (ICCE) changed its name to the International Council for Distance Education (ICDE).

Holmberg (1986) defines distance education as "the various forms of study at all levels which are not under the continuous immediate supervision of instructors present with their students on the same premises, but benefit from the planning, guidance, and tuition of a tutorial organization. The main characteristic of distance education is non-contiguous communication" (p.2).
While initially distance education may have been viewed as a service to rural students; now, Wilkinson and Sherman (1991) note that it is an important urban choice for those adults who are concerned about balancing work schedules, cutting commuting time, and child care costs. This urban demand for distance education will continue to grow and, perhaps, exceed growth in rural areas.

In the 1960s and 70s, television became the new medium of distance education. Even though the United States started educational television, its usage varied among the fifty states. Clarke (1974) attributes this initial lack of coordination to the failure of instructional television having a significant influence on American education.

In Europe, Clarke (1974) points out, countries have a more centralized control of education along with national television networks. For example, the Open University (OU) of the United Kingdom works in partnership with the British Broadcasting Corporation (BBC) and Channel 4 to develop and broadcast the same instructional programs throughout the British Isles. Willis (1990) asserts that for distance education in the United States to be successful, many constituencies must share the same instructional goals and technological vision, and/or the federal government must have a role in directing nation-wide programs.

There now exists a continental agency whose constituency is a consortium of state and provincial organizations from the United
States and Canada. It is the Agency for Instructional Technology (AIT) which funds the design and production of learning materials that encourage the use of technology especially video (Nelson, 1991).

Jefferson and Moore (1990) report that the federal government is also involved in distance learning through the Department of Education's Stars Schools Program. Televised courses delivered via satellite are designed to provide instruction to isolated or otherwise disadvantaged schools in rural areas.

In the 1960s, the prevailing uses of educational television were to alleviate the teaching of overflow classes, demonstrate detail, train teachers, and repeat lectures to groups. Moss (1983) views those prevailing functions as teaching aids which teachers could easily reject. He feels that an important conceptual shift occurred when television material began to be created for direct use by the students. With teachers accepting television more easily as an instructional resource for study rather than as an instructional aid, "it became userfriendly to teacher as well as student" (p.55).

This shift in developing television programming for the consumer/student has seen educational television emerge as video (Moss, 1983). Video as opposed to television implies that the student has more control over the pace and sequence of learning.

The shift has also been accompanied by the development of the instructional design process. Garrison (1989) states that "up to
the early sixties, instructional technology was very much concerned with the use of hardware to present largely nonverbal information as an adjunct to the teacher centered approach" (p.91). Today instructional technology is described as "the systematic application of theory and other organized knowledge to the task of instructional design and development" (Gagne', Briggs, & Wager, 1988, p.20).

The system's approach is evident in the definition of a telecourse offered by Hudspeth and Brey (1986). The primary source of presentation is television; however, it is interrelated to a "set of materials and procedures, each part of which is necessary and works with the other parts" (p.8).

**The Instructional Design Process Applied to Distance Education**

**Analysis**

This is the first step in the instructional design planning model, sometimes called front-end analysis. Considerable efforts should be expended here in order to define precisely the instructional problem. Garrison (1989) includes the consideration of students' needs and abilities, appropriate instructional materials, learning outcomes and instructor attributes in the analysis phase. Analysis provides information for all resulting activities in the instructional design model.

**Needs Assessment.** Dick and Carey (1990) state that instruction is the solution to a problem. "The problem identification process
is typically referred to as a needs assessment" (p.13). A need is defined as a gap or discrepancy between a desired state or goal and what presently exists (Gagne', Briggs, & Wager, 1988).

It is important to establish whether or not the existing educational institution is meeting the educational needs of the designated population. Kaye and Rumble (1981) list indicators that a traditional educational system is failing:

- a mismatch between the national ability to provide classrooms, teachers and materials, and the high level of student demand and numbers;

- inadequate provision of non-formal and/or part-time educational opportunities for adults;

- inaccessibility of existing facilities for large or significant sectors of the population due to distance, cost or time factors;

- inappropriateness of existing facilities to the aspirations of large sectors of the population or to societal needs (p.22).

If failures or shortcomings appear in the existing traditional educational institutions, it becomes necessary to respond to the problems, possibly through the educational technologies of distance teaching. Kaye and Rumble (1981) list three criteria for adopting distance learning as a solution: economics (least costly option), a widely dispersed target population, and the need for non-disruptive education or training for adults.
In the UK the Open University was founded partly in response to the needs of working adults who had missed out on opportunities to pursue university study (Kaye & Rumble, 1981). More recently the British have addressed a national vocational and training need by establishing the Open College (OC) in 1987. Like the Open University the college uses national and local television and radio, print, cassettes, computer software, kits, and student services. Innes (1987) lists some of the problems which were identified: 1. the inability to compete economically on the world market because of the worker’s lack of training and upgrading of necessary skills; 2. small firms unable to provide necessary training because of costs; and 3. lack of educational organizations providing instruction to upgrade skills in the workplace.

While many distance learning institutions are established because of adult needs, any educational level can benefit from this type of instruction. The Stars Schools Program is an example of the federal government’s response to educational problems in American rural public schools. The lack of science, math, and foreign language teachers is being addressed by distance-learning projects using a variety of video delivery systems (Jefferson & Moore, 1990).

The needs assessment examples given represent educational institutional problems which have been remedied by distance education technology. The assessment process is the similar whether
one is addressing educational institutional delivery problems or the content of a telecourse.

**Content Analysis.** This step emphasizes that appropriate skills and knowledge must be identified and included in the instructional materials to insure that the learner will achieve the instructional goal effectively and efficiently (Dick & Carey, 1985). One approach to analyze content is the use of a cognitive classification. Duby's (1991b) examples illustrate the relation between Bloom's taxonomy and various television formats.

Television's best cognitive impact is on the recall of information based on the dynamic visual imagery which enhances overall verbal recall. However, if the documentary-style format is planned as a more open-ended program, students will be encouraged to use and develop higher level thinking skills such as application, analysis, interpretation, evaluation, and problem solving. The "purpose behind the programme should be articulated to the producer and, more importantly, the viewer" (Duby, 1991a, p.73).

According to Duby (1991a) television is an ideal medium for simulation. The "TV programme can 'improve' on a real-life situations by emphasizing important points or issues (by repeating, colouring, slowing down, voice-over, etc.) and so draw the viewer's attention to issues that could get lost in a real-life situation" (p.73).
A game is also a simulation which has other attractive qualities such as contest, fun, and appreciation of intellectual skills. This opportunity to use intellectual skills, such as the integration of ideas and application of higher mental functions, are emphasized in a game to a greater extent than in routine educational activities. Duby (1991a, p.74) notes that "other key terms are used to describe advantages of games: drill and recall, process learning, practice of reality, activity and engagement, variety, motivation, involvement, etc." Careful identification is important here to assure that all elements contribute to successful learning in the telecourse.

Learner Characteristics. According to Kaye and Rumble (1981) "the main characteristics of student groups taking distance-learning courses are determined by the political and social motivations underlying the establishment of the institutions and their course profiles" (p.35).

Institutional characteristics reflect political factors such as the demand for higher educational opportunities which can't be satisfied by conventional means on the scale required. Kaye and Rumble (1981) cite an example from Sri Lanka where there were 110,000 qualifying candidates but only 5,000 university places available in 1979.

Another factor involves training needs determined by the business sector or national economic policy. Courses are aimed at
specific target populations. A third political motivation is a desire to provide educational facilities to disadvantaged groups who have been denied access to education through no fault of their own. The establishment of the Open University is a response to the elitist nature of the British school system (Kaye & Rumble, 1981).

Students in conventional and distance learning institutions have similar reasons for desiring an education; however, the populations are different. The post-secondary telecourse student meets the typical distance learner profile. Wilkinson and Sherman (1991) found that these students are older than traditional college students. They are characterized as self-motivated, persistent, independent, usually employed, often married with children, and are part time students. Most students appear to select distance education for the convenience. This includes decreased travel, compatibility with schedules and the opportunity to self-pace course work.

Moss (1983) notes that student independence is promoted in distance education. A student using video often has more autonomy over the timing, selection, and sequence of course content than students who attend scheduled teacher-mediated classes.

The Open University assumes a student is highly motivated and is able, or at least willing to learn the ability, "to learn effectively from reading, to organize study time, to set oneself
tasks and to be self-sufficient in the learning situation" (Ferguson, 1976, p. 30).

When attempting to adapt telecourses developed in Great Britain or the United States to South American countries, Moss (1983) found that different learner characteristics and cross-cultural issues must be considered. Identifying the specific characteristics of learners helps in the selection of a suitable level of content and appropriate instructional strategies. The best procedure when developing a product according to Gagne', Briggs, and Wager (1988) "is to interview and test the skills of the target population until you know enough about them to design instruction appropriately" (p. 25).

**Goals and Objectives.** Needs, content, and learner analyses lead to the development of goal statements and performance objectives. The objectives serve as the guideline for developing the instruction and designing measures of student or institutional performance to show progress toward the goals (Gagne', Briggs, & Wager, 1988).

On the institutional level the Open College's mission is to improve the United Kingdom's economic performance by widening access to training through open learning and so raising the level of the personal and vocational competence of the whole community (Innes, 1987). All the OC goals and objectives from institutional to course level have been developed from the needs assessment process.
Some of the OC objectives relate to individual learners; others, such as making the courses self-supporting, relate to the institution. A sample of OC institutional objectives is listed: 1. to provide a wide range of courses to meet the needs of individuals and employers, and give the learners the opportunity to obtain a qualification or credit towards a qualification; 2. to make OC courses available to as many of the UK population as possible; 3. to open up a variety of new opportunities in education and training below the degree level, etc. (Innes, 1987).

On the course level it is suggested by several writers (Duby, 1991a; Garrison, 1983) that when writing objectives for a telecourse, one should take into consideration the characteristics of the media which will be most effective in assisting the learner achieve the desired outcome.

Others (Clarke 1983; Salomon, 1979) agree. Clark (1983) suggests studying the "attributes of media and their influence on the way that information is processed in learning" (p.451) An earlier study by Salomon (1979) outlines a psychological theory that integrates and considers the interaction among media, cognition, and learning. One of his proposals is that "symbol systems differ with respect to the kinds of mental skills that they invoke in the process of knowledge extraction. To the extent symbol systems call on quantitatively and qualitatively different mental skills,
knowledge acquisition outcomes can be expected to vary respectively" (p.217). Clark (1983) concludes that so far the evidence "implies that media attribute research may contribute to instructional design but not to theory development" (p.451).

**Instructor Characteristics.** This step has been added to analysis because of the non-traditional role of the instructor in a telecourse. Garrison (1989) recognizes that teacher behaviors are an important component in increasing the success of student learning.

One aspect noted by Ferguson (1976) in video-based courses is that the teacher no longer brokers between the information and the student. While planning is still a teacher responsibility, the student appears to be more directly involved with the learning situation. A student gains exposure to a variety of experiences and teaching methods compared to the relative isolation and limitations of a traditional classroom teacher. And, the student is introduced to a variety of people who are also viewed as authorities.

When telecourses use instructors in the more traditional manner, the following, according to Chung (1991), are important for success: 1. thorough knowledge of the subject matter; 2. dynamic classroom relationships; 3. ability to evoke meaningful student responses; 4. ability to involve students in their own education; 5. enthusiasm for the subject and teaching; 6. empathetic understanding
of the student; 7. fairness in assessment; 8. teacher impact on students outside the class, and 9. distinctive and imaginative ideas.

The instructor must tie together video clips, remote site inserts, demonstrations, graphics, and text. If the presentation is live, it is important for the television teacher to know the medium well. Malfunctions of microphones, bulbs, and telephone lines can disrupt a live telecast (Hudspeth & Brey, 1986).

**Design**

This second component of the instructional design model identifies the techniques and methods that will be used to deliver instruction. Starting with the objectives instruction is developed which will lead the student to a successful observable performance (Gagne', Briggs, & Wager, 1988).

**Instructional Strategies.** Dick and Carey (1990) state that an "instructional strategy describes the general components of a set of instructional materials and the procedures that will be used with those materials to elicit particular learning outcomes from students" (p.162). They list five major components to an instructional strategy: 1. preinstructional activities, 2. information presentation, 3. student participation, 4. testing, and 5. follow-through.

The Agency for Instructional Technology has developed its own but similar strategies for designing its instructional videos.
Nelson (1991) identifies them as follows: 1. learning will increase if the learner understands explicitly what is expected; 2. students learn most effectively when they start with familiar situations before moving to new situations and problems; 3. the greatest amount of learning occurs when skills are developed and practiced in situations similar to those in which they will be applied; 4. effective instruction emphasizes active rather than passive learning; 5. effective instruction encourages the development of skills that are transferable from one context to another.

Examples of AIT productions include Mathworks, It Figures, Global Geography, and Principles of Technology. Nelson (1991) observes that AIT believes that adherence to the following principles of learning allows the creation of these highly sophisticated video programs: 1. active participation which encourages students to think along with the presentation; 2. sequencing from the simple to the complex, the familiar to the unfamiliar; 3. chunking by presenting the right amount of information for the development level of the students; 4. congruency which eliminates whatever is not tightly relevant.

In another example of instructional strategy from AIT, Mathworks presents the "same information about the mathematical formula in three different situations: drama, teacher lecture and animation. Thus, students are exposed to repetitive messages from
different points of view, each presented in highly motivating situations" (Nelson, 1991, p.40).

Providing feedback in a telecourse so that students are actively participating in their acquisition of knowledge is a prominent issue in distance education. Greater efforts have been made into preparing and transmitting the content than the interactive dialogue where meaning is pursued by teacher and student. Garrison (1989) insists that the "quality of the educational transaction is dependent upon two-way communication" (p.17).

Feedback is a component of the communication loop. The process of communication is considered successful when the internal experiences of the receiving person are more or less parallel to those sent by the communicator. Garrison (1989) allows that communication is "the negotiation of meaning and the prospect of mutual learning through dialogue and discussion" (p.15). Feedback goes beyond a simple confirmation that a message has been received. Garrison (1989) continues that "the student and teacher may discuss a viewpoint and potentially both may revise an existing impression" (p.16).

Garrison (1989) feels very strongly that education has no place for manipulation or indoctrination which one-way communication can inadvertently promote. He stresses the need for interaction in the educational process. Media must be capable of supporting adequate feedback.
**Media Design**. The search for reasons and practices contributing to the reemergence of the telecourse leads to the concept of video versus television. Even though a telecourse integrates a number of media, only video will be considered in this section.

Moss (1983) asserts that video will play a vastly more influential role in education than television has. Video is different from broadcast television in that students gain greater control of the viewing experience. Moss (1983) cites an example of a video-based course developed for first-year history students at Leeds. While a few view the video as a lecture, most students adopt their own strategies. Most stop the machine periodically and reflect on the contents; others use fast forward and rewind or the still-frame controls much as they would use printed text in a book or article. "The truly interesting aspect of the challenge of video to established traditions," Moss (1983) concludes, "lies in its potential to stimulate and support individual study, a potential summed up by the label found on at least some video recorders, 'search'" (p.28).

Although some argue that no one medium makes a significant difference in learning, Dick and Carey (1985) "suggest that differences in learning outcomes are reflected in the media used to deliver instruction" (p.169). Video characteristics that should
be considered in the design of instruction are briefly explored from the following research.

Metallinos (1991) states that "there is an understanding now by television practitioners and researchers that the medium helps to shape the message" (p.50). He advocates the use of the field of television aesthetics which studies the elements that constitute television production and "the specific medium-related variables which influence the viewer's attention, comprehension, and appreciation of televised messages" (p.52).

Metallinos (1991) defines the three major areas of television aesthetics as perception, cognition, and composition. Studies in both perception and cognition have revealed the significant elements which aid the comprehension and understanding of pictures and sound. Color, size, patterns, sound, and motion are some of the perceptual factors which structure the video image. Examples of cognitive factors include picture orientation, symbolism and memory, imagination and thinking. Compositional factors of televised images rely not only on the existing rules from art and performance, but also on knowledge of the human visual and auditory limitations and potentials from perceptual and cognitive studies.

Duby (1991b) describes examples of television features which can improve the mastery of relevant skills. "Research showed that fragmentation of spaces, logical gaps, close-ups, and zooming in and out have an impact on the acquisition of knowledge. Gaps, for
example, activate the viewer's mind (to close the gap) and improve comprehension of logical structure and continuity. Zooming in encourages analysis; zooming out, generalization. A viewing version that emphasizes close-ups requires more knowledge of the relationships between parts of whole etc.

Learners have to familiarize themselves with these TV symbols and codes in order to be able to decode and interpret the message, as transmitted, into a meaningful cognitive message" (p.193).

Salomon's (1979) comments on symbols and coding from his earlier research lends a basis to Duby's findings. He states that "because the acquisition of knowledge is mediated by cognitive symbolic functions, media's symbolic input may play an important differential role in learning" (p.216).

Television is considered a rich and dense source of information because it carries a variety of presentational characteristics simultaneously. Duby (1991b) lists these as: the spoken work, the written work, still and moving pictures, events occurring in real time, slow or accelerated motion, animation, sounds, and music.

"Underlying TV technicality is the assumption that TV content and TV technical forms are determined culturally" (p.191). Salomon (1979) supports the cultural bias of media symbols by relating that human intellectual development, which depends on mastery of techniques, occurs with "varying efficiency and success by culture - language being a prime example" (p.227).
Evaluation

Evaluation in education may be judgmental or non-judgmental. It can be of students, products, administrators, or institutions. "Indications of how well an instructional product or system performs are best obtained from systematically gathered evidence" (Gagne', Briggs, & Wager, 1988). Evaluation is the process of gathering, analyzing, and interpreting such evidence.

Learner Evaluation. Assessing the learner's performance involves looking at the degree to which the specified objectives have been achieved (Verduin & Clark, 1991). Educators are always concerned that the delivery of instruction, whether by traditional or mediated methods, leads the learner to mastery of the course objectives. Many studies have been conducted to demonstrate the effectiveness of one medium over another. Clark (1983) asserts that generally students accomplish performance objectives equally well from all media including the traditional classroom. Post-test score comparisons have found no significant differences in achievement of the objectives among the different instructional modes.

This assertion from Clark (1983) and others (Chung, 1991; Garrison, 1989) has redirected research in educational media production. Now media attributes are considered to influence the way information is structured and presented in the light of cognition and learning (Garrison, 1989).
Another consideration of learner evaluation is at the institutional level. One of the barriers distance education has had to overcome is the testing situation. Hudspeth and Brey (1986) note that the "future holds promise with respect to electronic-based testing" (p.83). Technologies which show remote testing potential include electronic mail which can provide the examination along with feedback and computer-based testing programs. Interactive cable television has a hand-held key pad which can record student responses during the broadcast program. The developer is challenged to replace the artificiality of the final exam with student response data that indicates true mastery of the objectives (Hudspeth & Brey, 1986).

On the institutional level one of the ways to judge the success of a distance education delivery system is to measure the numbers of graduates. Poor completion rates are well documented in distance education (Verduin & Clark, 1991). The Open University has in ten years time awarded 30,000 degrees (Kaye & Harry, 1982). Much of the credit of the OU success is attributed to the course team approach using formative evaluation. The teams can include subject area experts, educational technologists, and BBC broadcasters. Formative evaluation "offers the prospect of evidence to support or overthrow views otherwise based on individual experiences that are likely to conflict" (Moss, 1983, p.117).
Formative Evaluation. As described by Dick & Carey (1990), formative evaluation is the collection of data and information during the development of instruction, a program, or an institution which can be used to improve its effectiveness. This type of evaluation is conducted as a constructive, informal and nonjudgmental process. It is based on the agreed performance objectives. It helps the designer to increase the likelihood that the final product will achieve its stated goals.

AIT verifies and refines its programming through formative evaluation by using teachers and other subject matter experts. The classroom is the testing ground for the preliminary drafts of scripts, video, and teacher's guides. AIT focuses on four criteria: 1. student attention to the lesson; 2. student comprehension of content; 3. the nature of classroom interaction stimulated by the lesson, and 4. the appeal of the lesson to students and teachers (Nelson, p.40).

AIT also uses formative evaluation when requested to adapt one of its programs for use in a non-English speaking country. As reported by Duby (1991b) and Salomon (1979) television symbolism and mastery of techniques is perceived differently by the experiences of different cultures. To meet specific curriculum needs, AIT may add a local host and include new video footage which illustrate local cultural values.
**Summative Evaluation.** Summative evaluation concerns itself with the effectiveness of an instructional system, course, or topic. It is a completed project for which a decision is needed for adoption (Gagne', Briggs, & Wager, 1988). The course, program or delivery system is implemented and maintained, maintained the product remains effective.

Many diverse elements have been considered in the reemergence of the telecourse in distance education. Growing populations in developing and developed nations demand access to education which can no longer be provided by traditional institutions. Distance education, which has been around for many years providing alternative educational opportunities, is itself changing.

Communication theory sparks the issue of the educational transaction, the difference between a student gaining information or knowledge. Garrison (1989) emphasizes that the quality and quantity of feedback is crucial to this educational issue.

Add to this the proliferation of technologies which can mediate communication and address the distance education problems. Then consider the attributes of media, in this case video, which can contribute to the efficiency of learning. Aspects of video which lend itself to distance education include: the student has a direct encounter with the content; the teacher is not needed to present the information, and the student has control of pace and sequence.
All of these elements, which must be considered to insure student mastery of the objectives, are organized under a systems model of instructional design. This field, too, has changed considerably since the 1960s. By focusing on the student's learning, the instructional design process has brought new potential to the video-based telecourse for a variety of learning situations.
CHAPTER III

Conclusion

This reemergence of the video-based telecourse in distance education is verified by a national survey of 180 higher education distance education programs. It was found that television technology was the most frequently used primary mode of educational delivery. "Three-fourths of the programs used video-based technology as the primary method of delivery in more than half of their courses with 47.7 percent using it as the primary method in every course" (Wilkinson & Sherman, 1991, p.56).

The television medium itself does not insure a quality telecourse; however, combined with sound instructional design planning, the results are excellent (Hudspeth & Brey, 1986). Chung (1991) confirms that student response to planning is very positive. When telecourses include well-trained site facilitators/instructors and well-designed learner materials, students rate them significantly higher than conventional courses. The often cited successful Open University is an excellent example of the instructional design system in action.

In developing countries, the place of video in distance education is by no means assured. The programs launched in the 1960s were either technical, administrative, or pedagogic failures. Moss (1983) relates that these failures do not devalue the potential of distance education for these countries; instead, he
emphasizes the importance of careful planning, administration, and evaluation, in other words using the instructional design process.

In the United States nation-wide organizations such as the Agency for Instructional Technology and the Adult Learning Service cooperating through public broadcasting have corrected many of the weaknesses of the past. Their adoption of the instructional design system along with other universities and community colleges is contributing to the production of outstanding telecourses (Nelson, 1991).

For the future of the telecourse, Moss (1983) predicts that "video, among other new technologies, offers education a challenge to rethink much of its methods and contents, helping tilt the balance away from teacher-centered instruction towards learner-centered study" (p.12). Students will become less passive viewers with the convergence of other technologies allowing for what Garrison (1989) reports as the "negotiation of meaning" (p.12) leading a student to knowledge.

Garrison (1989) states that the "function of education is to develop skills of critical analysis, and therefore, the ability to acquire knowledge. In the communication process information is transmitted through one-way communication while knowledge is induced through two-way communication" (p.16).

Garrison (1989) acknowledges that the success of a distance education course should not be media led but media enhanced. The
The issue is "identifying and understanding instructional design and communication principles to meet the learning needs of a broad range of individuals" (p.102). The two disciplines, educational technology with its emphasis on instructional design and distance education, have unique and complimentary attributes which are leading the way towards improving instruction for all learners.
REFERENCES


