

A SYNTHESIS OF AUDIOVISUAL MATERIAL RESEARCH  
FOR  
THE CLASSROOM TEACHER

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by

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## CONTENTS

	Page
ACKNOWLEDGEMENTS .....	11
 Chapter	
I. INTRODUCTION .....	1
Statement of the Problem .....	1
Limitations of the Study .....	3
Justification of the Study .....	4
Definition of selected Terms .....	5
View of the Thesis .....	7
II. LEARNING CONCEPTS RELATED TO AUDIOVISUAL MATERIALS .....	8
Motivation .....	9
Stimulus-Response .....	16
Reinforcement .....	20
Practice .....	23
Reasoning and Understanding .....	27
Interference and Transfer .....	30
Retention .....	34
Summary .....	36
III. AUDIOVISUAL RESEARCH RELATED TO LEARNING CONCEPTS .....	37
Motivation .....	38
Stimulus-Response .....	43
Reinforcement .....	47
Practice .....	48
Reasoning and Understanding .....	50
Interference and Transfer .....	51
Retention .....	53
Summary .....	53
IV. SPEECH AND ITS GUIDELINES FOR AUDIOVISUAL UTILIZATION .....	54
Motivation .....	55
Stimulus-Response .....	56
Reinforcement .....	57
Practice .....	59
Reasoning and Understanding .....	59
Interference and Transfer .....	61
Retention .....	64
General Implications or Guidelines .....	66
Summary .....	67

V. IMPLICATIONS FROM THE STUDY .....	69
Motivation .....	70
Stimulus-Response .....	73
Reinforcement .....	76
Practice .....	78
Reasoning and Understanding .....	80
Interference and Transfer .....	82
Retention .....	84
Conclusion .....	85
A SELECTED BIBLIOGRAPHY .....	86

CHAPTER I  
INTRODUCTION

Statement of the Problem

Considerable emphasis is placed upon the use of audiovisual materials as a means of improving learning in the classroom. With this increased interest in audiovisual materials, a substantial amount of research information has accumulated concerning the influence of audiovisual materials on the learning process.

There is little doubt in the minds of many people as to whether audiovisual materials should be used in the classroom. They should and are being used, and their use is increasing. With the potential power of audiovisual materials in education, it becomes essential to consider the actual role they play in the learning process, and the type of audiovisual materials available for teachers to use. It is argued by some who have researched the use and application of audiovisual materials that audiovisuals successfully contribute to a different kind of experience from that supplied by textbooks and conventional lectures.

Teachers are now confronted with the problem of how to design and utilize audiovisual materials in order to insure the best learning. While many of these problems are attacked by those who contribute to scholarly journals and textbooks, each teacher must decide what answer will meet his needs.

Many times, of course, there are several answers and the teacher spends valuable time experimenting to find the best or appropriate one.

The basic problem to be investigated in the present study centers on the teacher faced with the task of designing and utilizing audiovisual materials. It is: what literature related to audiovisual materials is available for synthesis and application for teachers in general and speech teachers in particular who are interested in improving their efficiency and effectiveness in the classroom?

The purpose of this study, then, emerges from this basic problem. It is to synthesize appropriate literature in order to provide theoretical guidelines for the efficient and effective design and utilization of audiovisual materials. The following three statements detail the purpose:

1. Specifically, to gather information in current learning concepts related to audiovisual materials and to develop applications to teachers interested in improving their efficiency and effectiveness in the classroom.
2. Specifically, to gather information in audiovisual research and to develop applications to teachers interested in improving their efficiency and effectiveness in the classroom.

3. Specifically, to gather information in current Speech textbooks related to audiovisual materials and to develop applications to teachers interested in improving their efficiency and effectiveness in the classroom.

#### Limitations of the Study

The present study will not include literature that is related to the technical construction of audiovisual materials. That is, it will not consider the actual construction of a device or material in so many different steps. The study will not include the technical problems of the devices that are used to project audiovisual materials, nor the conditions of the room, its lights, seating, and other features. The study will not discuss teacher competencies in the use and ability to design audiovisual materials or the knowledge the teacher possesses of his academic field. Finally, the study will not consider those audiovisual materials that involve the communication of information through the audio or visual channel which are used to supplant, but not supplement, the teacher. Audiovisual devices designed primarily for providing aesthetic and affective experiences and those designed to change attitudes by means other than that of providing information are beyond the scope of this study.

### Justification of the Study

"Our schools and colleges have felt the burden of a series of explosive changes that have created a crisis in contemporary education."<sup>1</sup> The tremendous enrollment increases, the expansion of knowledge at an ever increasing rate, and the demands of our society for technical and high-level training have put pressure on our educational philosophy.

The problems of enrollment, expansion of knowledge and society's demands have resulted in a reconsideration of the aims and objectives of education and of materials and methods by which these objectives may be achieved. In light of this present reconsideration there is an opportunity to reappraise the literature of audiovisual communication, learning related to audiovisual communication, and Speech pedagogy related to audiovisual communication in an attempt to arrive at theoretical guidelines for improving the learning process.

Travers uses an analogy to highlight the problem of designing audiovisual materials. The analogy serves also, as a basic justification for examining in depth appropriate literature on audiovisual communication.

The engineer confronts the same problem in designing a bridge as the person who constructs audiovisual materials. The engineer, working on structural problems relies on principles of classical mechanics which physicists have produced. Although, the engineer may full realize

<sup>1</sup> Brown, James W., and Kenneth Norberg, Administering Educational Media, (New York: McGraw-Hill Book Co., 1965), p. 2.



that the principles of physics may only apply to a limited degree to this problem and that simplifying assumptions may have to be done, but there are no substitutes for the principles, and he knows that he must work with them even if his bridge design violates many of the assumptions on which they are based.

Just as the engineer almost certainly designs better bridges by basing his design on well-established scientific principles despite their limited applicability to his problem, so too does it seem reasonable to assume that audiovisual teaching materials will be improved when they too are designed on the basis of sound psychological principles.<sup>2</sup>

#### Definitions of selected Terms

The present study reviews literature in three specific areas: Psychology of Learning, Audiovisual Communication, and Speech teaching methods and classroom texts in order to understand and present their implications for the design and the use of audiovisual materials. Audiovisual materials in the study refer to those devices a teacher employs to supplement his verbal meanings.

In order to detect general theoretical guidelines within and across the three areas in relation to designing and utilizing audiovisual materials in the most efficient and effective way, a set of common categories across the three areas

<sup>2</sup> Travers, Robert M.W., Research and Theory Related to Audiovisual Information Transmission, (U.S. Department of Health, Education, and Welfare, Office of Education, 1964), pp. 1.03-1.04.

was evolved. The categories are labeled by selected learning concepts which permit parallel examination of literature within each area.

Motivation is the condition produced by external or internal needs, which energizes, selects and directs the learning of an individual.

Stimulus-Response is the process of an individual reacting to some internal or external event that he perceives.

Reinforcement is any stimulus external or internal which provides rewards or punishments prior to or after the performance of a learned act.

Practice is the rehearsing of a given behavior in order to improve or perfect an act.

Reasoning and Understanding are the abilities of the learner to deduce and structure events so that he can comprehend them to fit his frame of reference and thus learn them.

Interference and Transfer are the influence of one learned act upon the learning or performance of another. Interference occurs when a previously learned act provides competition for learning a new act, thus resulting in forgetting or confusion (negative transfer). Positive transfer occurs when the previously learned act facilitates the learning or performance of another.

Retention is the number of acts previously learned available for performance at any particular time.

## View of the Thesis

The statement of the problem under study, its limitations, and a justification for its investigation serve as a foundation for this study.

Chapter II examines selected but fundamental concepts about learning which should be useful in improving teaching by means of audiovisual materials.

Chapter III examines the relationship of audiovisual research to learning concepts in order to provide practical and theoretical guidelines for improving teaching by means of audiovisual materials.

Chapter IV examines Speech methods texts written for the teacher in Speech and Speech textbooks written for the student in Speech in order to detect guidelines for designing and using audiovisual materials for learning.

Chapter V examines the three areas in relation to one another and presents theoretical guidelines derived from them for the efficient and effective design and utilization of audiovisual materials for improving learning.

## CHAPTER II

### LEARNING CONCEPTS RELATED TO AUDIOVISUAL MATERIALS

The purpose of this chapter is to present some selected but fundamental concepts about learning which should be useful in improving teaching by means of audiovisual materials. It is possible to review in detail each of the many theoretical views of learning and then make evaluations of each view. However, this would add little to our objective of seeking practical applications for the efficient and effective use of audiovisual materials. Such reviews and appraisals have already been done by other people and teachers who are interested can read them for a complete theoretical approach to learning.

The chapter's concern will be with learning concepts which relate to the design and utilization of audiovisual materials. Learning theory as a criterion for more efficient and effective design and utilization has not received much attention until recently. Meierhenry<sup>3</sup> states that the need for careful and systematic theory development seems to be more necessary now than ever before because newer types of media combine in varied ways the older and often simpler experiences. For example, the film which combines both a visual and audio message no doubt has a more complicated

<sup>3</sup> Meierhenry, Wesley C., "Learning Theory and AV Utilization," AV Communication Review, IX, (Sept.-Oct., 1961), p. 5.

impact on the student than the spoken word alone, the still picture alone, or the silent "moving picture." He goes on to say that whenever multiple variables are combined, an interaction among them is likely, so that the combined results differ from the individual results of each variable. Meierhenry indicates that so far, there has been very little speculation in the audiovisual field as to the specific effects of many of the materials when employed for either general or particular instructional purposes. The reason for the little speculation about the specific effects of audiovisual materials is generally due to the failure of educators, including audiovisual specialists, to be as knowledgeable as they should be about the conditions under which learning may be expected to take place.

### Motivation

Motivation is said to be necessary for learning by most learning theorists. The difficulty of describing human motivation hinges on its complexity. "The motivation of any organism, even the simplest one, is at present only partly understood."<sup>4</sup> Some of the ideas that will be presented about motivation are conflicting because they emphasize different aspects of the concept.

<sup>4</sup> Deese, James, Principles of Psychology, (Boston: Allyn and Bacon, Inc., 1964), p. 54.

Townsend<sup>5</sup> states that we respond to various events, and each new one is affected by the accumulation of preceding experiences. Motivating conditions of an internal nature change from moment to moment; although the external situation remains relatively stable, behavior is highly changeable. The investigator who attempts to understand another's actions may often be misguided or confused because of his inability to find the motivating factors. Theories of learning seek to incorporate internal factors, but the variables involved are numerous and intertwined.

When theory reduces human action to tissue needs, it overlooks certain important, even crucial, characteristics. The assumption being made may be implicit in that human needs can be reduced or understood in terms of certain tissue needs common to all animals. The Gestalt psychologist, according to Luchins,<sup>6</sup> does not deny that an approach via tissue needs in other species may reveal some important factors that are actually operative in human behavior. However, they do want to know whether or not particular factors are relevant to human behavior, and their relation in role and function to particular behavior.

Gestalt psychologists have given considerable attention to motivation in terms of ego needs. "They recognize that

<sup>5</sup> Townsend, Edward Arthur, and Paul J. Burke, Learning for Teachers, (New York: The Macmillan Company, 1962), pp. 10-11.

<sup>6</sup> Luchins, Abraham S., "Implications of Gestalt Psychology for AV Learning," AV Communication Review, IX, (Sept.-Oct., 1961), pp. 10-11.

attitudes, assumptions, expectations, and other such ego-factors are, at times, important determinants of behavior."<sup>7</sup> McDonald states that "the common conception among theories is that motivation is an initiating state leading to increased response activity, the consequences of which strengthen certain responses and heighten the probability of their future occurrence under similar conditions."<sup>8</sup>

Motivation based on audiovisual devices cannot logically be deduced from Gestalt psychology according to Luchins. Before Gestalt psychology can offer an answer, they will have to know the role and function of a particular audiovisual device in a particular learning situation. "We need to explore how to structure or to organize a particular learning situation so that audiovisual devices accomplish their intended purposes and help move the learning in the desired directions."<sup>9</sup>

Luchins<sup>10</sup> states that the educational process is directed to produce certain knowledge and skills. To the extent to which audiovisual materials aid in achieving this goal, they may be regarded as intrinsic to it. To the extent that the material is assumed to arouse interest or to entertain or reward the pupil, it may be regarded as extrinsic to the goal.

<sup>7</sup> Ibid., p. 11.

<sup>8</sup> McDonald, Frederick J., "Motivation and the Communication Processes," AV Communication Review, IX, (Sept.-Oct., 1961), p. 62.

<sup>9</sup> Luchins, p. 13.

<sup>10</sup> Ibid., pp. 13-14.

Even with the assumption that audiovisual materials have some motivating elements, McDonald<sup>11</sup> states that it is important to remember that learning is not thereby guaranteed. On the other hand, it is not necessary for audiovisual material to have motivating properties if it is employed in connection with other procedures for motivating learning.

In his article on "Learning And the Technology of Instruction," Glaser<sup>12</sup> takes the behavioristic approach that motivation is related to the drives produced by certain experiences in an organism's history. An example of this would be a student, who hears or sees a lesson and goes on his own to continue his exploration of the subject being presented. Motivation sometimes is the outcome of frequent reinforcement in the course of learning; constant success often appears to bring about interest and what appears to be motivation.

Audiovisual devices solely or primarily employed for extrinsic motivation can be dangerous. Such a device, according to Luchins<sup>13</sup> may mislead the pupil's motivation so that he cannot come to grips with the subject matter. The pupil may acquire a superficial relation to the subject matter displayed by the materials and even to learning in general.

<sup>11</sup> McDonald, pp. 62-63.

<sup>12</sup> Glaser, Robert, "Learning And the Technology of Instruction," AV Communication Review, IX, (Sept.-Oct., 1961), p. 53.

<sup>13</sup> Luchins, p. 13.



It is important that audiovisual devices should not become merely a means of entertainment, of developing superficial familiarity with the subject matter, or of making learning a passive activity. They can be vital in structural relationships of the concepts and skills being taught.<sup>14</sup>

Luchins discusses the ability of audiovisual devices to capitalize on existing motives.

Aside from appealing to an individual's likes or status or appetites, audiovisual devices should appeal to his need for cognitive clarity and meaning, and should challenge his curiosity and decision-making ability. We should not overlook the possibility that a person may want to learn and to understand, and may not be satisfied with easy and entertaining activities.<sup>15</sup>

It is also important to investigate not only the learning process but also the social climate in which the learning takes place. The implication is that both the audiovisual material and the social climate should be considered in regard to their influence on one another.

Some devices may seem structurally clearer than others, but it may not be advisable to use them because they may create a social climate that interferes with learning. For example, in lessons intended to teach Arabs the value of a balanced diet, it is not advisable to use an AV device which refers to pork. That reference is likely to arouse attitudes that interfere with their grasping the essential point. To avoid such disturbing factors, it is necessary to take into account not only the social norms of the pupil's status groups but also his reference groups.<sup>16</sup>

14 Ibid., p. 14.

15 Ibid., p. 14.

16 Ibid., p. 15.

It may also be necessary for one to relate the purpose of the audiovisual materials being employed with that of a pupil's life experiences and feelings. However, it should not be forgotten that the materials should also be meaningful in regard to the structure of the subject matter. For example, in the design of an arithmetic device, the choice of whether the elements involved should be colored squares, dots, dogs, or pieces of pie may be less important than how the elements should be grouped. One grouping may reveal the organization of the arithmetical functions far more adequately than another. "Care should be taken not to divide the subject matter into arbitrary parts, contrastructurally, in order to have parts which can be readily related to the pupil's needs, or feelings, or experiences, or to the social context."<sup>17</sup>

Glaser points out, "when one measures the usefulness of a learning concept in terms of the extent to which it generates applied research and applications for educational practice, the concept of motivation does not fare well."<sup>18</sup> In fact, he goes on to say that many learning theorists avoid the word in their explanations of the learning phenomena in more operational terms. McDonald,<sup>19</sup> on the other hand, states that motivation is generally agreed to be a necessary condition for learning, though theorists disagree as to the extent of its character in relation to learning.

<sup>17</sup> Ibid., p. 15.

<sup>18</sup> Glaser, p. 53.

<sup>19</sup> McDonald, p. 62.

Personalities of the students differ and in some cases may call for different audiovisual materials to insure optimum effectiveness. Luchins<sup>20</sup> says that it may be necessary to "tailor" audiovisual material to increase motivation. He supports this contention by referring to the different attitudes and knowledges of the pupils. "A device suitable for one type of subject matter may not be at all adequate for another because, although it is in keeping with and helps reveal the structure of the former, it may be out of keeping or irrelevant to the structure of the latter."<sup>21</sup> Similarly, material adaptable for one group or one social climate may be non-adaptable for another. The problem of "tailoring" is one of purpose according to Luchins.

Even though motivation as a concept is only partly understood and in some instances produces conflicting views, it should not be neglected for the efficient and effective use of audiovisual materials. Consideration of the attitudes, assumptions, expectations, and other such ego-factors that make up students' behavior should be factors included in the preparation of audiovisual materials. The materials should not be made exclusively for entertainment if they will mislead the student from the intended purpose. It should be kept in mind that even though a device seems to be motivating a student, it doesn't necessarily guarantee learning. The material being employed can be supplemented by motivation from the

20 Luchins, p. 16.

21 Ibid., p. 16.

teacher as well as the material, such as frequent reinforcing comments. Motivation can be increased by appealing to the student's likes or status in relation to his cognitive clarity and meaning and should challenge his desire for understanding. Whenever possible, the material should be "tailored" to meet the different personalities of the students in order to be relevant to the knowledge and attitudes they possess. Finally, one should always keep in mind the purpose of the device or materials being employed.

### Stimulus-Response

Since the birth of Psychology less than a century ago, psychologists have been seeking the answer to the problem of describing behavior. There have been many descriptive systems but few have remained. So far none have been accepted universally.

The one language system that seems to have stood the test of time is the system that employs the stimulus-response conception of behavior. Even with the passing of time, there are still many unanswered questions that impair understanding of the S-R approach.

Kendler<sup>22</sup> states that anybody who is interested in controlling behavior--and every audiovisual educator is--must first learn to describe it. This, however, is not an easy task as the history of psychology demonstrates.

<sup>22</sup> Kendler, Howard H., "Stimulus-Response Psychology and Audiovisual Education," AV Communication Review, IX, (Sept.-Oct., 1961), p. 33.

There are three separate components that make up S-R psychology. The advocates of S-R psychology, according to Kendler,<sup>23</sup> who have adopted this approach, indicate its usefulness but cannot necessarily provide intrinsic validity for it. The language of S-R psychology seeks first to represent the events of behavior. Second, methodologically, the behavioristic tradition uses experimental techniques. Third, many authors of books about human behavior employ it as a classification to bring together various theories of learning. (e.g., those of Guthrie, Hull, Spence, and Estes) that utilize a common language and methodological approach.

Instructional technology's primary interest is with the response of a student to a particular material. Because the functions of education should result in definable changes in pupil response, they are produced to bring the responses under control of the preferred subject matter stimuli. "To be appropriately developed, the learner's responses should be operationally (behaviorally) specified in so far as possible, just as the task to be learned in the laboratory is carefully specified by the experimental psychologists."<sup>24</sup>

There has been much doubt expressed about describing behavior in terms of stimulus-response association. Some of the apprehension has stemmed from the differences between active, flowing behavior and the inert, single S-R association.

<sup>23</sup> Ibid., p. 34.

<sup>24</sup> Glaser, pp. 43-44.

It seems incomprehensible that raw behavior can be reduced to isolated S-R connections. This objection stems from misunderstanding. To use S-R language does not mean that complex behavior "actually" consists of S-R connections. Relevant to this point is a quotation from Toulmin, an English philosopher of science, who after analyzing the concept of light, concludes, "We do not find light atomized into individual rays: we represent it as consisting of such rays." Applying the same idea to the following statement, "We do not find behavior atomized into individual S-R associations: we represent it as consisting of such S-R association." The concept of the S-R association, therefore, must be judged not in terms of its ability to provide a clear image of behavior, but rather in its capacity to represent the facts of behavior.<sup>25</sup>

Gestalt psychologists do not favor the concept of associationistic learning, when it is presented as the model of all learning but they seemingly do not deny that such learning takes place. The Gestalt psychologist is concerned with the characteristics of man as he tries to reach homeostasis with the world around him. "Associationistic theories, according to Wertheimer, do not deal adequately with such characteristics: they seem to espouse the 'homo mechanicus' doctrine that views man as a machine."<sup>26</sup>

Gestalt psychology seemingly does not indicate to any extent what pupils should learn but rather how they should learn. Its concern is not merely with the response but also what determines or brings about the response. "The same response may be brought about by different processes; different responses may be brought about by the same process."<sup>27</sup>

<sup>25</sup> Kendler, p. 34.

<sup>26</sup> Luchins, p. 17.

<sup>27</sup> Ibid., p. 17.

The implication presented here is one of over-all structure of the learning situation and how a given response is determined.

The teacher must know exactly what response he desires his students to learn. Too often the purpose of audiovisual material is unclear or vaguely stated leading to a variety of student responses. "Unless one knows precisely the behavior that is to be acquired, it is impossible to formulate any sensible training program."<sup>28</sup>

The Gestalt psychologist says that learning has taken place when a student has grasped or comprehended the structure of a concept or procedure. It isn't necessary for him to repeat a specific response exactly the way it was presented. However, an indication of understanding of, or insight into, the role and function of the particular response in the structure of which he has participated is necessary.

The concern of the Gestalt psychologist, according to Luchins,<sup>29</sup> lies with the process of events leading to the students' response or responses and also in making an analysis of the structure, consideration as to whether the pupils fully understood what was taking place, whether their responses were repeated mechanically from habit or accidentally stumbled upon. Students may repeat a given response or set of responses

<sup>28</sup> Kendler, p. 37.

<sup>29</sup> Luchins, p. 17.

correctly and yet not understand the underlying principle; on the other hand, they may respond inaccurately and yet understand the point.

The stimulus-response concept of learning has survived the passing of time. Even though it is not accepted universally, it has presented some implications that are useful to the classroom teacher in the design and utilization of audiovisual materials. The major concern implied by the concept is that the materials be designed so that a definable response can be projected from it and received by the students. The message encoded through audiovisuals should be associated to the students' past experiences. In other words, the progression of difficulty should be related to the students' knowledges and frames of reference.

### Reinforcement

As with many concepts, there is little agreement over the exact definition of reinforcement. For a teacher, however, the term relates to confirmation and reward. There may be important theoretical differences between the terms confirmation and reward, but the two terms will be used interchangeably in this discussion.

Confirmation of behavior can be as simply expressed as: "yes, do it that way," or even "uh-huh." The expression of confirmation is given when a correct or desired response is being performed by a student and the teacher wishes the behavior to continue. "In practice, the confirmed action is



continued to such an extent that most behavior theorists believe reinforcement to be the most important determiners of what people do."<sup>30</sup> Townsend<sup>31</sup> states that reinforcement is generally considered the condition that causes one response rather than another to be related or associated with a certain stimulus. Reinforcement is the consequence of either confirmation or denial that follows the event. The teacher, for example can say "yes" or "no;" he agrees or disagrees; he smiles and nods his head in agreement or shakes his head and appears reproachful. The basic result is the strengthening of a correct response or the weakening of an incorrect one.

Postman<sup>32</sup> and Glaser<sup>33</sup> are seemingly in agreement that consequences which follow a response have a significant influence on the learning that occurs. Postman, however, cautions his reader not to relate the conception of reinforcement which has developed from the investigations in animal behavior to the application of human learning. Reinforcement that occurs as a result of biological need seems to have little relevance to most human learning. Instead, the rewards and punishments are symbolically presented to human subjects, such as a simple "right" and "wrong," other knowledge of

<sup>30</sup> Townsend, p. 177.

<sup>31</sup> Ibid., p. 178.

<sup>32</sup> Postman, Leo, "Human Learning and Audiovisual Education," AV Communication Review, IX, (Sept.-Oct., 1961), p. 71.

<sup>33</sup> Glaser, pp. 47-48.

results, and prompting. This kind of reinforcement is only rewarding or punishing but often gives the learner necessary information to continue in his responses or to change them.

The investigations of reinforcement have pointed out certain characteristics which relate to educational technology. Glaser<sup>34</sup> in his article on "Learning And the Technology of Instruction" relates three relatively established considerations: First, reinforcing operations are correlated on contingent events which occur subsequent to the occurrence of a response. The principle being implied for the design of audio-visual materials is that they should include some reinforcing contingent event. The contingency is under the influence of several elements in the learning situation. He says that an adequate number of reinforcing responses be produced and/or occur to strengthen the response; that is, to bring about a high probability of its reoccurrence in appropriate circumstances. Second, when a response is reinforced immediately, it is more likely to produce better results in learning. The design of teaching machines has taken this fact most seriously in regard to the reinforcement of a specific response. The reinforcement, here, is merely a "knowledge of results;" that is, whether or not the response of a student is considered correct. Third, the learning is affected by the scheduling or intermittency of the reinforcement contingencies. The findings generally have referred to the relation of frequencies

<sup>34</sup> Ibid., pp. 48-49.

and different patterns of reinforcement in the course of learning sequences. This, however, has not been related to the development of educational procedures.

Reinforcement, like many of the other concepts, does not have a universal definition; however, the term is related to rewards and punishments given for responses by a subject. It is accepted by most to be helpful in aiding the learning process. The implication presented is that a simple confirmation should be given in regard to either incorrect or correct response(s) when using an audiovisual material. The result will encourage correct responses and discourage incorrect responses. The audiovisual material, whenever possible, should include some reinforcing element, for example, a clue or hint to the correct answer or response in the material itself or from the instructor employing the material. The response is most effective when it is immediate. Finally, the reinforcement can be scheduled intermittently.

### Practice

Practice is the concept of perfecting or improving an act or given behavior. "Practice makes perfect" is a maxim that has long been with us. While there seems to be some truth in the adage, there are some instances where more practice perfects an imperfect act, such as one's own handwriting.

From any theoretical or practical point of view, however, the case for routine, drab practice is weak. Rote learning is of value in a few special

instances for an individual, e.g., idioms in a language or a formula in mathematics or science; and someone can always point to something better than rote for even these special instances. Rather, the learner benefits from practice when the other important learning conditions are operative at the same time.<sup>35</sup>

The Gestalt psychologists do not consider practice or repetition as a necessary condition for learning; however, neither do they consider that all learning occurs through insight, nor that past experience is never important or that insight is always sudden in learning. "They have pointed out that insight can occur in the first experience, that it may not occur until a later experience, and that it may not occur at all."<sup>36</sup>

Glaser<sup>37</sup> reflects the behavioristic approach toward practice when he asserts that practice and repetition are necessary for learning as well as maintaining previous learning.

The Gestalt psychologist, on the other hand, believes that repetition without variation is a mechanical process and is not learning in relation to the concept of understanding. Learning for understanding is education for the developing of minds; while repeating responses over and over again with little variation, develops robots. If the focus of practice is with detail of a peripheral nature, the student may develop a "piecemeal" understanding to what is being taught; with a narrowing of his visual and cognitive field to a concentric

<sup>35</sup> Townsend, p. 101.

<sup>36</sup> Luchins, pp. 22-23.

<sup>37</sup> Glaser, p. 51.

view, he is, therefore, not seeing the entire structure of the stimuli or event before him. "The danger of education which focuses on sheer repetition is that it makes little provision for, and perhaps may even destroy, the desire for understanding and the display of curiosity, imagination, and creativity."<sup>38</sup>

According to Glaser<sup>39</sup> psychological experimental research findings have found that learning appears to be more effective and efficient when practice is provided in a number of trials divided throughout a given period of time. The conclusion evoked for instructional devices would be according to its spacing sessions of practice among other events, including discussions and laboratory practice.

Luchins<sup>40</sup> indicates that for learning to produce comprehension for a student, the amount of practice and the number of repetitions may be less important than the structure of the subject matter being learned. The Gestalt psychologists would rather be concerned with which structures of stimuli are easier or more difficult to learn, than with how many repetitions are needed. Therefore, the audiovisual material that presents opportunities for practice should be considered secondary to that which reveals the nature of the material to be learned.

<sup>38</sup> Luchins, p. 23.

<sup>39</sup> Glaser, p. 51.

<sup>40</sup> Luchins, p. 23.

However, it should be noted that the Gestalt psychologists do not reject practice as a value for establishing certain behaviors. They also recognize habits that are produced mechanically in order to meet recurring situations in life. "When the aim of practice is to inculcate a specific response, it may be crucial to consider how much practice an audiovisual device affords."<sup>41</sup>

The integration of practice in audiovisual learning is most useful when the pupil understands what he is practicing and why he is practicing it within a certain context. Wertheimer, according to Luchins<sup>42</sup> points out that individuals need to get a sound structure--a sensible relationship--with the material with which they are working.

Practice or repetition have produced disadvantages under certain conditions of learning. The concern in the investigation of Luchins<sup>43</sup> has produced what he refers to as the so-called "Einstellung" phenomenon in which a subject who has learned to respond through repeating a response in a series of similar situations, tends to repeat it mechanically in subsequent situations calling for different solutions; they even tend to produce the same response to altogether inappropriate situations. The major contention being made here is that audiovisual materials can be made to cut down on the mechanical

<sup>41</sup> Ibid., p. 24.

<sup>42</sup> Ibid., p. 24.

<sup>43</sup> Ibid., p. 24.

types of responses by initially presenting the information in a meaningful manner. To this, it is suggested that "isolated drill" be avoided in the initial learning situation.

The training situation itself, availability of the prescribed responses is maximized by overt performance and rehearsal of these responses. Hence, a training procedure which requires the learner to practice or recite responses is likely to be more effective than one calling upon him merely to observe the material.<sup>44</sup>

"Practice makes perfect" can be misleading and caution should be taken, so as not to perfect an imperfect act or misunderstanding of a concept when using audiovisual materials. Research has found that practice is most effective when it is provided in several trials or periods over a given period of time. Audiovisual materials should be designed to limit the mechanical types of responses by presenting the information in the most meaningful manner. The suggestion is that "isolated drill" be avoided in early learning situations. Finally, practice should be done in an overt fashion whenever possible to keep the student active and involved with the exercise taking place.

#### Reasoning and Understanding

"I know the student seems to be learning, but does he really understand?" This is a question that is asked by many teachers and the only reply that can be given is to ask whether

<sup>44</sup> Postman, p. 73.

the student is performing the behaviors you desire so that you know he is understanding and reasoning.

At times, teachers need to use audio visual materials that provide hints toward solutions and remove frustration in the problem solving process. Other times, however, confusion deliberately incorporated in audiovisual material may be advisable in order to unstructure a student's viewpoint by providing striking contradictions to his ideas. In this manner, audiovisual materials may function against "premature closure" in thinking.

It should be pointed out that the terminal behaviors defined as understanding, concept formation and utilization, and reasoning seem to be brought about by continuous variations of the stimulus context in which the pupil is to respond. The important objective is to "enrich" the pupil's understanding by inducing him to arrange and reproduce the elements of his repertoire. "At the extreme of these stimulus and response variations, the goal of instruction is really not concerned with the learner's response to any one situation."<sup>45</sup> The terminal behavior or action can be looked at as reasoning with, or understanding, a concept. The implication being made is that audiovisual materials need to provide variations in both stimulus and response which in the end could result in a common understanding of the response.

<sup>45</sup> Glaser, p. 52.



Luchins<sup>46</sup> states that the objective of the lesson should not be presented by audiovisual materials in inflexible parts. Preparation of the teacher should include flexibility so that acceleration or delay in presentation is possible whenever it seems necessary. The teacher also must know when to present a complete idea and when only to supply hints at an idea. It is at times valuable to stop a presentation of an audiovisual device during a lesson to discuss it or, perhaps, if understanding is achieved, it should not be resumed at all. Finally, it is suggested that the pupils should participate in the development of audiovisual materials whenever possible.

Does the use of audiovisual material provide the student with the desired behavior? This question in regard to the concept of reasoning and understanding can only be answered by the teacher and his desired purpose in using the materials. At times, it might be helpful to lead the students into the solutions and answers in the material and at other times it might be advisable to present contradictions to the student's beliefs or concepts in order to keep him from closing his mind to further search for answers. Again this is a teacher decision in relation to his purpose. Whenever possible, a variety of materials should be presented to instill understanding and reasoning from events that evoke the same purpose. Finally, the teacher should have control over the presentation, in order to be able to provide acceleration or delays in the use of the audiovisual materials.

<sup>46</sup> Luchins, pp. 29-30.

### Interference and Transfer

Generally, interference in learning which results in forgetting and a slowing down of the learning process is usually the result of competition between the response under consideration and other responses acquired prior to or subsequent to it. Transfer is the result of similar stimulus components that appear in different learning situations so that the response is generalized. The educational process involves, to a great extent, two aspects: (a) learning to respond to similar elements in stimulus situations--for example, to so generalize as to recognize all words of a certain class as nouns; and (b) learning to make differential responses to different stimulus situation--that is, to form such discriminations as are required to differentiate between nouns and verbs. Most instructional aims in the educational process are to teach students to generalize within stimulus classes and to discriminate between class instances. "Interference in instruction often comes about in the course of this generalization-discrimination process, but it can be overcome by practice sequences presenting many response instances which progressively narrow the discriminations to be made."<sup>47</sup>

Postman<sup>48</sup> states that earlier learning may facilitate or hinder the acquiring of new habits giving the transfer either positive or negative effects. The type and amount of the

<sup>47</sup> Glaser, pp. 49-50.

<sup>48</sup> Postman, p. 75.

transfer effects are created by the stimuli and responses and their relationship in preceding tasks. An old and frequently cited generalization is that the attaching of an old response to a new stimulus is a condition of positive transfer, whereas negative transfer must be expected when a new response is to be learned to an old stimulus. This rule refers to two limiting cases which may be subsumed under more general principles of transfer. These principles are (a) that the magnitude of the transfer effects increases as a function of the similarity of the stimuli, and (b) that the degree to which the effects are positive or negative depends on the relationship between the response required in successive tasks.

According to Luchins<sup>49</sup> interference may be an artifact of the entire audiovisual material or parts of it. It may be due to when, where, and how the material is introduced in the learning situation. It may also be the result of the particular materials and its relationship with: (a) cultural factors, (b) the social atmosphere of the classroom, (c) the structure of the specific teacher-learning process, (d) the structure of the subject matter, and (e) the personalities of the learner and the teacher. Interference, whether or not it results, may be determined in part by the attitudes and assumptions of the pupils to the specific audiovisual material, to similar materials, or to audiovisual materials in general, which in turn may be affected by his previous experience.

<sup>49</sup> Luchins, pp. 19-20.

The audiovisual material may stress the "wrong thing" and interference may, indeed, result. The materials employed may go in an opposite direction of the intended lesson. The materials may add extraneous ideas or concepts that mislead the pupil from the lesson's goal and even substitute another goal.

Interference can be a result of arousal of an emotion (unintentionally) that is incompatible with the response to be learned. Experiments related to learning point up situations in which such behavior is produced.

In the process called "extinction," a response is permitted to occur in a situation where there are no contingent reinforcing events. As a result, the response attains a low strength and can be replaced by a response more frequently reinforced. In the course of extinction, it is noted that emotional or frustration behaviors occur. It is also true that after a history of continuous reinforcement, the omission of a reinforcement is frustration and similarly results in certain behaviors which may be incompatible with learning the appropriate response.<sup>50</sup>

Instruction should be prepared so as to eliminate negative transfer and maximize the probability of positive transfer. This again points out the importance of making the training situation as similar as possible to the conditions of later application. According to Postman<sup>51</sup> the transfer of information can be more effective when it is presented to simulate realistic conditions of performance.

<sup>50</sup> Glaser, p. 50.

<sup>51</sup> Postman, p. 76.

The best way to give "functional meaning" to material is to link it to the past experience, needs, and interests of the learner. However, relating the material to these factors of experience, needs, and interests may lead to obscuring the structural meaning and thus mislead the student and thereby, interfere with learning.

Audiovisual materials according to Luchins<sup>52</sup> may present interference that leads to a mental set, or "Einstellung." The materials may set the student to comprehend in a certain direction, and he may continue in this direction even when the circumstances change and require a change in orientation. The audiovisual material then would be creating a negative transfer for the student.

Luchins states that audiovisual devices should be used to create "tensions" which the student can resolve in achieving his goal in a particular situation and not interfere in achieving the goal. "Audiovisual devices may also be used to shock the learner, to unstructure his frame of reference, to make him aware of contradictions and controversies, and so on. In short, audiovisual devices may be used as eye-openers rather than as tranquilizers."<sup>53</sup>

In this discussion of the concepts of interference and transfer, it is implied that forgetting increases when the

<sup>52</sup> Luchins, p. 21.

<sup>53</sup> Ibid., p. 22.

responses under consideration are in competition with responses acquired prior to or subsequent to the one being learned. Interference can be of a positive or negative nature depending upon the attitudes and assumptions of the pupils toward the material being presented. The implication being presented is that in the design and utilization of the materials, the teacher should be aware of cultural factors related to the students, the social atmosphere of the classroom, the structure of the educational process being employed, the structure of the subject matter, and the personalities of the learners as well as himself. The audiovisual material should be prepared to prevent a negative transfer; this can be accomplished by designing the material as similar as possible to the desired goals and practical applications to be used by the students. Consistent with other concepts is the relating of the materials to past experiences, needs, and interests of the learner which help make up the student's meanings for the materials being presented. There are also instances when some unstructuring of the student's past experiences may be necessary to make him aware of various contradictions and controversies implicit in the materials.

### Retention

Townsend<sup>54</sup> states that remembering, memory and retention refer to a catholic biological operation which is indispensable

<sup>54</sup> Townsend, p. 116.

for all consistent behavior. Such consistency is derived from experiences which are recalled or recognized so that behaviors that need not change from day to day remain with us. Our memory unites past and present through the representation of aspects of the past in present contexts.

The most important single criterion in the analysis of learning procedures is that of long-term retention. The success of training is the establishing of habits which are not easily forgotten and thus retain a continuous strength long after the pupil has left the learning situation. The materials should be designed on well-established habits whenever possible in order to increase the effective and efficient mastery of new tasks. "The most effective method of insuring the long-term retention of a habit is to carry original learning to a high degree of strength. Whatever the amount of interference, a strongly learned habit will be more resistant to it than a weakly learned one."<sup>55</sup>

Retention is one of the most important outcomes of the educational process and is usually desired by all involved in the process of teaching. The basic implication presented under this concept is to design the materials whenever possible on already existing habits. This is to say that the materials should be based on the past experiences of the students.

<sup>55</sup> Postman, p. 78.

Summary

In summary, this chapter has been concerned with the implications presented by the following concepts: motivation, stimulus-response, reinforcement, practice, reasoning and understanding, interference and transfer, and retention for improving the efficiency and effectiveness of design and utilization of audiovisual materials in the learning process.



CHAPTER III  
AUDIOVISUAL RESEARCH RELATED  
TO LEARNING CONCEPTS

The purpose of this chapter is to present information regarding relationships of audiovisual research to learning concepts in order to provide practical and theoretical guidelines for improving teaching by means of audiovisual materials. The research found in this chapter does not cover the entire range of research that is undertaken in the audiovisual field. Certain kinds of literature have been eliminated because the information they present is not considered by many to be relevant. An example would be the literature that compares a traditional lecture with similar content presented by an audiovisual device. Research of this nature does not provide us with guidelines for efficient and effective teaching; however, they are mentioned in the literature as comparisons of types and styles of teaching.

The comparison is rarely, if ever, an attempt to present the same information through two different procedures, the times of presentation are rarely equated, and differences between lectures and differences between versions of the same film cannot be estimated. Such studies generally illustrate most of the technical weaknesses which can be found in experimental designs, and the results cannot be generalized beyond the limits of the particular study.<sup>56</sup>

The main concern in the chapter will be with specific pedagogical and empirical literature in the field of audiovisual

<sup>56</sup> Travers, p. 2.02.

communication. The pedagogical writings will be limited to what is considered to be influential and outstanding works in the area as indexed by frequency of reference in the literature on audiovisual communication. They hopefully cover nearly all the major concepts found in audiovisual literature and to present the claimed advantages of audiovisual techniques over traditional techniques and the special function which the various materials are said to serve. The empirical literature will be limited to those studies in which certain aspects of a presentation are varied to determine the efficiency and effectiveness of that particular aspect of learning. Thus one can present the same transparency in a black-and-white and color version and determine the effect of color upon the particular situation and its effect on learning. Studies of this nature, according to Travers,<sup>57</sup> at least provide experimental information concerning what contributes or detracts from learning specific tasks. They also provide a useful means of relating audiovisual practices to the empirically based psychology of learning.

### Motivation

Dale<sup>58</sup> states that the main concern of audiovisual material is to "bring the world to the classroom." He points out that many of those who drop out of school do so because

<sup>57</sup> Ibid., p. 2.02.

<sup>58</sup> Dale, Edgar, Audio-Visual Methods in Teaching, (New York: The Dryden Press, 1954), pp. 3-86.

their work is "bookish" and lacks contact with reality. The implication being made is that the use of appropriate audio-visual materials will make school work more interesting and, hence, reduce the dropout rate. However, there is no indication as to what material is appropriate in specific learning situations other than the more concrete is better than abstract material.

Wittich and Scholler<sup>59</sup> attempt to present an analysis of the various elements in audiovisual communication. The authors refer to the elements as barriers to communication and these barriers they present can be eliminated by the use of audiovisual materials. "Daydreaming" for example is the barrier of not attending. In other words, the materials or subject matter being presented does not motivate the students' interest or attention. Wittich and Scholler argue that if the information being presented is dull in the learning situation, the learner will find other more interesting internal experiences. They go on to another barrier, "disinterest," in which they imply the student is distracted by something; what that something is, however, is not clear. It differs from daydreaming in that it does not represent a distraction of something more interesting. The "disinterested" factor does not imply such conflict. The answer to solving these problems is that when the students are interested and attending they will not be

<sup>59</sup> Wittich, W. A., and C. F. Scholler, Audiovisual Materials: Their Use and Nature, (New York: Harper and Brothers, 1963), pp. 8-9.

disinterested or concerned with internal experiences; however, the solution is not presented very clearly by the authors, but it is assumed that audiovisual materials help eliminate the barriers. Dale,<sup>60</sup> like Wittich and Scholler, states that audiovisual material has a high degree of interest for students, but he fails to provide evidence.

Erickson presents the following in relation to motivation that is developed by the use of audiovisual materials. He states that audiovisual material provides the teacher with interest-compelling springboards into a vast proliferation of learning events. The implication is that students must be motivated to bring out worthwhile objectives of their own. "What we need to seek, then, is better, more lifelike, realistic, functional, and significant problem-solving activities if we wish to stimulate bona fide interest."<sup>61</sup>

Weaver and Bollinger,<sup>62</sup> in their book, Visual Aids Their Construction and Use, state that one function of visual material is that it attracts and holds attention more than verbal explanation. The implication being presented is similar to those of others in that it is the concreteness of

<sup>60</sup> Dale, p. 65.

<sup>61</sup> Erickson, Carlton W. H., Fundamentals of Teaching with Audiovisual Technology, (New York: The Macmillian Company, 1965), p. 18.

<sup>62</sup> Weaver, G.G., and Elroy W. Bollinger, Visual Aids Their Construction and Use, (New York: D. Van Nostrand Company, 1949), p. 4.

the materials being presented that attracts and holds the attention of the student.

Travers<sup>63</sup> presents the following implication about motivation based on forty-six empirical studies. The studies are what he refers to as "viewer preference studies." He indicates that motivation is derived from our preference for one design or style of material over another. He also states that motivation is aroused more easily if the material is related to the student's interests.

Rodriques Bou,<sup>64</sup> as reported in Travers, completed a study in which he made illustration for 2500 second, fourth, and sixth grade Puerto Rican students. He presented to them three illustrations varying in degrees of realism. The results indicated that 46 percent preferred the most realistic, the next by 32 percent, and the one with the least amount of realism was preferred by 22 percent of the student subjects (no level of significance is given).

Employing thirteen paired pictures with each pair providing a simple and a complex picture, French<sup>65</sup> found a steady increase in preference for complexity as the age of the students increased. The study used students, 142 six and seven year olds and 554 eleven year olds of different socio-economic

<sup>63</sup> Travers, pp. 2.07-2.55.

<sup>64</sup> Rodriques Bou, (see Travers, p. 2.09.)

<sup>65</sup> French, J. E., "Children's Preference for Pictures of Varied Complexity of Pictorial Patterns," Elem. Sch. J., 53, (1952), pp. 90-95.

levels to determine changes in response due to maturation. The main implication of this study is that students tend to avoid complex illustration until they are old enough to comprehend them.

Travers<sup>66</sup> points out that color is the most common embellishment used in audiovisual teaching materials. The preference studies seem to indicate that when colored and uncolored versions of the same picture are shown to the younger student in the elementary level, there is a marked liking toward the colored version. As age increases in the students studied, the more preference for realism in the color employed in the materials increases. Younger students prefer brilliant colors, while the older students prefer soft tones. High school age students and young adults prefer colored films to black and white.

Color, because it adds to attractiveness of an instructional material, does not necessarily indicate that it increases learning. The research reviewed by Travers concludes that black and white is as effective as color for training purposes except, of course, when learning involves an actual color distinction. However, it should again be pointed out that students do have preference for colored versions even though they do not necessarily increase learning. Sound effect, humor and other special techniques for the purpose of holding the attention of the learner have not been shown to be an aid to the learning process.

<sup>66</sup> Travers, pp. 2.31-2.57.

McLean and Hazard<sup>67</sup> found in their study that materials that rated high in preference were those that were close to the subject's own interests. Low ratings were given to those correlated with lack of interest, or ambiguous content or action. (No levels of significance are given.)

In summary, the concept of motivation and the implications from the literature in audiovisual communication indicate that realism, color, and interest play an important role in gaining and holding the attention of the learner.

#### Stimulus-Response

Carpenter<sup>68</sup> states that audiovisual materials are useful in improving learning in that they provide concreteness, realism and "life-likeness" in stimulus situations calculated to instigate learning. The indication being made by Carpenter is that the more the stimulus (audiovisual material) conveys realism the more one can predict the response to be learned.

Fleming<sup>69</sup> completed a study in which he investigated the problem of establishing characteristics of pictures which influenced the predictability of a subject's response to them.

<sup>67</sup> McLean, M. S., and W. R. Hazard, "Women's Interest in New Pictures: The Badge Village Study," Journ. Quart., 24, (1947), pp. 194-201.

<sup>68</sup> Carpenter, C. R., "Psychological Concepts and Audio-Visual Instruction," AV Communication Review, X, (Fall, 1962), p. 362.

<sup>69</sup> Fleming, M., "Relationship Between Pictorial Cues and Learner Responses," AV Communication Review, X, (1962), pp. 36-48.

The subjects were 40 seventh grade pupils who responded orally to the pictures presented to them. The pictures were presented and the students' responses were classified by judges according to their abstractness. The following are general conclusions from the study: (1) Reducing the number of stimulus attributes of specifiable properties of an object exhibited by a single picture tends to increase the abstractness of verbal response; (2) A decrease in the number of common attributes exhibited between a pair of pictured objects tends to increase the abstractness of verbal response; (3) Changes in the arrangement of pictured objects so as to emphasize object, form, and number of attributes can increase the predictability of verbal responses.

McKown and Roberts state that it is quite obvious that sensory aids hold the interest of students, and this is done for several reasons.

These aids are usually novel--Sensory aids usually represent a "rest" from the traditional activities of the school--such as reading, computing, drawing, writing, reciting, or listening that the pupil has been doing. When using them he is experiencing something different, and variety is always attractive to the child as well as the adult.<sup>70</sup>

The implication of the above statement is that there is a need for stimulus variety or change from daily routine. It implies that audiovisual materials could provide the stimulus variety and change that is needed to attract student interest.

<sup>70</sup> McKown, Harry C., and Alvin B. Roberts, Audio-Visual Aids to Instruction, (New York: McGraw-Hill Book Company, 1940), p. 23.



"On the one hand, we use audiovisual materials to make the meaning of words clear, and, on the other hand, we use words (verbal methods, using all printed media) to make pupil experiences based on audiovisual media presentations clear, meaningful, and useful."<sup>71</sup> In relation to the above statement Erickson refers to the character of audiovisual materials as being able to bring a broader array of sensory stimuli to the student, thus providing a more direct form of experience. He implies that the student has the opportunity to hear, see, do, and try, and thus increase the directness of his experience.

Wittich and Scholler<sup>72</sup> in presenting the barrier called "referent confusion" seem to point out that the teacher's words represent one set of ideas, but the words used by the students may refer to a different set of ideas. Communication theorists, for example, would say that the teacher and the pupil are coding different messages. The implication is that words can be supported and given concrete illustrations through the use of audiovisual materials. The implication can be carried further in that abstract concepts or theories are more difficult to respond to if the stimulus (message) is abstract and unclear.

Dale's<sup>73</sup> "cone of experience" model presents a similar implication (to those of Wittich and Scholler) in that his

<sup>71</sup> Erickson, p. 6.

<sup>72</sup> Wittich and Scholler, p. 8.

<sup>73</sup> Dale, p. 43.

model refers to stimulus complexities. His model indicates that experiences go from the most abstract to the most direct. This implies that experiences can be learned more easily when they are direct and purposeful. He makes it a point to caution the reader about taking the representation too seriously. However, he then uses the cone to structure a large remaining portion of his book. He also implies in the model that auditory experiences are less real than visual experiences, for the auditory is placed higher on the cone (i.e., more abstract) than is the visual.

Dale<sup>74</sup> states that the audiovisual materials make contributions to the growth of meaning and hence to vocabulary development. He also goes on to say that they provide experiences which are not easily presented through other materials and that they contribute to the efficiency, depth, and variety of learning. The implication here is that audiovisual materials present an array of stimuli, providing the student with many experiences that he could not have without audiovisual materials.

Travers states that the problem of the interaction of multi-channel presentation of information is complex. The investigations reviewed in relation to information that is redundant and transmitted through two sensory modalities, indicate that there is no gain in doing so. "When information is transmitted through one channel and the input through the

<sup>74</sup> Ibid., p. 65.

other is not designed to transmit task-relevant information the results appear to be unpredictable. . . ."75

### Reinforcement

"Ideally learners should have available combinations of audiovisual experiences which reinforce one another if we are to provide the most efficient paths possible for the mastery of understandings and concepts."<sup>76</sup> Here the meaning of the term reinforcement seemingly is different from the meaning which is used by psychologists in the area of learning. Wittich and Scholler provide an example. In an upper-level American history class, the concept level is likely to be quite low and, thus, reading is likely not to be enough for understanding and comprehension. They then add, "here the teacher's task is to arrange a pattern of audiovisual experiences which will enhance the understanding of history concepts."<sup>77</sup> The term "reinforcement" seems to imply more than an aspect of the process of structuring a concept. They continue by claiming that the term reinforcement implies that experiences reinforce one another if they present a similar idea through different channels of communication.

According to Travers's<sup>78</sup> review of the empirical research, "knowledge of results" helps to increase learning and

<sup>75</sup> Travers, p. 2.30.

<sup>76</sup> Wittich and Scholler, p. 22.

<sup>77</sup> Ibid., p. 22.

<sup>78</sup> Travers, p. 2.91.

reinforces the learner in the correct direction of the learning task at hand.

Gibson<sup>79</sup> investigated an "unreinforced method" of presentation and a "reinforced method" of presentation to 280 Air Force trainees. The subjects were presented slides of aircraft for identification. One time their response was reinforced with the knowledge of results and the second time the presentation was unreinforced by their not receiving the results. This was repeated three times. The test of learning was sheer recognition and recall of aircraft names. Gains for the "reinforced method" were significantly greater ( $p=.01$  level) than for the other method. Gibson concludes that the experiment clearly shows the importance of overt response with reinforcement by knowledge of results.

### Practice

Wittich and Scholler<sup>80</sup> presents a fifth barrier "imperception" in which they point out that perception can be trained with respect to speed and span. They thus imply that such training will improve learning in those situations involving similar learning processes.

Travers<sup>81</sup> investigates some twenty-seven studies related to practice and participation by the learner. "Participation"

<sup>79</sup> Gibson, J. J., Motion Picture Testing and Research, (U.S. Air Force Aviation, Psychology Research Report, No. 7, Washington, D.C., Government Printing Office, 1947).

<sup>80</sup> Wittich and Scholler, p. 9.

<sup>81</sup> Travers, pp. 2.79-2.110.

is defined as student activity, such as answering questions, discussions, or a test. These would be controlled by the teacher rather than the material being employed. The concept involved in the research is "that individuals learn what they do."

Verbalization of response and the furnishing of knowledge of results seem to be the more effective participation methods. Gibson's<sup>82</sup> study is a good example of how knowledge of results affects the learning process.

Hovland,<sup>83</sup> et al., experimented with four conditions of presenting a sound filmstrip on the teaching of the phonetic alphabet. The results favored the active participation group with 68 percent recall of the phonetic words compared to 48 percent recall by those not participating. The difference between the two groups was significant ( $p=.01$  level). A general summary of the investigation showed that active participation by verbalizing the response to be learned was most effective with the less intelligent subjects, and with the learning of more difficult material.

Travers<sup>84</sup> indicates that note-taking as practice or participation is of doubtful value, and that in some instances further research is needed to prove its effectiveness. There are as yet no clear answers to the questions of whether

<sup>82</sup> Gibson, (see page 48).

<sup>83</sup> Hovland, C. I., A. A. Lumsdaine, and F. D. Sheffield, Experiments on Mass Communication, (New York: Princeton University Press, 1949).

<sup>84</sup> Travers, p. 2.07.

increased learning during participation is a result of actual practice, increased time with materials, or increased motivation resulting from the involvement in the activity. However, several studies have been directed toward answering them. Michael and Maccoby<sup>85</sup> in their study concluded that learning increase was due primarily to practice effect only. Levine,<sup>86</sup> on the other hand, stated that his findings were the result of significant gains for nonpracticed items as a result of participation under low motivation conditions. Yale<sup>87</sup> in his study, according to Travers, found that material directly practiced during participation was learned to a greater degree than those not practiced.

One finding, presented by Travers,<sup>88</sup> indicated that participation does not have to be overt. Some of the studies in his review found that mental practice was as effective as overt when motor skills are being learned, such as, tying a knot.

#### Reasoning and Understanding

Because of the nature of audiovisual literature and its authors' promotion of audiovisual material as a means for

<sup>85</sup> Michael, D. N., and N. Maccoby, "Factors Influencing Verbal Learning From Films Under Varying Conditions of Audience Participation," J. Exp. Psychol., 46, (1953), pp. 411-18.

<sup>86</sup> Levine, S., "The Role of Motivation in the Effect of 'Active Review' on Learning from a Factual Film," Amer. Psychology, 8, (1953), pp. 388-389.

<sup>87</sup> Levine, (see Travers, p. 2.07.).

<sup>88</sup> Ibid., p. 2.09.

improving learning, very little research is directly related to the reasoning and understanding concept. It is assumed by most and is questioned by few that reasoning and understanding exists whenever concrete audiovisual materials are employed.

Weaver and Bollinger<sup>89</sup> point out that visual materials assist in understanding proper relationships of component parts. The implication is that understanding will increase when comparisons and relationships can be seen.

McKnown and Roberts<sup>90</sup> state that sensory aids increase understanding because they are concrete. The student can see the material first hand and, therefore, increase his ability to comprehend the materials and information presented to him. Dale<sup>91</sup> and Erickson<sup>92</sup> imply the same reason in explaining that audiovisual materials increase comprehension for the student.

#### Interference and Transfer

Transfer, to the audiovisual researcher, is basically always of a positive nature when the audiovisual material is concrete and real in design. Negative transfer resulting in interference is usually the result of some variable interfering with learning, such as the barriers of "disinterest," "daydreaming," "referent confusion," or "imperception" as presented by

89 Weaver and Bollinger, p. 4.

90 McKnown and Roberts, p. 24.

91 Dale, pp. 13-26.

92 Erickson, pp. 12-36.

Wittich and Scholler.<sup>93</sup> Thus, negative transfer and interference that results in forgetting will be the only consideration in the following discussion.

Dale<sup>94</sup> states that forgetting occurs when learning "does not seem important to us"--because it does not relate to our needs. The material either lacks importance in itself or we do not see any relation in it to what we already know. We do not become interested in the material. McLean and Hazard's<sup>95</sup> study indicates the importance of interest in the subject material as well as the content's clearness.

Material that is unclear or abstract is easily forgotten--because one does not know what he is trying to learn or do. The implication being made here by Dale<sup>96</sup> is that the goal or the objective needs to be clear so that the student knows in which direction he is headed.

"Material that is not used is forgotten--because it cannot be utilized in our experiences or in a meaningful way."<sup>97</sup> Dale implies here that material that is irrelevant to tasks performed in our daily experiences are easily forgotten.

"Learning that is mechanically memorized stands little chance of being retained, particularly when we blindly memorize

<sup>93</sup> Wittich and Scholler, pp. 8-9.

<sup>94</sup> Dale, p. 22.

<sup>95</sup> McLean and Hazard, pp. 194-201. (See page 43.).

<sup>96</sup> Dale, pp. 22-23.

<sup>97</sup> Ibid., p. 23.



what a textbook or a teacher says."<sup>98</sup> Dale also indicates that poor motivation can also lead to increased forgetting of material.

### Retention

The concept of retention is important to those who write the pedagogical works on audiovisual communication. Dale<sup>99</sup> has a section which he calls "Education for 'Permanent' Learning." In this section he concludes that when the material is motivating, concrete, practiced, and useful it is the kind of material that will remain with the student.

Most of the empirical literature compares one technique of presenting material over another and is, thus, outside the scope of the present study. However, the general conclusion is that audiovisual material helps retention in most cases when tested.

### Summary

In summary, this chapter has been an attempt to look at various concepts found in learning as they relate to audiovisual communication theories and implications. The chapter employs both pedagogical and empirical literature in the hope of providing a variety of information and views.

<sup>98</sup> Ibid., p. 23.

<sup>99</sup> Ibid., pp. 13-26.

CHAPTER IV  
SPEECH AND ITS GUIDELINES  
FOR AUDIOVISUAL UTILIZATION

The information reported in the pages that follow is a review of a select sample of literature in Speech. The review summarizes guidelines which are present in methods textbooks for the teacher and in textbooks for the student in Speech relating to efficient and effective use of audiovisual materials.

Before we can proceed, it will be necessary to distinguish differences in audiovisual material utilization in relation to the teacher and the student in Speech. It should be noted that most articles and books concerning the use of visual materials are written by educators for the use of educators, whether the situation be one in the typical classroom, in military instruction, or in industrial training programs. The scope and profusion of audiovisual materials adaptable to the teaching of concepts, skills, and facts are not always appropriate for use in formal or classroom speaking situations. An example would be the use of a motion picture film to take the place of the student's assigned speaking situation. "All the aids which a speaker can use may also be used effectively by a teacher, but a speaker cannot use all the devices which may be employed in a classroom."<sup>100</sup>

<sup>100</sup> Loney, Glen M., Briefing and Conference Techniques, (New York: McGraw-Hill Book Company, Inc., 1959), p. 33.

The problem may be viewed as one of different roles. The speaker may have the purpose to affect behavior, by either changing or confirming it through his communication. The important thing is the oral communication. "It must not be subordinated to the aids, no matter how colorful and intriguing they may be. If the aid is more effective and interesting than the speech, then perhaps the speech is unnecessary."<sup>102</sup>

In instructional situations, the teacher generally relies heavily on oral communication; his purpose in communicating is similar to that of the student. The role of the teacher is to teach his students in the most efficient and effective way; however, he may become secondary to the audiovisual materials he employs.

The purpose of the Speech methods textbook is to prepare future teachers of Speech to be as efficient and effective as possible in the educational process in relatively specific communication roles. The purpose of the Speech textbook is to prepare students to be efficient and effective speakers in relatively general roles.

### Motivation

Material used to instruct should be as concrete as possible. It is often difficult for students to sustain

<sup>102</sup> Ibid., p. 33.

interest in abstract ideas. Riper and Butler<sup>103</sup> state that subject matter is essentially abstract, visual material can be very helpful in giving meaning to the oral abstractness of certain concepts and information to be presented. Methods writers are aware that learning under certain conditions can be made more concrete and, therefore, easier to understand and learn. This, implies that a student will be more apt to be motivated by something he can comprehend than by material that is too abstract for his comprehension. Most textbook writers for the student, however, apparently do not seem too overly concerned with the concreteness of the message being projected by the visual materials but rather with the interest it conveys to the receiver.\*

#### Stimulus-Response

The textbook writers indicate that the first value of visual stimulus materials is that it gains and holds attention of the listener. Most of them suggest that if a visual is used at the beginning of a speech, the speaker can more easily get all the members of the audience to focus their attention on the visual. They apparently assume that it motivates the audience, arousing their interest to see what it is that is being shown. As presented by the writers, the specific goal

<sup>103</sup> Riper, Charles Van, and Katherine G. Butler, Speech in the Elementary Classroom, (New York: Harper and Brothers Publishers, 1955), p. 20.

\*For example, St. Onge, Keith R., Creative Speech, and Monroe, Alan, Principles and Types of Speech.

in mind here is not clear as to whether the visual is the focus of attention throughout the speech or if it is to attract attention to the speaker. The methods text writer is not concerned where the attention is focused as long as it is focused. The textbook writer indicates that the varying of the verbal and visual stimulus presentation will heighten interest and thereby increase the motivation and attention of the audience to listen. Mulgrave<sup>104</sup> states, that the dramatic effects which are possible with some visual materials, the directness of others, and vivid detail presented in still others all help to hold attention. The implication being made here seems to be that the attention in oral communication must be gained and maintained in order for the material to generate motivation and direct the listener to the desired response.

### Reinforcement

The Speech textbook writer generally makes it quite clear that visual materials are in themselves communication. "The striking feature of visual aids as employed by the speaker is that they are almost entirely self-explanatory. They may reinforce the narration of an event or make more vivid reasons that contribute to an argument, but in themselves visual aids are clarifying, expository."<sup>105</sup>

<sup>104</sup> Mulgrave, Dorothy, Speech for the Classroom Teacher, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955), p. 325.

<sup>105</sup> Black, John Wilson, and Wilbur E. Moore, Speech Code Meaning and Communication, (New York: McGraw-Hill Book Co., 1955), p. 314.

Rahskopf<sup>106</sup> seems to imply that we should use visual materials only when necessary, for the communication is between a speaker and his audience, and when the speaker uses visual materials he is taking himself out of the communication process. The authors of methods textbooks do not share this concern for the visual as a neutralizer of the teacher's personal experience.

Robinson and Kerikas<sup>107</sup> state that visual material should be relevant to the subject matter being presented. They also indicate that the speed of the presentation of materials is important. However, they do not state what speed of presentation is best and under what conditions. They do say that the "use of visual and kinesthetic clues is a reinforcement technique only."<sup>108</sup> The authors do not define what they mean by the term "reinforcement" but the implication presented in their writings is that visual materials are merely supporting materials. They seem to clarify this when they state that visual material should not be a substitute for the teacher but should be used effectively as an aid in support of the subject material being presented.

106 Rahskopf, Horace G., Basic Speech Improvement, (Columbia, Missouri: Artcraft Press, 1960), p. 229.

107 Robinson, Karl F., and E. J. Kerikas, Teaching Speech Methods and Materials, (New York: David McKay Co., 1963), pp. 173-174.

108 Ibid., p. 1174.

### Practice

The methods writer has indicated that the student with some background of visual materials, such as, experience with television, slides, or motion picture films, and, from this experience knows what to expect, will learn more and also retain more than the student without a background of visuals. According to Riper and Butler<sup>109</sup> the material employed should be discussed in advance, put into use, and then rediscussed for the best results.

According to Robinson and Kerikas<sup>110</sup> in their methods text, visual materials, when employed, are most effective when students participate actively in their presentation. Thus, they imply an increase in the intensity of impression which also broadens the student's experiences.

### Reasoning and Understanding

A practical value to using visual materials is that it allows the teacher or the student the opportunity to do something more than just verbalize. The teacher, Balcer and Seabury<sup>111</sup> state, can use visual materials to show students other speakers in action, in discussion, in debates, in

<sup>109</sup> Riper and Butler, p. 20.

<sup>110</sup> Robinson and Kerikas, p. 173.

<sup>111</sup> Balcer, C., and H. F. Seabury, Teaching Speech in Today's Secondary Schools, (New York: Holt, Rinehart, and Winston, Inc., 1965), pp. 275-276.

interviews, in plays, and in radio productions. The student, on the other hand, can use visual materials in a similar fashion (by demonstrating how to do something or what something may look like that would be difficult to describe verbally) thereby making various concepts and theories that are difficult to verbalize more concrete and easier to comprehend and understand. Visual materials can be used effectively in promoting class discussion, in affording opportunities for the teacher to ask questions, and to lead members of the class in a critical analysis of elements of speech, speaking, and speechmaking. When explaining the speech mechanism, for example, charts or models are often helpful in showing how voice is produced, how speech sounds are formed, and how problems might result from the improper use of the speech mechanism.

Sometimes information can be given through the eye so effectively that understanding comes in the flash of a split second, while the same information, presented through the ear, may require many minutes or even hours to make clear. The use of visual aids in speech-making, therefore, serves in making clear what cannot be made clear by the use of words alone and is a means for presenting information quickly.<sup>112</sup>

While the methods writer spends a great deal of time discussing the uses of visual materials to help clarify concepts and theories for easier comprehension for the listener, the textbook author indicates that the speaker and his speech delivery is more important.

<sup>112</sup> Yeager, Willard Hayes, Effective Speaking for Every Occasion. (New York: Prentice-Hall, Inc., 1940), p. 63.



### Interference and Transfer

The methods writers, Robinson and Kerikas, state that "visual materials are a means to an end."<sup>113</sup> The implication being made here is that visual materials are used to represent abstract concepts and are used to make the educational experience more vivid for the student by giving reality to words, ideas, and principles. When language fails to communicate because it is inadequate or too abstract or inefficient and, therefore, ineffective, they feel that visual material should be employed.

White<sup>114</sup> states that when visual materials are carefully prepared and skillfully presented, they are unexcelled in promoting clarity. Yeager<sup>115</sup> says that visual materials not only add clarity but also speed to inadequate verbal language.

The use of visual materials for expedience is certainly evident throughout the Speech writings. There is very little difference between the authors of methods textbooks and Speech textbooks on the ability of visual materials to strengthen or clarify oral communication. "The wise speaker, ordinarily pressed for time, soon discovers that he can often present material much more quickly by using visual aids."<sup>116</sup>

<sup>113</sup> Robinson and Kerikas, p. 173.

<sup>114</sup> White, Eugene E., Practical Speech Fundamentals, (New York: The Macmillian Company, 1960), p. 320.

<sup>115</sup> Yeager, p. 63.

<sup>116</sup> Walter, Otis, and Robert L. Scott, Thinking and Speaking A Guide to Intelligent Oral Communication, (New York: The Macmillian Company, 1962), p. 51.

Visual materials help to make the learning experience more vivid, interesting, significant, permanent and present information in a concrete manner. Braden<sup>117</sup> says when visual materials are handled properly, they can make speech instruction interesting and significant as well as permanent. He goes on to say that visual materials, improperly used, can be a nuisance and waste of time, interest, and energy.

The writers of textbooks for the students imply that visual materials reduce tensions when employed in a speech. Stage fright has been a concern of many in the Speech field and there have been many articles and experimental studies written on the appearance and causes of stage fright. A definition of stage fright by Gordon Low presented in an article by Clevenger<sup>118</sup> will help clarify what stage fright might be:

. . . the emotional disturbance of the physical and mental behavior of the public speaker as it is manifest by the observable characteristics: Poor eye contact, nervous hand movements, restless shifting of feet, awkward posture, body quiver, timid voice, embarrassment and vocal cues empathically perceived.

The usual answer to preventing stage fright is to learn your material well enough to have the necessary confidence for giving a speech. While this answer is certainly appropriate and should not be overlooked or taken slightly, there is the use of visual materials to consider also. The Speech

<sup>117</sup> Braden, Waldo W., Speech Methods and Resources, (New York: Harper and Brothers, 1961), p. 481.

<sup>118</sup> Clevenger, Jr., Theodore, "A Synthesis of Experimental Research in Stage Fright," QJS, XLV, (April, 1959), p. 135,

textbook writer suggests that the use of visual materials will aid in the reduction of stage fright. "Visual aids also serve the speaker personally by giving him something to do thus reducing his nervous tension."<sup>119</sup> What happens when one uses visual materials, as implied by the authors, is that the excess nervous energy which is a by-product of stage fright can be utilized positively in setting up displays or using visual aids as outlines to follow while giving a speech. It is claimed that, momentarily, the speaker focuses on the visual and the content, rather than his own fears. "Audiovisual material reduces anxiety and at the same time enhances the presentation of information."<sup>120</sup> Some of the Speech textbooks encourage students to use visual materials in speaking because it often gives the speaker the feeling of being at home on the platform, gives poise, and leaves the speaker something to do with his hands.

Another aid to the speaker through the use of visual materials is that it helps to outline the speech for the speaker and thus, eliminates the fear of forgetting. The authors of the Speech textbooks seem to be implying that the visual will in some instances be structured enough to guide one safely through his speech by visual cues for verbal

<sup>119</sup> Andersen, Martin P., Wesley Lewis, and James Murray, The Speaker and His Audience, (New York: Harper and Row Publishers, 1964), p. 315.

<sup>120</sup> Ross, Raymond S., Speech Communication: Fundamentals and Practice, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965), p. 133.

responses. The methods writers do not mention the speaker and the use of visuals to prevent forgetting the message.

### Retention

Visual materials, according to the authors of Speech textbooks, contribute to the comprehension of the listener by making concepts and processes clear and gaining and holding attention. Barrett<sup>121</sup> states that visual material increases perception and, thus, understanding and learning will increase along with the amount of perception. The ability of visual materials to leave an impression on the listener also causes the listener to remember more than if only verbal communication was employed. According to Buehler and Linkugel<sup>122</sup> visual materials provide clarity and are effective for attention and interest; they also enhance the listener's memory. "One of the things that must stand out in our memory are the ones which made extensive use of graphic visual materials."<sup>123</sup> The methods writers say very little about the contribution of visual material to the retention of the listener other than they add to the learning experience.

<sup>121</sup> Barrett, Harold, Practical Methods In Speech. (New York: Henry Holt and Co., 1959), p. 73.

<sup>122</sup> Buehler, E. C., and Wil A. Linkugel, Speech A First Course, (New York: Harper and Brothers, Inc., 1962), p. 162.

<sup>123</sup> Dietrich, John E., and Keith Brooks, Practical Speaking for the Technical Man, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1958), p. 128.

Weaver and Ness state that "there is a good deal of experimental evidence which shows we remember what we have seen better than what we have heard, and what we have seen and heard still better."<sup>124</sup> What they are asserting is that dual-channel communication is more effective and efficient than a single channel. Rahskopf<sup>125</sup> states that greater and longer retention occurs when acquisitions of concepts and processes is by the dual-channel of sight and sound. Sarett, Foster, and Sarett<sup>126</sup> state that research has verified that one can learn more and retain it better if he perceives through his eyes and his ears simultaneously. Zelko and Dance<sup>127</sup> in their text state:

The visual channel is one of the best ways for presenting evidence that will become firmly implanted in the minds of an audience. We are thus treating visual aids as a form of evidence and support, not just for novelty, but to strengthen and reinforce the development and proof of a point. It should be remembered that the visual sense is extremely strong in holding attention and interest as well. A photograph of a starving child can be more eloquent than five minutes of verbal description. However, in using such an aid, the speaker is not limited to just one-channel appeal. He can enlarge upon its impact by a few well-chosen sentences--thus appealing to both visual and auditory channels.

<sup>124</sup> Weaver, Andrew T., and Ordean G. Ness, An Introduction to Public Speaking, (New York: The Odyssey Press, 1961), p. 99.

<sup>125</sup> Rahskopf, p. 229.

<sup>126</sup> Sarett, Lew, William T. Foster, and Alma J. Sarett, Basic Principles of Speech, (Boston: Houghton Mifflin Co., 1958), p. 466.

<sup>127</sup> Zelko, Harold P., and Frank E. X. Dance, Business and Professional Speech Communication, (New York: Holt, Rinehart, and Winston, 1965), p. 90.

While it is quite clear that the writers of Speech textbooks for the student emphasize dual-channel communication as being the most effective way of communication, no specific comments on dual-channel communicating were made by the methods writers.

#### General Implications or Guidelines

The remainder of the contributions by the authors of Speech methods and Speech textbooks are one statement guidelines for the teacher and student. Because of the large number of them, they are listed in two categories: 1) for the selection, and 2) for the utilization of visual materials.

The selection of visual materials: 1) Does the visual provide interesting information in a clear and concise way? 2) Are the visual materials easy to operate, manipulate, and handle while giving a speech? 3) Are they the most striking visual materials possible? 4) Analysis of the purpose and listener should be made, keeping in mind that not all visual materials will mean the same to all listeners. 5) Does the visual relate to the message? 6) Is the visual material large enough to be seen by everyone? 7) What is the purpose of using the aid? 8) Is the purpose of selecting to supplement or to supplant the speech? 9) Colored illustrations should only be employed to show contrasts or to gain attention. 10) Is the visual neat and clear? 11) Does it use short labels? 12) Is the visual too complex and difficult to read? 13) Does the visual provide information beyond what the

speaker can? 14) Is the visual easy to produce? 15) Is the visual realistic and accurate?

The utilization of visual materials: 1) Give care to presentation of visual material. 2) Don't just use the visual for the sake of using it. 3) Use a variety of devices, whenever possible. 4) Don't pass objects around the audience. 5) When using visual materials try to keep constant eye contact with your audience. 6) When finished using visual material put it aside so it doesn't distract from the remaining part of the speech. 7) Consider the time you have for the presentation of your visual materials in comparison with speech. 8) Remember when using visual materials, they are only as effective as the person who is using them. 9) Plan in advance the use of visual materials. 10) Continue your speech even if the aid fails to be effective. 11) Use visual materials to help organize your subject matter. 12) Draw quickly when producing a visual during a speech, so as not to lose the attention of the audience. 13) Don't stand between the visual and the audience when using it. 14) The use of mechanical visual materials may cause problems of which you should be aware.

### Summary

In summary, this chapter has been concerned with speech and the uses of audiovisual materials both in teaching Speech and in giving a speech. The concepts of motivation, stimulus-response, reinforcement, practice, reasoning and understanding,

interference and transfer, and retention were examined in light of the authors of methods and Speech textbooks. Finally, general implications were presented.



CHAPTER V  
IMPLICATIONS FROM  
THE STUDY

It is often remarked in Public Speaking texts that a good speaker first tells his audience what he is going to tell them, then he tells them, and finally he tells them what he has told them. The same characterization might well apply to this study. The Introduction to this investigation indicated what was going to be studied. The individual chapters presented the findings. The purpose of this chapter is to synthesize the findings from the literature studied.

There are few concepts presented in this study about which any considerable number of authors appear to agree. A superficial reading of the contributions provided here gives the impression of the babble of voices one has come to expect in discussing theoretical implications. A careful reading of these views presented in each of the preceding chapters, however, reveals that there is not so much disagreement or contradiction as there are differences in emphasis.

It should be obvious that each of the three chapters: Learning Concepts Related to Audiovisual Materials, Audiovisual Research Related to Learning Concepts, and Speech and Its Guidelines for Audiovisual Utilization, have taken some different views toward the design and use of audiovisual materials. However, it should not be forgotten that our purpose is to synthesize the available research and to provide

general theoretical guidelines for teachers interested in improving their efficiency and effectiveness in designing and utilizing audiovisual materials.

### Motivation

The learning psychologist's concern is with operational meaning and control of motivation. There is common agreement among theorists that motivation is needed for learning to take place; however, there is no indication from the literature as to what kind of motivation and how much motivation is needed. Even if motivation is present, there is no guarantee that learning will occur.

These theorists further indicate that motivation can be a result of one's past experiences based on the student's attitudes, assumptions, expectations and other factors that make up his personality. It is implied that motivation is an initiating state leading to a high degree of response activity based on the student's personality which results from his past experiences.

The extent to which audiovisual materials produce motivation is not known by the learning theorist; however, it is indicated that the audiovisual material does not have to possess motivating properties within its design if other factors of motivation are employed. For example, the teacher could motivate by reinforcing the learner with statements of success and praise which in effect would be motivation for the student.

Some learning theorists warn the designer of audiovisual materials not to be overly concerned with producing materials that are enjoyable and easy to learn; thereby possibly leading the student away from the importance of the material. Audiovisual material should appeal to the needs of the students for cognitive clarity and at the same time challenge his curiosity and ability to make decisions.

Luchins indicated that personality differences can exist in the same classroom; therefore he calls for different audiovisual materials to insure optimum effectiveness. In relation to this he refers to the different attitudes and knowledges of the pupils as factors to consider in designing and utilizing materials. To help resolve this problem, he implies that the purpose of the learning task should always be kept in mind while designing or utilizing the materials.

Audiovisual and Speech writers do not appear to be overly concerned, as does the learning theorist, with what motivation is; however, they are concerned with what initiates it. Their concern is with keeping the interest and attention of the students on the event or task that is taking place.

The audiovisual material, when employed by the teacher according to the audiovisual writers, eliminates the barriers to interest and attention by providing materials that are helpful to the student's understanding. These materials are designed in the most concrete way. Both the pedagogical and empirical writers are in agreement in that motivation is increased when materials are designed with realism, color, and

in relation to the students' interests. This simply denotes that materials which are related to the individual and the group that he is in will help increase the motivation of the group and therefore will result in increased learning.

The Speech writer is concerned with the student and his ability to understand and comprehend the materials being presented to him. In agreement with both the learning theorist and audiovisual writer the Speech authors state that concrete material is easier to comprehend and therefore results in the greatest amount of attention and interest.

The general guideline that can be drawn from the literature is: motivation is necessary for learning to take place, but the exact nature and amount necessary remains unknown.

Specific guidelines that can be drawn from the literature are:

1. Audiovisual materials should be concrete and related to the student's past experiences, intelligence, and existing needs.
2. The audiovisual material does not have to be motivating within itself, since the teacher or the person utilizing the material may add reinforcing comments.
3. Realism in the use of color increases with the age and ability of the students. Therefore, color should be used in accordance with this.

4. Motivation does not necessarily insure learning.

#### Stimulus-Response

The S-R approach to learning is one that has seemingly stood the test of time; however, it is still not accepted by all theorists on a universal level. The approach on the surface appears to be a simple one: create a stimulus that an individual perceives and a response will occur. However, the case is not this simple. Like motivation, the learning theorists are not sure what exactly brings about a given response, and why different responses are evoked by similar stimuli. Luchins states that "the same response may be brought about by different processes; different responses may be brought about by the same process."<sup>128</sup>

The learning theorist implies that the teacher must know exactly what response he desires from his students. This indicates that the teacher's purpose must be clear or it will lead to a variety of student responses. If the purpose is clear, it will also aid in the comprehension and thus remove the possibility of generalization. This can be done by reducing the similarity of the materials that are to evoke different responses.

128 Luchins, p. 17 (See page 19.).

Similar to motivation, the stimulus should be related to the student's frame of reference and therefore be in conjunction with his intelligence and past.

The audiovisual writer is apparently in agreement with the learning theorist in that the more realistic the material is and the fewer barriers there are in the way of discriminating between similar stimuli (i.e., abstractions) the more one can predict the response that will be made.

Concerning audiovisual materials as a stimulus, the audiovisual writers differ from the learning theorists. The audiovisual writers stress stimulus variety (i.e., the number of different materials employed in support of one another) to bring about increased interest; however, they do not state the nature of the resulting response. The learning theorist would consider the use of a variety of material to bring about response generalization. Therefore, it would be difficult to predict the response that would be learned.

Stimulus complexity as indicated by Dale in his "cone of experience" model shows that experiences (stimuli) go from the most abstract to the most direct. The implication is that the stimulus material that is most clear and purposeful (least abstract) is the easiest to learn. This is seemingly in agreement with what the learning theorist indicates by keeping materials from being too similar and thus slowing down the learning process.

The empirical researchers state that information that is redundant over two different channels is not proven to be

useful. This belief differs from the majority of the audiovisual researchers but is supported by evidence.

Speech literature views audiovisual material differently from both the learning and audiovisual writers because the first concern is for the stimulus material to gain and hold attention.

Both Speech and audiovisual literature agree in varying the verbal and visual presentation. This results in stimulus variety and creates a more concrete, direct, and vivid message. Thus it leads to a predictable response by the listener.

The general guideline that can be drawn from the literature is: there is little known about the specific stimulus that would produce in one instance any given response; therefore, the response desired should be based on one's intended purpose.

Specific guidelines that can be drawn from the literature are:

1. The intended purpose should be kept in mind at all times while designing and utilizing audiovisual materials.
2. The more concrete the pictured object and the more attributes the material possesses, the more it can increase the predictability of the response.
3. Material related to the experiences of the students will increase the predictability of response.

4. Redundant information is not proven to be useful when presented over two channels.

### Reinforcement

Reinforcement can be said to be a process or procedure that relates to confirmation and reward for a response or for not responding to a stimulus. The learning theorist indicates that reinforcing a given response can make it occur again or decrease its future occurrence.

While the learning theorists are not in agreement about a definition of reinforcement, many do agree that reinforcement is necessary for the learner to continue or cease doing or reacting to a stimulus in a particular way. The reinforcement is most effective when it is immediately given after a response.

The audiovisual writer differs considerably from that of the learning theorist as to what the term and use of reinforcement implies. The audiovisual definition of reinforcement is the use of one device to support another device that is unclear.

However, the empirical literature agrees with the learning theorist in the aspect of "knowledge of results." They indicate this helps to guide the learner in the proper and desired direction.

The authors of Speech texts agree with the audiovisual writer that audiovisual materials will reinforce the narration by adding clarity to abstract terms if properly constructed.



However, the concern goes beyond the reinforcing of the speech itself. The authors in some cases imply that the speaker is the important factor in the speech making process and that the audiovisual material will detract from the speaker and therefore not reinforce but take over the speaking situation.

Similarities appear in both audiovisual writings and Speech writings in that the materials should be relevant to the subject matter being presented in order to support it.

Speech writers, however, indicate that audiovisual materials add speed to the abstract verbal symbols. Thus, reinforcement means to support abstract verbal symbols by adding concreteness to them.

The general guideline that can be drawn from the literature is: reinforcement is seemingly understood differently and employed for different reasons or purposes; however, reinforcement is needed for learning to occur.

Specific guidelines that can be drawn from the literature are:

1. Reinforcement to a response should be given. However, it is not indicated as to whether the material should contain the reinforcing elements or whether it should be delivered by the teacher. This is a matter of teacher's preference.
2. Reinforcement that is immediately employed is the most effective in guiding the student.

3. Audiovisual material can be employed to reinforce abstract verbal language if relevant to the subject.

### Practice

The term practice implies the perfecting of an act. Psychologists are not in disagreement as to what practice is but they are in disagreement as to how practice affects learning. The majority of the psychologists indicate that some form of practice is desired to increase the efficiency or strength of the learned response. However, practice without understanding leads to unmeaningful learning. One group of psychologists advocate that practice be provided in a number of trials throughout a given period of time. The implication is that the student should discuss the material and use it thus enabling him to gain a better understanding over a period of time.

Care should be taken so that responses that are practiced by the student are understood by the student or else the practice will lead to meaningless mechanical responses, thus possibly leading the student to give the same response to similar but unrelated stimuli. This can be avoided by not being overly concerned with the number of repetitions that are necessary for learning but rather with the structure of the subject matter and how the student can understand it.

Those who write in the audiovisual field claim that practice comes about not by discussing the materials or using them

but from the past experiences one has had with audiovisual materials. However, the theory that "individuals learn by doing" is the same as that indicated by those in the learning area.

The audiovisual empirical research shows that those who participate in discussing and responding to the material learn more, especially if the material is difficult. As of now, there is not enough evidence to determine whether participation affects learning because of the actual practice, the increased time with materials, or increased motivation resulting from the involvement in the activity.

The literature also indicates that, in motor skills learning, overt practice is not necessary.

The authors of the Speech material agree with both the audiovisual and learning writers in that practice contributes to learning. A relation to past experience is made which is similar to that made by the audiovisual writers.

The student should participate in discussion of the material as well as their actual construction as indicated by some of the Speech methods writers. Teachers should discuss the material before using it, thus giving the student the knowledge of what to expect and what to look for. Then the material should be used and rediscussed in relation to its purpose.

The general guideline that can be drawn from the literature is: in most instances, practice is necessary for good learning to occur.

Specific guidelines that can be drawn from the literature are:

1. Participation or practice does not have to be overt in all learning situations when employing audiovisual materials.
2. Students should be given prior experience to the audiovisual material so that they know what to expect.
3. Repetition that leads to memorization of materials that are not understood should be avoided.

#### Reasoning and Understanding

The question asked by many teachers, "I know the student seems to be learning, but does he really understand?" is not answered directly by the learning theorist. Understanding, they imply, is the result of the student doing the behavior desired by the instructor. Therefore, understanding cannot be detected other than by what the teacher can interpret as understanding by observing (i.e., tests) how the student reaches the learning objective.

The learning theorist implies that at times cues should be given to remove frustrations. Other times, the learning theorist suggests that deliberate confusion should be a part of the audiovisual material's design. This, the theorist states, would possibly function against "premature closure"

in thinking. However, they do not indicate when this should be done. This, then, would be a teacher decision.

Understanding, according to the learning theorist, is assumed when the student is able to respond correctly to variations in the stimulus context of the same concept being learned. This implies that different variations of the audiovisual material presenting a concept is desired for showing that the student's response is one of understanding based on his reasoning, rather than memorization of the task.

Materials can be presented in various parts so that acceleration or delays in presentation may be possible whenever it seems necessary. This would then allow the teacher to present complete ideas or, if desired, only supply hints at an idea. Participation, according to the theorist, also helps to improve the learning process, by having the student respond by doing.

The audiovisual writer, because of the lack of direct comment to the reasoning and understanding concept, supplies only the implication of using concrete material and material that presents information in proper relationship to its component parts. They do, however, seem to be in agreement with the learning theorist in providing a variety of materials to show the same stimulus concept in different surroundings.

The Speech textbook writer indicates that audiovisual material helps to give clarity to verbal language, e.g., demonstrating something or what something looks like, which therefore increases understanding. While the Speech writer would

not be concerned with presenting variations of the same stimulus to prove that understanding exists or is being gained by the student, they do implicate the need for participation to understand.

The general guideline that can be drawn from the literature is: it is not known when reasoning and understanding occur. Only the teacher can detect whether the desired objective is acquired or reached.

Specific guidelines that can be drawn from the literature are:

1. Reasoning and understanding are important to learning; however, this can only be indexed by the teacher's observation.
2. The material will promote greater understanding if it is concrete.
3. Flexibility is important in the design of the parts of the material, so that the teacher can provide hints at entire ideas or at only parts of an idea. This also allows for acceleration or delays in presenting materials.

### Interference and Transfer

The learning theorist implies that interference and transfer can result if the responses under consideration are in competition with prior learning experiences. This can be avoided if the design of the materials is based upon the

previous learning of the student with consideration of his attitudes and assumptions toward the material to be presented. This implies that material should be designed with an awareness of cultural factors related to the students, the social atmosphere of the classroom, the structure of the material, and the personalities of the learner and himself. Materials should be designed to evoke the desired goal and have as much practical application to the students as possible. Interference can be avoided if the materials are related to past experiences, needs, and interests of the learner which help make up the meaning for the student of the materials being presented.

The audiovisual writers seem to agree with the learning theorist as to what causes interference. Material that doesn't seem important or that is not related to the student's interests or needs, is easily forgotten. Material that is memorized without understanding is easily forgotten as well as material that is learned under low motivation.

The Speech writer agrees with the audiovisual authors that abstract and hard-to-understand material creates interference with learning. The Speech writer further advocates that the use of audiovisual materials can reduce tensions in the speaker by helping to structure the speech and keeping him from forgetting.

The general guideline that can be drawn from the literature is: audiovisual materials should be designed and utilized in relation to the student's past experiences, needs, and interests.

Specific guidelines that can be drawn from the literature are:

1. Consideration should be given to the student's attitudes and assumptions toward the subject matter.
2. An understanding of cultural and social beliefs that make up the student's personality should be considered.
3. Audiovisual materials, when employed, can reduce nervous tensions by adding structure to a message.

### Retention

The learning theorist indicates that audiovisual materials should be designed in relation to past experiences of the students. If this is done, the remembering and retention of information presented will be easier.

The audiovisual writer differs from the learning theorist by advocating that concreteness rather than relevancy leads to increased retention.

The Speech authors indicate that visual materials leave stronger impressions than verbal materials and therefore are easier to remember in comparison with verbal language. They agree with the audiovisual writer that those materials that are clear are the easiest to remember.

The major difference in the Speech texts in regard to the retention concept is that they indicate that retention



is increased when materials are presented through two channels rather than one.

The general guideline that can be drawn from the literature is: material that is both concrete and relevant to the past experiences of the students increases retention.

Specific guidelines that can be drawn from the literature are:

1. Visual materials leave stronger impressions with students than verbal language.
2. Two-channel information can be retained longer in speaking situations.

### Conclusion

At the present time, the literature presents very few practical guidelines to the construction of audiovisual materials. There is a definite need for more research in order to provide the teacher with better and more explicit guidelines. It is hoped that the present synthesis developed across the seven categories within these emphasis areas has helped clarify existing guidelines and to some extent, extracted useful guidelines from conflicting and differing points of view.

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A SYNTHESIS OF AUDIOVISUAL MATERIAL RESEARCH  
FOR  
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by

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## ABSTRACT

### A SYNTHESIS OF AUDIOVISUAL MATERIAL RESEARCH FOR THE CLASSROOM TEACHER

by William John Seiler

The basic problem of the investigation centered on the teacher faced with the task of designing and utilizing audiovisual materials. It was: what literature related to audiovisual materials is available for synthesis and application for teachers in general and speech teachers in particular who are interested in improving their efficiency and effectiveness in the classroom?

The purpose of this study, then, emerged from this basic problem. It was to synthesize appropriate literature in order to provide theoretical guidelines for the efficient and effective design and utilization of audiovisual materials.

The study reviewed literature in three specific areas: Psychology of Learning, Audiovisual Communication, and Speech teaching methods and classroom texts in order to understand and present their implications for the design and the use of audiovisual materials. In order to detect general theoretical guidelines within and across the three areas in relation to designing and utilizing audiovisual materials in the most efficient and effective way, a set of common categories across the three areas was evolved. The categories are labeled by selected learning concepts which permit parallel examination

of literature within each area. They are as follows: motivation, stimulus-response, reinforcement, practice, reasoning and understanding, interference and transfer, and retention.

The results of the study revealed the following: 1) motivation is necessary for learning to take place, but the exact nature and amount necessary remains unknown. 2) There is little known about the specific stimulus that would produce in one instance any given response; therefore, the response desired should be based on one's intended purpose. 3) Reinforcement is seemingly understood differently and employed for different reasons or purposes; however, reinforcement is needed for learning to occur. 4) In most instances, practice is necessary for good learning to occur. 5) It is not known when reasoning and understanding occur. Only the teacher can detect whether the desired objective is acquired or reached. 6) Audiovisual materials should be designed and utilized in relation to the student's past experiences, needs, and interests. 7) Material that is both concrete and relevant to the past experiences of the students increases retention.