EXPRESSED KNOWLEDGE OF, ATTITUDE TOWARD,
AND EXPERIENCE WITH INSTRUCTIONAL
DEVELOPMENT AMONG ANDREWS UNIVERSITY
FACULTY MEMBERS AS A FUNCTION OF SELECTED
PROFESSIONAL VARIABLES

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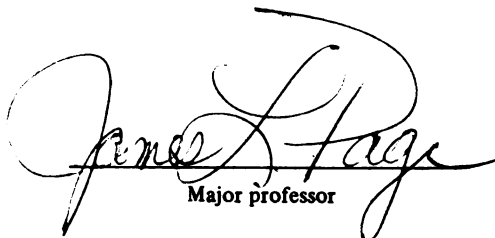MICHIGAN STATE UNIVERSITY
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ABSTRACT

EXPRESSED KNOWLEDGE OF, ATTITUDE TOWARD, AND
EXPERIENCE WITH INSTRUCTIONAL DEVELOPMENT
(ID) AMONG ANDREWS UNIVERSITY FACULTY
MEMBERS AS A FUNCTION OF SELECTED
PROFESSIONAL VARIABLES

By

Donald E. Van Duinen

The purpose of this study was to determine the degree of difference, if any, among Andrews University faculty members in:

1. Expressed knowledge of ID

2. Expressed attitude toward ID

3. Expressed experience with ID.

Comparisons were made:

1. Among teachers, administrators, and specialists;

2. Among faculty members with baccalaureate, masters, specialists, and doctoral degrees;

3. Between those with less than five years of professional experience and those with five or more.

4. Between male and female faculty members.

The population of this study consisted of the full-time and part-time faculty members at Andrews University during the 1973-74 school year.

Two methods of data collection were used. A questionnaire, Expressed Knowledge of, Attitude Toward, and Experience with Instructional Development, was administered to 216 members of the Andrews University faculty. Mean scores were compared among the various sub-populations. A "significant difference" was defined as a difference which would arise with a probability of $\leq$ .10, if random samples of the given sizes were taken from the finite population with known means and known standard deviations.

Using an interview schedule, in-depth interviews were conducted with 39 department heads and other administrative officers responsible for the development and improvement of instruction at Andrews University. Data is reported in antecdotal form in the study. Similarity in responses to items was examined.

Data analysis support the following findings:

1. Specialists has significantly more positive attitudes toward ID (at the .10 level) than did teachers and administrators.

2. Administrators had significantly greater experience with ID (courses developed) (at the .10 level) than did specialists.

3. Faculty members with masters degrees had significantly greater experience with ID (credits earned and clock hours spent with ID specialists) (at the .10 level) than did faculty members with doctorate degrees.

4. Faculty members with five or more years of professional experience had significantly greater experience with ID (credits earned) (at the .10 level) than did those with fewer than five years.

5. Female faculty members scored significantly higher in knowledge of, attitude toward, and experience (courses develoepd) with ID (at the .10 level) than did male faculty members.

6. In all other comparisons no significant differences were found. Mean scores of the various sub-populations were not significantly different (at the .10 level) from each other.

From the statistical findings and the interviews, the following major conclusions were drawn:

1. Administrators support the concept of well-developed courses.

2. Specialists have positive attitudes toward instructional development and may be willing to assist.

3. Determining factors other than specific differences found may be individually determined.

Most applicable implications following the study are:

1. Instructional development workshops should be conducted for small groups of faculty members at one time.

2. Faculty members should be grouped in seminars based on their interests and backgrounds rather than as members of the same department.

3. Faculty members should be identified
   individually as to their interests and
   attitudes about ID.

Some of the observations noted from this study are:

1. Instructional developers at Andrews University
   can benefit from the implications of the study.

2. The questionnaire and the interviews served
   as procedures for exposing faculty members
   to ID.

3. No parallel research that supports or fails
   to support the results of the study were found
   in the literature.

The methodology became a part of a chain of events

that may be of value to instructional developers who may

be interested in similar studies in other institutions.

Researchers may wish to examine the procedures in order

to make use of them for the diffusion of innovation.

EXPRESSED KNOWLEDGE OF, ATTITUDE TOWARD, AND EXPERIENCE

WITH INSTRUCTIONAL DEVELOPMENT AMONG ANDREWS UNIVERSITY

FACULTY MEMBERS AS A FUNCTION OF SELECTED

PROFESSIONAL VARIABLES

By

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CHAPTER I

THE PROBLEM

Purpose of the Study

The purpose of this study is to determine the degree

of difference, if any, in expressed knowledge of, expressed

attitude toward, and expressed experience with instructional

development among faculty members and administrators at

Andrews University. Comparisons will be made among teachers,

administrators and specialists, among faculty members with

faccalaureate, masters, specialists, and doctors degrees,

between those with few years experience and those with many,

and between men and women.

Andrews University

Andrews University, located at Berrien Springs,

Michigan, consists of five schools: the College of Arts

and Sciences, the College of Technology, the School of

Graduate Studies, the Seventh-day Adventist Seminary, and

the K-12 Laboratory School. The faculty numbers about

235 members. The faculty is defined as those university

employees who hold earned degrees, are salaried, and hold

academic rank. The student body consists of 1680

undergraduate college students, 310 graduate students, 285 seminary students, and approximately 760 enrolled in the K-12 Laboratory School.

The Seventh-day Adventist denomination founded Battle Creek College at Battle Creek, Michigan, in 1874. In 1901, the institution was moved to Berrien Springs and was given the name Emmanuel Missionary College.

The Seventh-day Adventist Theological Seminary was organized in 1934 as the Advanced Bible School on the campus of Pacific Union College in Angwin, California. There it operated in summer sessions only, until in 1936 the General Conference of Seventh-day Adventists voted to locate it on a more permanent basis in Washington, D.C., and named it the Seventh-day Adventist Theological Seminary.

In 1957 the Board of Trustees enlarged the scope of its operations by establishing a School of Graduate Studies. The institution was then known as Potomac University. A new and larger site was sought to facilitate the strengthening and growth of the expanded institution.

In 1959 the enlarged institution moved to the campus of Emmanuel Missionary College in Berrien Springs, Michigan. The Theological Seminary and the School of Graduate Studies were united under one chapter bearing the name Andrews University with an integrated board of trustees, administration, and faculty.

Andrews University is approved by several professional organizations with recognized accreditation by the North Central Association of Colleges and Secondary Schools to confer degrees at the associate's, bachelor's, master's and doctor's degree levels. The institution has been on the North Central Association list of approved colleges since 1922.

The American Association of Theological Schools has granted accreditation to the Master of Ministry, Master of Theology, and Doctor of Ministry degrees.

The University serves as a training and research center for the world-wide activities of the Seventh-day Adventist Church. It has as a primary concern the nurture and training of leaders for the church and its enterprises, and for the vocations and professions which by their nature are service-centered. The Board of Trustees also desires that Andrews University render service and guidance to society--locally, nationally, globally. The university community will ever remain cosmopolitan in outlook and composition.[1]

Definitions

Attitude

Attitudes are learned predispositions to respond to an object or class of objects in a favorable or unfavorable way.[2]

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[1] Andrews University Bulletin, 1973-74.

[2] Martin Fishbein, Attitude, Theory and Measurement (New York: John Wiley and Sons, 1967), p. 108.

Change-agent

A change-agent is a professional person who attempts to influence adoption decisions in a direction that he feels is desirable. A change-agent usually seeks to secure the adoption of new ideas, but he may also attempt to slow the diffusion and prevent the adoption of certain innovations.[3]

Instructional Development

. . . a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives based on research and human learning and communication and employing a combination of human and non-human resources to bring about more effective instruction.[4]

Need for the Study

Educational leaders at Andrews University are aware that as newer methods of transmitting knowledge are continuously being developed, organized ways of presenting information to students in the university must be critically examined and carefully selected. Pressures from the high cost of education in a parochial institution, the desire to educate a greater percentage of the Seventh-day Adventist youth, and some dissatisfaction with the present practices demand that the process of determining effective methods of instruction become more and more systematic. The faculty members of Andrews University have a sincere desire

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[3]Everett M. Rogers, Diffusion of Innovations (New York: The Free Press, 1962), p. 17.

[4]"To Improve Learning," The McMurrin Commission on Instructional Technology Reports, Educational Screen and Audiovisual Guide, Vol. 49, No. 3 (March, 1970), p. 5.

to provide the best in Christian education for their students. Ellen G. White, who wrote widely on the subject during the early organizational period of the Seventh-day Adventist educational system, places much stress on the importance of a balanced education for each student. She wrote:

> True education means more than the pursual of a certain course of study. It means more than a preparation for the life that now is. It has to do with the whole being, and with the whole period of existence possible to man. It is the harmonious development of the physical, mental, and the spiritual powers. It prepares the student for the joy of service in this world and for the higher joy of wider service in the world to come.[5]

For the youth of the Seventh-day Adventist church to be trained as leaders and eventually to bear responsibilities, they must be prepared to use their individual initiatives. Graduates from Andrews University serve as religious and educational leaders in nearly all parts of the world field of Seventh-day Adventist work, as well as in non-denominational employment. In her instructions to church educators, Ellen White states:

> Every human being, created in the image of God, is endowed with a power akin to that of the Creator--individuality, power to think and do. The men in whom this power is developed are the men who bear responsibilities, who are leaders in enterprise, and who influence character. It is the work of true education to develop this power, to train the youth

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[5]Ellen G. White, Education (Mountain View, California: Pacific Press, 1903), p. 13.

to be thinkers, and not mere reflectors of other men's thoughts.[6]

It is assumed that many persons who are currently teaching at Andrews University have not developed a systematic conception of teaching. DeCecco indicates that teachers and administrators need a better conception of teaching, for organizing our present knowledge about teaching, advancing knowledge through research, and guiding teaching practices.[7]

The responsibilities of the faculty of institutions of higher education are not only to teach, but to otherwise serve the society of which they are a part and by which they receive their support.[8] Curriculum development will be influenced by many changes other than those related specifically to the areas of curriculum. Wider use of the computer, more independent study, and individualized instruction will become the concerns of the future.[9]

At present the curricula in today's colleges and universities tends to fluctuate between an emphasis on

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[6]Ellen G. White, Fundamentals of Christian Education (Nashville, Tennessee: Southern Publishing Association, 1923), p. 17.

[7]John P. DeCecco, The Psychology of Learning and Instruction: Educational Psychology (Englewood Cliffs, New Jersey: Prentice-Hall, 1968), p. 6.

[8]Paul W. F. Witt, "Instructional Development: What? Why? How? Who?," a paper presented at the Symposium on Instructional Development, Michigan State University, May 3 & 7, 1970, p. 1.

[9]Ross L. Neagley and Dean N. Evans, Handbook for Effective Curriculum Development (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967), p. 302.

content and an emphasis on method. At present the content of the disciplines is receiving the most emphasis. An understanding of the interrelationships and common areas of the disciplines should be stressed.[10]

As they continue to search for better ways to individualize instruction, colleges and universities must strive to assure nearly all students of successful learning experiences. As we plan to provide successful and satisfying learning experiences for the majority of our students, major changes must take place in the attitudes of students, teachers and administrators. Teaching strategies and methods of evaluation must undergo radical changes. The move should be toward changing the entire culture of what is now called higher education. Alternative ways of learning must be offered to students seeking an education. Complete reassessment of our priorities will be necessary before we can improve the quality of human life.[11]

Neagley and Evans are of the opinion that since the goals of education have changed little in the past fifty years, except in emphasis of past and present goals, there is little likelihood of their changing in the next twenty-five years. The very way American society is made up should permit us to do a better job of coping with change.[12] Despite

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[10]Ibid., p. 294.

[11]Ibid., p. 294.

[12]Ibid., p. 294.

all the talk about innovation, Dressel writes that under-

graduate curricular requirements, as a whole, have changed

remarkably little in recent years.[13] There is too little

evidence that the significant area for innovation, rethinking

the total undergraduate program, has been given its due

consideration.[14] Rapid change in the American academic

society must be understood so that educators can cope with

it, and harness it toward ends that are acceptable. If

change is anticipated and creatively utilized it can be

integrating and unifying to the curriculum.[15]

Further consideration must be given to the advice

of Ellen G. White to church leaders some 60 years ago:

> Let those who are competent to teach youth, study
> themselves in the school of Christ, and learn lessons
> to communicate to youth. Sincere, earnest, heartfelt
> devotion is needed. All narrowness should be avoided.[16]

As we avoid thoughts of narrowness, we should ap-

preciate that there is no single conception of teaching.

The task ahead is to keep ourselves informed and open-minded

regarding the changes in learning and resources and tech-

niques of instruction that will continue to occur in every

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[13]Paul L. Dressel and Francis H. DeLisle, Under-
graduate Curriculum Trends (Washington, D.C.: American
Council on Education, 1969), p. 75.

[14]Ibid., p. 76.

[15]Ibid., p. 1.

[16]Ellen G. White, Fundamentals of Christian Edu-
cation, op. cit., p. 116.

field of man's endeavor. By focusing on the goals of
instruction that are evolving, the curriculum worker will
best be able to select appropriate methods and resources
for the total learning environment.[17]

According to Witt, we need to analyze critically
our theoretical constructs regarding the ways in which
instruction is developed, to assess our current resources
for doing instructional development, to identify the princi-
ple barriers to instructional development, and to determine
ways and means for overcoming these barriers. Educating
human beings is a very complex task and theories and
practices for conducting this process are far from complete
or universally applicable.[18]

A realistic approach to the improvement of instruc-
tion lies in changes in the strategies of instructional
planning and administrative arrangements, which might better
utilize present facilities and learning resources. Sys-
tematic procedures in developing instruction are being
examined by some educators desiring solutions to the problems
they face in colleges and universities as more and better
alternatives to current procedures become available. It
should be the desire of each person responsible for edu-
cating youth to use the most effective and efficient learning

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[17]Ross L. Neagley and Dean N. Evans, op. cit.,
p. 204.

[18]Paul W. F. Witt, op. cit., p. 5.

strategies to meet the learning needs and interests of
their students. Each strategy must include some way of
dealing with individual differences in learners through
some means of relating the instruction to the specific
characteristics of the learners. The nature of professional
education provides limited opportunities for a researcher or
teacher to work independently of his colleagues.[19]

Gillett indicates that he is committed to the propo-
sition that education needs change, and that teachers must
initiate reform or expect to have some outside agent impose
it. He further states that tradition has been used as a
rationale for most of the present teaching methods used in
schools and colleges. Any practice or policy that cannot
be defended for its educational advantage alone should be
closely examined. In a plan for change, it is essential
to define limits and to set immediate objectives. It is
also necessary to establish a constant and continuing
pattern of examination, evaluation, and implementation
for all instruction. It is the teacher who should deter-
mine what changes are needed and to direct the efforts to
implement those changes. Change need not always be initiated
from the top. The group responsible for innovation policies
must have some authority of its own.[20]

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[19]Ross L. Neagley and Dean N. Evans, op. cit.,
p. 295.

[20]Thomas D. Gillett, "Teachers can make Changes,"
Today's Education NEA Journal (April, 1973), pp. 44-46.

The present tremendous public interest in education offers an unparalled opportunity for educators to make some long-overdue improvement in our schools from kindergarten through college. Some strong and positive suggestions have been made by well-known educators for improving our schools. Dewey lists three possible directions of choice; (1) educators may act so as to perpetuate the present confusion and possibly increase it, (2) they may select the new scientific technological and cultural forces that are producing change in the older order, and (3) they may become intelligently conservative and strive to make the schools and colleges a force in maintaining the old order intact against the impact of new forces. He believes that the second choice is the only one to be considered by educators of today. Even though many believe that innovative practices are the only route to take, some may still fall into the other two categories.[21]

Taking the second position in Dewey's series, Trump proposed that all these innovations be incorporated into an integrated program. However, a single or best strategy for many situations has not been created. One of the models suggested by Trump has the following ten steps: (1) the problem is formulated, (2) solutions are developed, (3) initial testing and feedback, (4) solutions are modified, (5) communicate

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[21]John Dewey, "Education and Change," Readings on the School in Society (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967), pp. 1-18.

and disseminate, (6) rigorous evaluation, (7) solutions are adjusted, (8) communicate and disseminate again, (9) rigorous evaluations, and (10) release the innovation from the cycle. Ideally, the tenth step should be a continuation of the eighth and ninth in the cycle. In other words, continuous reappraisal and modification should be built into use and perfection of the innovation.[22]

Attitudes Toward Innovation

Before innovations in the form of better teaching methods can take place, changes in the relationship between attitudes toward learning and present teaching practices must be examined. Educators are not giving adequate atten to students' attitudes toward learning. They need to give consideration to using a variety of learning modes, permitting students to select effective methods of learning.

The purpose for studying attitudes is not to predict what behavior will occur in the future, but to get a better view of the person's present behavior by studying his attitude. With an objective view of the attitude, consequently behavior, it may be possible for the change agent or instructional developer to guide and direct the person toward a new behavior and a new attitude.

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[22]Richard I. Miller, "Some Observations and Suggestions," Perspectives on Educational Change, ed. by Richard I. Miller (New York: Appleton-Century Crofts, 1967), p. 366.

Various researchers have reached conclusions indicating that attitude toward a field of study is improved during formal studies in that area. In-service training of teachers can be beneficial in improving their attitudes toward specific innovative practices. Further, teachers who used instructional television had more positive attitudes toward, not only instructional television, but the newer instructional media as well. This tends to bear out the concept that attitudes tend to follow behavior. Usually negative attitudes toward instructional media have been related to utilization barriers and not to educational media alone. Availability of equipment may be a curcial factor rather than opposition to the medium itself.[23]

Bhattacharya identifies attitude with opinions held. He further identifies attitude as a complex mental set-up. Guilford defines attitude as a tendency to favor or not favor some type of object or situation. Thurstone calls attitude the sum-total of man's inclinations and feelings, prejudices, ideas, fears, threats, and conventions about any specific topic. Allport defines attitude as a mental and neural state of readiness organized through experience, exerting a direct or dynamic influence upon individual response to all objects and situations with which it is

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[23]Charles C. Aquino, "Teacher Attitudes Toward Audio-visual Instruction," A V Communication Review, Summer, 1970, p. 189.

related. Attitudes have been defined as the inferred basis

for observed consistency in the behavior of individuals.[24]

The approaches and construction of the instruments

to measure attitude vary, but their objectives seem to be

the same. At present attitude scales are the most prominent,

the most widely used and the most carefully designed methods

of measuring how people feel about certain objects or situ-

ations. Usually attitude scales do not measure attitude

directly. What attitude scales require of an individual is

a set of judgments of the acceptability or unacceptability

of a series of verbal propositions. Attitude studies do not

imply that any given belief will be correlated with the

attitude, and further that it is inappropriate to predict

the individual's future behavior as a result of his expressed

attitude.

Frequently the attitude is studied to get a better

view of the individual's current behavior; since attitude

expression tends to follow one's behavior. Rather than

viewing beliefs and behavioral intentions as a part of

attitude, Fishbein prefers to define them independently

and to view them as phenomena that are related to atti-

tudes. Doob argues that attitude is a learned predisposition

to respond; that is, it is a learned mediating response.

Thus attitude is usually considered as a simple

unidimensional concept. This unidimensionality of the

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[24]Srimbus Bhattacharya, _Psychometrics and Behavioral Research_ (New Delhi: Sterling Publishers, 1972), p. 145.

attitude concept is one reason why we cannot predict behavior from attitude.[25]

Attitude scales do not attempt to discover the complex factors which might enable the surveyor to predict individual reactions, and consequently no individual scores are kept. Rather than examining each separate item in an attitude scale, researchers look at the composite score.

The data obtained in public opinion and attitude surveys may be used in either of two ways: (1) to discover the number or percentage of people who respond in a particular way to a single statement, phrase, or other attitude indicator; or (2) to measure the strength of the attitude of each individual by a series of questions, the answers to which are combined into a single score for each person. Then the number or percentage of people holding attitudes of varying intensity may be ascertained.

Likert's primary concern was with unidimensionality-making sure that all the items would measure the same thing. It must be remembered that attitude scales are techniques for placing people on a continuum in relation to one another, in relative and not in absolute terms. Also, in dealing with the dimensions of attitude, one is confronted with the question whether a person is for or against a given social

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[25]Martin Fishbein, ed., Readings in Attitude, Theory and Measurement (New York: Wiley and Sons, Inc., 1967), p. 478.

stimulus. The combination of the two dimensions, direction and degree represents the major concern of attitude studies.

There is now sufficient evidence to suggest that, under certain conditions, one of the most effective ways to "change the hearts and minds of men" is to change their behavior. In fact this may be easier than the other way around. At present, there is still little, if any, consistent evidence supporting the hypothesis that knowledge of an individual's attitude toward some object will allow one to predict the way he will behave with respect to an object or situation. A person tends to bring his attitude into line with his behavior rather than from studies demonstrating that behavior is a function of attitude.[26]

Instructional Development

It becomes more and more difficult to give a simple definition of the process of developing an instructional program after one examines the definitions given by a number of authors. Instructional development can be considered as a way of thinking, or a way of ordering the processes of the mind. An instructional development approach to curriculum planning can facilitate learning under the most efficient conditions.

The development of instruction is considered a process based on a network of people, resources, and

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[26]Daryl L. Bem, Beliefs, Attitudes, and Human Affairs (Belmont, California: Brooks/Cole Pub. Co., 1970), p. 54.

facilities. It is a continuous process involving refine-
ment, feedback and improvement. It is very important that
all of the elements of the process should be included. Many
authors consider teaching as guiding and directing the
learning process of the student, which includes the recog-
nition of learner differences. It is the student who must
be given top consideration when changes in instructional
procedures are being given consideration.[27]

A system can be either large, including many ele-
ments, or small, with a set of at least two well-defined
elements. It is the relationship among elements within the
system that clarifies the structure or organization of an
orderly whole, clearly showing the interrelationships of
parts to each other and to the whole itself.[28]

The educator must study the effect of technology on
the instructional process, and keep in mind that technology
consists of processes, systems, management, and control
mechanisms, using both people and machines.[29]

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[27] Floyd Urbach, "Instructional Development: An
Overview" (an informal paper), Monmouth, Oregon: Teaching
Research Division of the Oregon State System of Higher
Education, 1970, p. 7.

[28] H. A. Bern, E. B. Montgomery, Leonard C. Silvern,
John B. Haney, and Robert M. Diamond. "Reply to Questions
About Systems," Audiovisual Instruction, Vol. X, No. 5
(May, 1965), p. 367.

[29] James D. Finn, "AV Development and the Concept of
Systems," Teaching Tools, Vol. 3 (Fall, 1956), p. 10.

Cost-effectiveness is to be considered as an important aspect of the systems approach to instructional development. Optimum use of human resources as well as nonhuman resources is essential as the process develops.[30]

Wittich and Schuller define instructional development as ". . . the application of an instructional systems approach to analysis of and development of practical solutions to teaching and learning problems." They further state that each step in the process has rather precise requirements; also, that there are substeps and additional steps that need to be followed if the true benefits of the Instructional Development process are to be achieved.[31]

The National Special Media Institute's definition of instructional development or I.D. is that it ". . . is a system approach to solving instructional problems. It involves: (1) a definition stage where the problem and all related instructional elements and resources, including management organization are identified; (2) a development stage where the behavior necessary to solve the problem is specified in measurable terms and a prototype learning experience is developed which employes the most effective methods and media learning theory and practical experience

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[30]John G. Haney, "How Can an Instructional System be Put Into Practice?" Audiovisual Instruction, Vol. X, No. 5 (May, 1965), p. 363.

[31]Walter A. Wittich and Charles F. Schuller, Instructional Technology: Its Nature and Use (5th ed.; New York: Harper and Row, 1973), p. 631.

can suggest; and finally, it involves (3) a <u>testing and</u>
<u>application stage</u> where the prototype system is tried out
and revised repeatedly until some version(s) successfully
teaches the desired behavior. Only then is the resulting
system used by teachers who have been thoroughly trained
to use it properly with qualified learners."[32]

It has been proven necessary to develop graphic
models of system analysis as an approach to solving cur-
riculum problems.[33] Most models are product oriented,
designed to produce gains in student learning. The models
pinpoint and sequence functions that are interdependent.
Adequate performance is assured through feedback loops.
It is necessary for the media specialist to continually
inform the instructor with whom he is working as to where
they are in the process. Each step must be identified in
order to find out about prior decisions and other important
elements of the process as the team proceeds.[34]

The nine-step instructional development model is
in use in instructional development institutes being offered
by National Special Media Institutes in all parts of the
United States.[35] The graphic model appears on the following

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[32]National Special Media Institutes, <u>Attitude Toward</u>
<u>Instructional Development</u>, Washington, D.C.: <u>U.S. Office</u>
of Education, 1971, p. 1.

[33]John G. Haney, <u>op</u>. <u>cit</u>., p. 363.

[34]<u>Ibid</u>., p. 363.

[35]Walter A. Wittich, <u>op</u>. <u>cit</u>., p. 632.

page (see Figure 1). The popularized version of the NSMI model, showing the numerous substeps and decisions points and the precise requirements which must be observed if the system is to function effectively is shown on the page (see Figure 2) following the nine-step model.[36]

Duncan points out that age of faculty members and years of professional experience are closely related. To Duncan it seems obvious that experience is a function of age, but age is not necessarily a function of experience.[37]

Leeds and Cook concluded that age, sex, length of training, teaching experience, grade level, and subject taught had little influence upon teacher attitude toward pupils. However, age and experience appeared to influence attitudes more than other factors.[38]

Other researchers, such as Wandt, Eichholz and Rogers found no significant differences in the number of years of teaching experience and expressed attitudes. The

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[36]Ibid., p. 634.

[37]Marvin Earl Duncan, "Expressed Attitudes of three Selected Groups Toward Instructional Development as a Function of Age, (2) Years of Experience, and (3) Instructional Mode: An Exploritory Study" (unpublished Ph.D. dissertation, Michigan State University, 1972), p. 25.

[38]Carroll H. Leeds and Walter W. Cook, "The Construction and Differential Value of a Scale for Determining Teacher-Pupil Attitudes," Journal of Experimental Education, Vol. 16 (1949), pp. 149-159.

STAGE I: DEFINE

FUNCTION 1:
IDENTIFY PROBLEM

FUNCTION 2:
ANALYZE SETTING

FUNCTION 3:
ORGANIZE MANAGEMENT

STAGE II: DEVELOP

FUNCTION 4:
IDENTIFY OBJECTIVES

FUNCTION 5:
SPECIFY METHODS

FUNCTION 6:
CONSTRUCT PROTOTYPES

STAGE III: EVALUATE

FUNCTION 7:
TEST PROTOTYPES

FUNCTION 8:
ANALYZE RESULTS

FUNCTION 9:
IMPLEMENT/RECYCLE

Decision Points

a. Compare status quo to ideal
b. Propose tentative solution(s)

c. Determine learner characteristics
d. Inventory school/community resources

e. Assign TAPS team responsibilities
f. Establish lines of communication
g. Specify project planning and control procedures

h. State terminal performance objectives
i. State enabling objectives and determine relationships between objectives
j. Construct performance measures
k. Specify instructional strategies and media forms
l. Specify alternative methods
m. Prepare comprehensive description of instructional design specifications
n. Specify design for evaluation of instructional and evaluation designs
o. Conduct technical review of instructional and evaluation designs
p. Specify procedures for collection and development of instructional materials
q. Construct and assemble instructional materials
r. Specify procedures to be used by personnel during tryout of instructional prototype

s. Carry out instruction as planned
t. Carry out evaluation as planned
u. Tabulate and process evaluation

v. Determine relationships between results, methods, objectives and goals

w. Indicate what kinds of revisions (if any) are suggested by the interpretation of results, methods, objectives and goals
x. Determine if suggested revisions indicate that the prototype is to be recycled or if the design can be implemented without major revisions.

Figure 1. Popularized version of the National Special Media Institute model showing substeps and decision points.

number of years did not seem to make a significant differ-
ence in expressed attitudes.[39]

Beamer and Ledbetter found that experienced graduate
students at North Texas State College, who had previous
experience as guidance workers, had a mean score higher than
the non-experienced graduate students. Results of their
study indicate that there may be elements which cause teach-
ers to change their attitudes negatively toward the pro-
fession after gaining teaching experience.[40] Valenti seems
to agree with Beamer and Ledbetter and suggests that young
teachers are more personal, informal and integrative in their
roles than older teachers.[41]

The Need

Knowledge of a client's attitude toward an innovation
can help the change agent devise strategies most likely to
bring about adoption in the shortest period of time. The

[39]Frank A. Scott, "The Development and Evaluation
of an Instrument to Assess the Attitudes of Public School
Principals," Journal of Experimental Education, Vol. 26
(March, 1958), pp. 185-96.

[40]G. C. Beamer and Elaine W. Ledbetter, "The Re-
lation Between Teacher Attitude and the Social Service
Interest," Journal of Educational Research, Vol. 50 (1957),
pp. 655-66.

[41]J. J. Valenti, "Measurement of Fairmindedness,"
Teachers College Constructive Education, No. 176 (1925),
pp. 244-52.

role of a change agent is that of influencing innovation-
decisions.[42]

The instructional developer is one of the people
who functions as a change agent in educational circles.
Through adoption of the innovation, instructional developers
hope to assist those who adopt and engage in the instruc-
tional development process to bring about systematic changes
in instruction which will result in more effective and effi-
cient learning on the part of the students. Change agents,
or instructional developers in this case, must have know-
ledge of the attitudes of the people he works with, if he
is to function successfully. According to Rogers, failure
to look at attitudes is one reason change programs fail.
Change agents must have knowledge of their client's atti-
tudes (among other things) if programs of change are to be
tailored to fit the clients.[43]

Knowledge of, attitude toward, and experience with
instructional development among Andrews University faculty
members will be of value to administrators and other faculty
leaders as expansion takes place in the form of new programs,
schools, departments and courses. It is very likely that

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[42]Richard J. Boutelle, "The Attitudes Expressed Toward
Instructional Development by three Groups . . . ," op. cit.,
p. 7.

[43]Everett M. Rogers and F. Floyd Shoemaker, Com-
munication of Innovation (New York: The Free Press, 1971),
p. 239.

faculty members will be more susceptible to the concepts of instructional development at the time these new programs are being established. It is assumed that it is of value to determine whether Andrews University faculty members are practicing instructional development as identified in this paper. However, some interest in instructional development has been expressed by some members of the various departments. While this interest and expansion of offerings are at the forefront would be a good time to introduce the merits of instructional development to the faculty members. The results of the knowledge, attitude, and experience questionnaire and the verbal interview will give developers insights into faculty practices and interests involving instructional development. The results of the study will permit an examination of the knowledge, attitude and experience of the faculty members, identifying groups which may be more interested in instructional development. The information should give instructional developers indications as to approaches that can be made. Internal examination of the results of the study will permit developers to compare specific areas of interest giving further insights into faculty interest in instructional development.

The study of expressed knowledge of, attitudes toward, and experience with instructional development among faculty members at Andrews University could provide: (1) information of value to change-agents at Andrews University

so that they can devise strategies for implementing the instructional development process among faculty members, (2) opportunities to discuss instructional development with department heads and other administrative officers during the interviews, (3) opportunities for faculty members to examine their own knowledge of, attitudes toward, and experience with instructional development, and (4) to obtain basic data for further research among the Andrews University faculty members in the field of instructional development.

Questions to be Explored by the Study

Is there a difference in expressed knowledge of instructional development as a function of: (a) professional responsibility (as defined by teachers, administrators, and specialists), (b) highest degree held (as defined by baccalaureate, masters, specialist, and doctorate), (c) years of experience (as defined by less than five, and five or more) and (d) sex.

Is there a difference in attitudes expressed toward instructional development as a function of: (a) professional responsibility (as defined by teachers, administrators, and specialists), (b) highest degree held (as defined by baccalaureate, masters, specialist, and doctorate), (c) years of experience (as defined by less than five and five or more), and (d) sex.

Is there a difference in expressed experience with instructional development as a function of: (a) professional

responsibility (as defined by teachers, administrators, and specialists), (b) highest degree held (as defined by baccalaureate, masters, specialist, and doctorate), (c) years of experience (as defined by less than five, and five or more), and (d) sex.

Professional experience was arbitrarily defined as coming between four and five years. Educational boards and administrators frequently consider individuals "experienced" if they have worked in an educational capacity for five or more years. Pay scales, promotions, and tenure policies seem to indicate that a break occurs somewhere near four or five years.

Research Hypotheses

The following research hypotheses were generated from the questions to be explored by the study. They were tested to determine if there is a difference among the various faculty categories specified. The areas to be tested were expressed knowledge of, expressed attitude toward, and expressed experience with instructional development among Andrews University faculty members:

1. There is no difference in expressed <u>knowledge</u> of instructional development as a function of <u>professional responsibility</u> among teachers, administrators, and specialists.

2. There is no difference in expressed <u>attitudes</u> toward instructional development as a function of <u>professional responsibility</u> among teachers, administrators, and specialists.

3. There is no difference in expressed <u>experience</u> with instructional development as a <u>function</u> of <u>professional responsibility</u> among teachers, administrators, and specialists.

4. There is no difference in expressed <u>knowledge</u> of instructional development as a <u>function of highest degree held</u> among faculty members with baccalaureate degrees, masters degrees, specialist degrees, and doctorate degrees.

5. There is no difference in expressed <u>attitudes</u> toward instructional development as a <u>function</u> of <u>highest degree held</u> among faculty members with baccalaureate degrees, masters degrees, specialists degrees, and doctorate degrees.

6. There is no difference in expressed <u>experience</u> with instructional development as a <u>function</u> of <u>highest degree held</u> among faculty members with baccalaureate degrees, masters degrees, specialist degrees, and doctorate degrees.

7. There is no difference in expressed <u>knowledge</u> of instructional development as a <u>function of professional experience</u> between teachers with less than five years experience and those with five or more years experience.

8. There is no difference in expressed <u>attitude</u> toward instructional development as a <u>function</u> of <u>professional experience</u> between teachers less than five years of experience and those with five or more years of experience.

9. There is no difference in expressed <u>experience</u> with instructional development as a <u>function</u> of <u>professional experience</u> between faculty members with less than five years experience and those with five or more years experience.

10. There is no difference in expressed <u>knowledge</u> of instructional development as a <u>function of sex</u>, comparing male faculty members and female faculty members.

11. There is no difference in expressed <u>attitude</u> toward instructional development as a <u>function</u> of <u>sex</u>, comparing male faculty members with female faculty members.

12. There is no difference in expressed <u>experience</u>
with instructional development as a <u>function</u>
of <u>sex</u> comparing male faculty members with
female faculty members.

<u>Organization of the Study</u>

The study is organized as follows:

Chapter I provides an introduction to the study,
the purpose of the study, a description of Andrews University,
questions to be answered by the study, the research hypothe-
ses, definition of pertinent terms, and related studies.

Chapter II presents a review of the literature on
attitudes, attitude measurement, innovations, instructional
development, and a summary.

Chapter III contains the description of the popu-
lation, the procedure, instrumentation, experimental
procedure, hypotheses, analysis, and a summary of the
chapter.

Chapter IV contains the analysis of the data, and
Chapter V discusses the findings and implications of the
findings. Chapter VI provides information on observations
of the study, implications, and recommendations.

CHAPTER II

REVIEW OF LITERATURE

Attitudes

In 1935, Allport termed attitudes ". . . the most
distinctive and indispensable concept in contemporary
social psychology." Even though the philosophies of the
various authors differ widely, attitude theorists continue
to find the concept of attitude useful.[1] A few definitions
seem to be appropriate at this point. Kiesler, Collins and
Miller point out that there has been no single definition
of attitudes acceptable to all who do research on attitudes
and attitude change.[2]

Rokeach defines attitude as ". . . a relatively
enduring organization of beliefs around an object or situ-
ation predisposing one to respond in some preferential
manner."[3] Thurstone indicates that "the concept of attitude

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[1]Charles A. Kiesler, Barry E. Collins, and Norman
Miller, Attitude Change: A Critical Analysis of Theoretical
Approaches (New York: John Wiley and Sons, 1969), p. 5.

[2]Ibid., p. 1.

[3]Milton Rokeach, Beliefs, Attitudes and Values: A
Theory of Organization and Change (San Francisco: Jossey-
Bass, 1970), p. 112.

is used to denote the sum total of a man's inclinations and
feelings, predjudices or bias, preconceived notions, ideas,
fears, threats, and convictions about any specified topic
. . . and that the concept of attitude is a subjective and
personal affair."[4]

With these brief definitions in mind, Rokeach's
extended definition of attitude is presented:

> An attitude is a relatively enduring organization of
> interrelated beliefs that describe, evaluate, and
> advocate action with respect to an object or situ-
> ation, with each belief having cognitive, affective,
> and behavioral components. Each of these beliefs is
> a predisposition that, when suitably activated, results
> in some preferential response toward the attitude
> object or situation, or toward others who take a
> position with respect to the attitude object or situ-
> ation, or toward the maintenance or preservation of
> the attitude itself. Since an attitude object must
> always be encountered within some situation about
> which we also have an attitude, a minimum condition
> for social behavior is the activation of at least
> two interacting attitudes, one concerning the atti-
> tude object and the other concerning the situation.[5]

A predisposition would be defined as a hypothetical
state of the organism which, when activated by a stimulus,
causes a person to respond selectively, affectively, or
preferentially to a stimulus. All beliefs are predisposi-
tions to action, and an attitude is thus a set of interrelated
predispositions to action organized around an object or
situation.[6]

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[4]L. L. Thurstone, "Attitudes Can Be Measured," The
American Journal of Sociology, XXXIII, No. 4 (January, 1929),
p. 530.

[5]Milton Rokeach, op. cit., 1970, p. 202.

[6]Ibid., p. 135.

Assuming that man acts according to his predisposi-
tions, there is no better way to predict his response to a
stimulus than to know his attitude toward it. If we know
a person's attitude toward an object, we can predict his
response to that object with some degree of certainty.[7]

Fishbein defines attitude as unidimensional as do
Osgood, uci and Tannenbaum. Attitude's only affect may
have positive, negative or neutral value for an individual.
While attitude is an underlying predisposition to regard
in a favorable or unfavorable ways, is specified as a
learned mediating evaluation response, affected by the
individuals interaction with his environment.[8]

Both opinion and attitude are regarded as inter-
vening variables between which there is a high degree of
mutual interaction. The most important interaction is the
change in attitude that follows the change in opinion.
Opinions, like other habits, tend to persist unless the
individual undergoes some new learning experience.[9]

We must continually keep in mind that the terms
opinion, attitude, and belief do not have fixed meanings
in the literature, but generally refer to a person's

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[7]Richard V. Wagner and John J. Sherwood, op. cit.,
p. 2.

[8]Martin Fishbein, ed., Readings in Attitude, Theory,
and Measurement, op. cit., p. 21.

[9]Chester A. Insko, Theories of Attitude Change
(New York: Appleton-Century-Crofts, 1967), p. 12.

preferences for one or another side of a controversial
matter. Opinion, attitude, and behavior are rational or
emotional judgments on specific questions. They differ
from one another in their generality or in the intensity
with which they are held.

Opinions and attitudes are presumably adapted to
beliefs, and are more amenable to change. Opinions are
sometimes called impressions or guesses. Attitudes are
sometimes called convictions, beliefs are sometimes called
values or sentiments. There are no hard-and-fast boundries
for the terms, so that one man's opinion may be another
man's attitude and still another man's belief. Given con-
sistent support form historical and parental groups, peo-
ple's opinions, attitudes, and beliefs are unlikely to
change at all.[10]

Attitudes are not innate, but learned. The process
of learning attitudes is not easily understood. Many atti-
tudes do not seem to be taught at all, but rather appear to
be acquired quite unintentionally from life experiences.
This process of adoption of attitudes occurs long before
the individual has had a background of integrated experi-
ences. More than other forms of learning, attitudes are

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[10]B. Berelson and Gary Steiner, Human Behavior: An
Inventory of Scientific Findings (Chicago: Harcourt-Brace,
1964), pp. 557-575.

transmitted through the process of imitation and association.[11]

People are apt to maintain their attitudes for one or two reasons, either they have met no new influence, because they have selected the nature of their perceptions, or they are able to exert counter pressures which are opposed to their views with various face-saving offenses, usually based on social support of some group.

Despite the tendency of attitudes to preserve themselves, they can be modified. Sometimes an attitude proves to be so personally inadequate that it can no longer be retained. When people change their attitudes they do so only as they find through experience that they are thwarted in satisfying basic human needs by keeping their attitudes. Usually a person will find some way to retain his beliefs even if it is illogical.

It takes an overpowering array of facts to change the minds of people who become set in their ways. Factual approaches designed to change attitudes are only successful when the facts are presented in a one-sided way and there is a definite attempt to produce emotional entanglements to accompany these facts. Edward further asserts that in order to change an attitude, a situation must be created

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[11]Ralph Edwards, "The Development and Modification of Elusive Attitudes," Education Forum, 28 (1964), p. 335.

which is similar to the one in which the attitude was originally developed.[12]

Attitudes and Behavior

In the past several years, questions such as: (1) whether attitudes predict behavior, and (2) whether changing attitudes lead to changes in behavior have again begun to attract a considerable amount of attention. Fishbein states his views as follows:

1. The best predictor of a single act behavior is its corresponding behavioral intention.

2. A general attitude measure can predict a multiple act criterion better than a single act criterion.

3. Perceived difficulty of a performing behavior is its corresponding behavioral intent.

4. Level of commitment does not improve behavioral prediction.[13]

An investigation of attitudes should be concerned with behavioral intentions as well as with attitudes, beliefs and behavior. One cannot actually predict behavior accurately from attitudes alone. Behavioral intentions may be necessary.[14]

Bem believes that beliefs and attitudes have their foundations in thinking, feeling, behaving and interacting

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[12]Ibid., p. 357.

[13]Martin Fishbein, ed., Readings in Attitude, Theory, and Measurement, op. cit., p. 23.

[14]Ibid., p. 22.

with others. Our most fundamental primitive beliefs are so taken for granted that we are apt not to notice that we hold them at all; we believe that an object continues to exist even when we are not looking at it; we believe that objects remain the same size and shape as we move away from them even though their visual images change; and, more generally, we believe that our perceptual and conceptual worlds have a degree of orderliness and stability over time. Our faith in the validity of our sensory experience is the most important primative belief of all.[15]

It is easy for most people to readily accept the idea that an attitude can cause a behavior. The concept that attitudes cause behavior is the prevailing view in American society. Stated another way, the inconsistency, or "dissonance," between an individual's beliefs or attitudes and his behavior will motivate belief or attitude change toward cognitive consistency.[16] To the observer, the most important clue to an individual's inner states are found in his behavior. When we want to know how a person feels, we look to see how he acts.[17]

Bem further writes that we have seen that behavior and conditions under which it occurs are one of the major

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[15]Daryl L. Bem, Beliefs, Attitudes, and Human Affairs, op. cit., p. 5.

[16]Ibid., pp. 54-55.

[17]Ibid., p. 57.

foundations of an individual's beliefs and attitudes. And, although the cognitive, emotional, and social factors also have their effect, it remains true that changing an individual's behavior is one of the ways of causing change in his beliefs and attitudes. His new behavior provides a source from which he draws a new set of inferences about what he feels and believes. By affecting a change in behavior, we can predict that a change in attitude will follow. This is a cause and effect sequence, the sequence in which behavior change causes attitude change.[18] Bem's illustration shows us that:

> We can now see one of the reasons why legislation and court decisions can change the 'hearts and minds of men, why stateways can change folkways.' They do so, in part, by effecting a change in behavior; then when behavior has been changed, attitudes often follow. This is not the whole story, however, for social norms are also involved in the attitude-change process.[19]

In contrast to Bem's theory, Festinger points out that an individual's opinion and attitudes tend to form clusters which are internally consistent, and his actions tend to be equally consistent with what he believes. He calls the situation, in which an individual decides to behave in a manner contrary to his beliefs or publicly expresses an opinion contrary to his private opinion, a force-compliance situation. According to him, such

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[18]Ibid., pp. 66-69.

[19]Ibid., p. 69.

force-compliance occurs generally only when the pressure to comply is accompanied by an offer of a reward for compliance or a threat of punishment for noncompliance.[20]

Wagner and Sherwood contend that the psychologist conceives of attitudes as aids in predicting behavior. The psychologist must investigate the conditions under which they are and are not good predictors. They refer to what LaPiere pointed out in 1934, that people do not always act in accordance with the attitudes they express. One simple indication of the difficulties involved in determining the predictive validity of an attitude is the fact that attitudes seldom exist as separate intities. There are other factors such as the intensity of the evaluation of the object, that tend to complicate the use of attitudes to predict behavior.[21]

Attitude Measurement

There are different types of attitude scales. One of which is a summated rating scale (also called the Likert-type scale) consisting of a set of attitude items, all of which are considered of approximately equal "attitude value," and to each of which subjects respond with degrees

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[20]Richard I. Evans, Resistance to Innovation in Higher Education (San Francisco: Jossey-Bass, Inc., 1968), pp. 102-103.

[21]Richard V. Wagner and John J. Sherwood, The Study of Attitude Change, op. cit., p. 2.

of agreement or disagreement, in other words intensity. This means that there is no scale of items, as such. One item is the same as any other item in the attitude value. The respondents are scaled; this "scaling" comes about through the sum, or averages, of the individual's responses. Summated rating scales allow for the intensity of attitude expression. Subjects can merely agree or they can agree strongly. The main advantage of summated rating scales is that greater variance results.[22] In the case of summated ratings, the investigator selects a series of statements in such a way that a reader can respond by checking one of the five positions for each, strongly approve, approve, un-decided, disapprove, and strongly disapprove. Weights from one to five are assigned to each position so that the high score always represents the extreme for the same attitude direction. The series of statements are administered to a number of subjects who express the degree of approval or disapproval. Weights are next assigned to each individual response. These weights are summated so that there is a single numerical score representing each individual's ratings. When the total scores for a large number of subjects are available, the responses of extreme value are retained for the scale. This method of summated ratings

[22]Fred N. Kerlinger, Foundations of Behavioral Research (Chicago: Holt, Rinehart and Winston, Inc., 1964), pp. 843-44.

depends on internal consistency of criteria. For the unfavorable items the scoring procedure is reversed. These total scores are next arranged from very high to very low. Then 25% of the subjects with the highest total scores and 25% of the subjects with the lowest total scores are taken. Thus two contrasted groups are formed and their responses are compared. The final attitude scale is then constructed by choosing 20 to 25 items from the total list which show the greatest discrimination. These items are used with the same five "agree-disagree" response categories, and scoring is done in the same way.[23] The data obtained in public opinion and attitude surveys may be used either to discover the number or percentage of people who respond in a particular way to a single statement, phrase, or other attitude indicator, or to measure the strength of the attitude of each individual.[24]

This method of summated ratings for measuring attitudes has enjoyed great popularity. Since its development by Likert in 1932, it may have been used to a greater extent than the Thurstone scales. Likert-type scales yield results comparable to Thurstone results. Because of the reliability of Likert-type scales and because of the

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[23]Srimbus Bhattacharya, Psychometrics and Behavioral Research, op. cit., pp. 146-152.

[24]Mildred Parten, Surveys, Polls, and Samples: Practical Procedures (New York: Cooper Square Publishers, 1966), pp. 193-94.

possibility that this method may be less time consuming,
Likert scales have been widely used in attitude studies.

An attitude scale should deal with one thing at a
time in as far as possible. This concept is known as
unidimensionability or homogeneity. Likert's primary con-
cern was making sure that all the items would measure the
same thing.[25] Validity of an attitude scale tells us
whether the scale measures what it is supposed to measure.
The attitude scale investigator may wish to correlate his
scale with an older, well established scale or he may wish
to use criterion groups, such as political party members.
At present, there is no way of making sure that an atti-
tude scale is valid.

Reproducibility on an attitude scale might show,
by means of a single figure, which statements the respondent
agrees with and which ones he disagrees with, thus telling
us his place on the attitude continuum.[26]

Construct validity of an attitude scale implies
that what the scale measures is indicated by the manifest
content of the items; others rely on groups of judges for
ascertaining what the items measure.

Predictive validity shows that behavior does not
have a simple one-to-one relationship with one type of

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[25]A. N. Oppenheim, Questionnaire Design and Attitude
Measurement (New York: Basic Books, Inc., 1966), pp. 121,
134.

[26]Ibid., pp. 122-123.

inner determinant such as an attitude. The relationship
is conplex and will involve both other attitudes, character
traits, and environmental determinants. Behavior is a
compromise, a resultant of the interaction of mutiple
forces.[27]

The results of the analysis are easily assemilated
in the form of a scalogram. Scalogram analysis is not a
method for constructing or developing an attitude scale.
Scalogram analysis can perhaps be most accurately described
as a procedure for evaluating sets of statements or existing
scales to determine whether or not they meet the require-
ments of a particular kind of scale.[28]

If the responses of subjects to the statements are
in accord with the theoretical model of a unidimensional
scale of statements, we would have confidence in inter-
preting scores of subjects based upon the statements as
also falling along the same unidimensional continuum.[29]

Attitude Change

The question of how attitudes are changed is of
vital importance to people who are concerned with such

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[27]Ibid., pp. 152-153.

[28]Ralph Edwards, "The Development and Modification
of Elusive Attitudes," op. cit., p. 172.

[29]Ibid., p. 176.

things, especially in the field of education.[30] The func-
tional approach suggests that attitudes develop and change
as they serve to promote or support goals of the individual;
that is, attitudes are instrumental to the person's satis-
faction of his needs. Attitudes change and develop because
they satisfy psychological needs of the individual, so
that the psychologist must be aware of what need is being
served by an attitude in order to predict the nature of
the change.[31]

Mayhew and Walker believe that much of the lasting
value of education is obtainable only in so far as student's
attitudes, beliefs, life goals, and values are affected.
Precise laboratory techniques are soon forgotten, but the
mental set toward experimental methods should remain.[32]

Wendt appraises the status and changes in attitudes
and in opinions by controlled experimentation in the area
of audiovisual instruction, and indicates that it has been
confined largely to films. He cites one early experiment
with theatrical films that showed student's bias toward
certain racial groups (and other problems) could be modified

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[30]Chester A. Insko, Theories of Attitude Change,
op. cit., p. 1.

[31]Richard V. Wagner and John J. Sherwood, The Study
of Attitude Change, op. cit., p. 4.

[32]Lewis B. Mayhew and H. Hill Walker, "Attitude
Inventories," Journal of Higher Education, 21 (1950),
p. 375.

by a film.[33] Successive exposures to similar films with the same point of view have resulted in pronounced changes in attitude, and this new attitude remained to a measurable extent for months. Further research findings indicate, that exposure to a series of films over a period of time have a considerable effect in changing student's attitudes. The problem is not so much to change their important attitudes as it is to implant a new attitude or nurture one already present.[34]

One must not think that knowing all there is to know about attitudes can immediately solve all problems. Such a view would be oversimplified and naive. The study of attitudes is only one facet of a complex puzzle. But the puzzle is present and the study of attitudes toward the beginning of a solution to the puzzle.[35]

<div align="center">Innovation</div>

Many articles in newspapers and periodicals reflect public dissatisfaction with higher education. State legislatures have been increasingly reluctant to provide additional funds to educational institutions thereby suggesting that

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[33]Paul R. Wendt, Audio-Visual Instruction (Washington, D.C.: National Education, 1957), pp. 12-13.

[34]Ibid., p. 13.

[35]Harry C. Triandis, Attitude and Attitude Change, op. cit., p. 2.

present practices in the field of education be examined.[36]

In like manner, Woodring reveals that life on the campus

has undergone more change during the past decade than in

the previous half century, however this has not only been

change in the classroom, nor in the curriculum, but in the

dramatic transformation of student life during ont-of-class

hours, affecting the total college experience. College

students have gained most of the personal freedom they

want and are now demanding a role in policy making.[37] As

a result of these student demands, the modern educational

institution is in a stage of flux. It is experiencing

tremendous change from within as a result of pressure from

within and without. These changes are placing pressures

on classroom teachers which are leading them to understand

that "learning is an active process and that their chief

classroom tasks are to serve as diagnosticians and organ-

izers, or managers, of functionally varied learning experi-

ences."[38] The present generation of students is qualita-

tively different, and Woodring predicts that the generation

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[36]Gerald Gage, "Accountability in the American Col-
lege," a paper delivered at the Instructional Development
and Technology Luncheon, Michigan State University, July 14,
1971, p. 1.

[37]Paul Woodring, "Higher Education in This Decade,"
Education Digest, Vol. XXXVI, No. 4 (December, 1970), 20-23.

[38]Charles B. Klasek, Instructional Media in the
Modern School (Lincoln, Nebraska: Professional Educators
Pub., Inc., 1972), p. 16.

of students coming to maturity will be still different,
enough different to make the student of the sixties seem
old-fashioned.[39] Leeper points out that the tempo of
change in schools and colleges of the United States has
increased in recent years and is continuing to accelerate.[40]

The need for change in American educational insti-
tutions is evident nearly everywhere. Many people, including
educators, have come to the conclusion that fundamental and
farreaching changes must be made.[41] Formal education is in
an important respect outmoded, since students learn outside
of educational institutions in ways which differ materially
from the ways they learn inside schools and colleges. Edu-
cational institutions make scant use of the potent means
of communication that modern society finds indispensable
and that occupy so much of young people's time out of
school.[42]

In today's schools, technology touches only a small
fraction of instruction. Colleges, universities and schools
have been using technology to only a limited extent.[43] One

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[39]Paul Woodring, "Higher Education in This Decade,"
op. cit., p. 20.

[40]Robert R. Leeper, ed., Strategy for Curriculum
Change (Washington, D.C.: Association for Curriculum
Development, 1965), p. v.

[41]"To Improve Learning," op. cit., p. 13.

[42]Ibid., p. 7.

[43]Ibid., p. 7.

of the reasons schools do not use more technology is because
they tend to continue doing what they have been doing and
were established to do, holding themselves relatively stable
resisting attempts at reconstruction. Neither external
groups, such as parents, and board members, nor internal
groups, such as teachers and administrators usually play
the roles of change-agents for instructional innovation of
a major scope.[44] Before a change-agent can successfully
introduce an innovative concept, his clients must perceive
a need for it. Not only should a change agent's clients
perceive a need for a new idea before it can be success-
fully introduced, but a change-agent should select inno-
vations for introduction on the basis of existing needs
among his clients.[45]

After exploring the concepts of the client's needs,
the change-agent must understand the process of planned
change. A typical model of planned change as introduced
by Grimes and Doyle involves the following stages: (1)
development of a need for change, (2) establishment of a
change relationship, (3) examination of alternative routes
and goals as well as establishing goals and intentions of
action, (4) transformation of intentions into actual change

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[44]Carlton W. H. Erickson and Donald Pl Ely, "The
Media Specialist: Object of Change," Audiovisual Instruc-
tion, Vol. 10, No. 6 (June, 1965), pp. 448-53.

[45]Everett M. Rogers, Diffusion of Innovations,
op. cit., p. 280.

efforts, (5) generation and stabilization of change, and (6) achieving a terminal relationship.[46]

We must further understand that the heart of education should be student learning, and the value of any technology used in education must therefore be measured by its capacity to improve learning. Formal education is not responsive enough to technology, colleges take too little account of even what is now known about the process of human learning, particularly the range of individual differences among students.[47] Technology could bring about far more productive use of the teachers' and the students' time.

Everett Rogers defines an innovation as "an idea, practice, or object perceived as new by an individual."[48] As far as human behavior is concerned it does not much matter if the innovation is new as measured by the passage of time since its first use or discovery. What matters in terms of an individual's reaction to an idea is his perception of the newness of the idea. Rogers states this concept as follows:

> 'New' in an innovation idea need not be simply new knowledge. An innovation might be known by an individual for some time (this is, he is aware of the

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[46]George H. Grimes and James Doyle, "Development, Design and the Process of Change in Education," *Audiovisual Instruction*, Vol. 16, No. 10 (December, 1971), p. 54.

[47]"To Improve Learning," *op. cit.*, pp. 7-8.

[48]Everett M. Rogers and F. Floyd Shoemaker, *op. cit.*, p. 19.

idea), but he has not yet developed a favorable attitude toward it, nor has he adopted or rejected it. The 'newness' aspect of innovation may be expressed in knowledge, in attitude, or regarding a decision to use it.[49]

In one situation described by Rogers, 50 years elapsed after development of a new educational practice before its adoption by all public schools. Putting this concept in another way, the average American school lags 25 years behind the best practice.[50] The question is immediately asked: Why is the diffusion or communication of educational ideas so much slower than farm innovations or medical drugs? Rogers believes it may be because of: (1) absence of a scientific source of innovations in education, (2) lack of change-agents to promote new educational ideas, and (3) lack of an economic incentive to adopt. "Unfortunately there seems to be no possible profit motive in being an educational innovator."[51]

Adaptability, essentially a synonym for innovativeness, was defined by Rogers as "the capacity of a school to take on new practices and discard outmoded ones." He quotes Mort and Cornell as follows:

To operate schools today in terms of the understanding of a half century ago is to waste school funds and school time. Adaptability, or the capacity to meet

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[49]Ibid., p. 19.

[50]Everett M. Rogers, Diffusion of Innovations, op. cit., p. 2.

[51]Ibid., p. 41.

new needs by taking on new purposes and new practices,
is indispensable to the effective functioning of nay
school system.[52]

Statements such as this seem to leave little doubt
that innovativeness of schools is perceived as desirable.[53]

Even though educators recognize the need for change
there is a continued resistance to change. It seems that
many who live or work in highly organized institutions,
including schools, tend to resist change. However, re-
sistance to change is not all bad. Many of the changes in
education that were once reported with enthusiasm subsequent-
ly warranted considerable circumspect and tentativeness.[54]

According to Van Wyck, innovations are less likely
to be resisted if they can be used in a variety of edu-
cational tasks rather than in one specific area. An inno-
vation in the use of instructional media faces less chance
of resistance if it supports or slightly modifies current
educational practice, rather than changing or replacing
the practice. Obviously it is necessary for teachers and
administrators to work cooperatively to initiate desired
changes in an instructional program. In addition to those
two groups, other influential groups and individuals within

[52]Ibid., p. 40.

[53]Ibid., p. 40.

[54]Steven M. Corey, "The Nature and Implications of
Educational Change," Audiovisual Instruction, Vol. 10,
No. 6 (June/July, 1965), p. 445.

an institutional system have significant roles in imple-

menting and fostering the growth of an innovation.[55] Those

who foster change in the schools and colleges must recognize

that any ideas of change might seem out of place, and that

people do not want change. There is an element of truth

to this idea. A definite conservatism does exist in all

cultures, and probably necessarily so, according to

Arensberg and Niehoff.[56] As individual educators who would

change the curriculum, we immediately list the number of

barriers that stem from outside the institution itself,

such as the state department, local or state legal require-

ments, college requirements, budgetary control, all seeming

to have been contrived to prevent change of any kind from

taking place.[57] Van Wyck presents a list of reject re-

sponses, or teacher opinions:

 1. rejection through ignorance--the innovation was
     unknown or its complexity led to a lack of
     understanding;

 2. rejection through default--admitting a knowledge
     of the innovation without any interest in its use;

 3. rejection by maintaining the status quo--
     innovation not accepted because it has not .
     been used in the past;

[55]William F. Van Wyck, "Reducing Teacher Resistance
to Innovation," Audiovisual Instruction, Vol. XVI, No. 3
(March, 1971), p. 90.

[56]Conrad M. Arensberg and Arthur H. Nichoff, Intro-
ducing Social Change (Chicago: Aldine-Atherton, 1971),
p. 66.

[57]George Sharp, Curriculum Development as Re-
education of the Teacher (New York: Bureau of Publications,
Columbia University, 1951), p. 17.

4. rejection through societal mores--teacher feals society finds the innovation unacceptable and will not use it;

5. rejection through interpersonal relationships-- colleagues do not use it, therefore neither will I;

6. rejection through erroneous logic--the use of rational but unfounded reasons for the rejection of worthy innovations;

7. rejection through substitution--using one practice over another practice requiring the use of an innovation;

8. rejection through fulfillment--teacher is confident of the success of using his own methods, making innovation unnecessary; and

9. rejection through experience--discussing with others the failure of some innovations.[58]

With a climate of strong resistance to change such as described by Van Wyck, it is essential that an assessment of attitudes toward instructional development take place in order to identify those educators who are either favorable toward instructional development or who are at least less negative toward the concept one might conclude them to be in view of their past record of resistance.

The purpose for examining all the reasons educators resist and reject new approaches to instruction is so those interested in change can formulate strategies to combat and overcome this resistance.[59] Certain conditions must be present before an innovation has a chance to succeed:

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[58]William F. Van Wyck, op. cit., p. 90.

[59]Ibid., p. 90.

1. the educational community must perceive and emphatically express a specific need for change;

2. the need must be recognized by the community at large;

3. a state of the art in both methodology and media must exist to meet the need in a cost-effectiveness manner;

4. sufficient funds must be available for paying the cost. The necessity for preparing teachers for change is a fifth condition.[60]

Numerous authors have expressed their concern with regard to the kind of climate or environment which exists in education with respect to educational change of any kind. Witt states that:

The history of innovation in American education makes it clear that a new process or practice such as instructional development, no matter how promising, is not likely to be widely adopted in a brief period of time. In view of what has almost always happened in the past, quite the contrary is likely to happen.[61]

Regarding education's history of resistance to change,vans is very much in agreement with Witt's perception:

. . . social institutions rarely include mechanisms for facilitating change . . . (and) the greatest resistance to change will be found in those institutions whose traditional primary function has been the perpetuation of society's folkways, mores, and values, such as religious and educational institutions. In general, changes in educational methods have been exceedingly slow, due primarily to the climate of resistance and the educator's often outright hostility toward change.[62]

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[60]Ibid., p. 90.

[61]Paul W. F. Witt, op. cit., p. 18.

[62]Richard I. Evans, op. cit., p. 213.

Corey speaks to the need for involvement in the curriculum and the content by those who would advocate change:

> I believe that the best approach . . . is not simply encouragement of the use of the various new instructional techniques and equipment, but rather emphasis upon the analysis of the teaching task in terms of the best information we have available on curriculum development and in the behavioral sciences. . . . The strategy behind this approach . . . is to give academic respectability . . . to media.[63]

Arensberg and Niehoff recognize that despite the conservatism existing in all cultures, a certain measure of which is certainly necessary, change is constant. The view that life is as it was hundreds or thousands of years ago anywhere in the world is based on superficial observations.[64] This does not mean that educators should change merely for the sake of change and call it progress. Change should be undertaken only after a strategy has been devised for implementing it.[65] It is necessary to enlist the support of influential groups or individuals in the schools, particularly in the establishment of a traditional program to bridge the gap between the old and the new. Teacher

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[63]Steven M. Corey, op. cit., p. 457.

[64]Conrad M. Arensberg and Arthur H. Nichoff, op. cit., p. 67.

[65]Richard I. Miller, "An Overview of Educational Change," Perspectives on Educational Change, ed. by Richard I. Miller (New York: Appleton-Century-Crofts, 1967), p. 333.

involvement and understanding are essential to the accept-

ance and enduring success of an innovation.[66]

Everett Rogers of Michigan State University describes

the innovator as:

> . . . a young, respected, adventuresome cosmopolite of
> high social status who has the ability to understand
> and use complex technical information, and is not
> discouraged by failure. His cosmopolite interests
> lead him to develop social relationships that may
> extend over wide geographic areas. In traditional
> systems he is sometimes referred to as a dreamer, odd
> ball, agitator.[67]

The change-agent is further described by Rogers,

as a professional person who attempts to influence adoption

decisions in a direction that he feels is desirable. In

most cases, a change agent seeks to secure the adoption of

new ideas, but he may also attempt to slow the diffusion

and try to prevent the adoption of certain innovations. A

new idea may compete with or supersede an old idea sponsored

by the change-agent. A change-agent may seek to prevent the

adoption of a non-recommended innovation.[68]

The change-agent or instructional developer must

realize that his initial actions will be judged critically.

If he is unpredictable or creates such an impression with

school people, they will tend to withhold full cooperation

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[66]William F. Van Wyck, op. cit., pp. 90-91.

[67]Steven M. Corey, op. cit., p. 455.

[68]Everett M. Rogers, op. cit., pp. 454-55.

on his project or future projects which appear similar.[69]
In practically all instances a specialist who wishes to
convince people to adopt some new idea will have to initiate
communication. This can be either personal or impersonal,
or some combination of the two. Whichever he chooses, how-
ever, communications will continue in the form of inter-
personal contact within the group. Its common name is
gossip. People start talking about significant events in
the school or community, and this talk is a powerful force
in decision making in the community, and should not be
overlooked.

Everyone knows that gossip exists, but most people
just condemn or ignore it. The times it gets conscieous
attention is when by chance a change agent hears a garbled
rumor of his efforts. Gossip is a private communication
and an outsider is not freely included in such conversations.
But if he works hard to gain acceptance and identifies key
people, he can do much to tap the intragroup communication
network. Gossip can be thought of as either positive talk
or negative rumors, both of which are important kinds of
information to the change agent. He can rest well-assured
that local response is favorable to an innovation if the
gossip is positive.[70]

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[69]Conrad M. Arensberg and Arthur H. Nichoff, op. cit.;
p. 109.

[70]Ibid., pp. 98-99.

Chin deals more explicitly with the type of relation-ship which must be established by the professional developer if he is to experience a reasonable degree of success in his efforts:

> Planned change is implemented because of the quality of the relationship between the change-agent and the client-system. This approach does not assume that the change-agent has a solution he must get across to the client, and yet it does not reject the fact that the change-agent does have some specialized valid knowledge about new technology and procedure.[71]

Knowledge of a client's attitude toward an inno-vation can help the change-agent devise strategies most likely to bring about adoption in the shortest period of time. This knowledge is crucial to the instructional developer. According to Rogers, failure to look at atti-tudes is one reason change programs fail. Change-agents must have knowledge of their client's attitudes, among other things, if programs of change are to be adjusted to fit the various clients.[72]

Kelley expands this concept further when he states that the attitude that the teacher holds regarding the use of audiovisual materials will greatly affect the success of any audiovisual program. The realization is rapidly growing that attitudes, the way individuals and groups

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[71]Robert Chin, "Some Ideas on Change," <u>Perspectives on Educational Change</u>, ed. by Richard I. Miller (New York: Appleton-Century-Crofts, 1967), p. 333.

[72]Everett M. Rogers and F. Floyd Shoemaker, <u>op</u>. <u>cit</u>., p. 17.

feel about the various aspects of their world, are probably more determinative of behavior than mere cognitive understanding of this world.[73] In Kelley's study, twenty-two statements regarding attitude were selected which covered the continuum from a very negative to a very positive attitude toward the use of audiovisual materials.

The returned rating scales were scored and placed in rank-order according to size of score obtained. These scores were divided into three categories corresponding to high, medium, and low attitudes toward audiovisual materials. He found that for some unknown reason, "Women tend to score higher on an attitude rating scale relating to use of audiovisual materials than do men."[74] Kelley also found what appears to be a relationship between the grade level on which a teacher works and his attitude toward audiovisual materials. This comparison was highly significant. Kindergarten and elementary level teachers tend to have better attitudes (score higher on the rating scale) toward audiovisual materials than do those in junior high school and high school. He found that on the college level the distribution of attitudes was about normal.[75]

He found it interesting that there is a highly significant relationship between the teacher's sex and his

[73]Gaylen B. Kelley, op. cit., p. 119.

[74]Ibid., p. 120.

[75]Ibid., p. 120.

attitude toward audiovisual materials. There is a definite tendency for women to have better attitudes (score higher on the rating scale) toward the use of these materials than men.[76] Kelley also found a significant relationship between the number of years of formal education and attitude toward audiovisual materials. Teachers with one to four years of training beyond high school have better attitudes toward audiovisual materials than do those with five or six years of training. He found that the subject matter area in which one teaches is not a significant factor in determining attitudes toward the use of audiovisual materials. He discovered that age is not a significant factor, except that teachers between the ages of 40 and 50 tend to have lower attitudes toward audiovisual materials.[77]

The study by Kelley concerning teacher attitudes toward the utilization of audiovisual materials in classroom instruction provides a knowledge of attitudes about only a small part of the total instructional development process. It should not be inferred that any sample population's attitudes toward media would be the same as their attitudes toward instructional development. The application of systems theory to the design, carrying out, and evaluation of the instructional process is a totally different concept

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[76]Ibid., p. 120.

[77]Ibid., p. 121.

than is the utilization of audiovisual materials as in-
structional media.[78] The results of Kelley's study empha-
size the importance of recognizing the place of attitude in
any attempt to analyze the use of instructional media.[79]

Bennis has accurately described the instructional
developer as a change-agent. Instructional development
must be characterized as planned change.

The concepts of instructional development and
instructional technology will continue to be peripheral
with insufficient resources until the educational community
gives it top-level commitment which results in a favorable
climate in which change can occur and provides a favorable
organization of time, space, and money which allows change.[80]

Instructional media have been criticized by edu-
cators and noneducators alike. But now exciting evidence
of media emerging as a truly "modern" school finally re-
sponding to the needs of the students and listening to the
valid critiques of knowledgeable and qualified critics.[81]
This concept is further developed by Duncan:

> Instructional development is a systematic process of
> bringing relevant instructional goals into effective
> learning activity. . . . It is a relatively new con-
> cept which must be spread throughout the academic

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[78]Richard J. Boutelle, op. cit., p. 6.

[79]Gaylen B. Kelley, op. cit., p. 121.

[80]Charles B. Klasek, op. cit., p. 8.

[81]Ibid., p. 8.

community of its full potential is to become a reality. Therefore the assessment of attitudes toward instructional development as an innovation is a necessary step prior to the diffusion process since the concept must be diffused and accepted before the innovation itself is diffused and adopted. The concern here is with the perception of innovation rather than the innovation per se.[82]

Most instructional development efforts are not likely to be such that an individual developer is working directly with one faculty member. The team approach should be used. All the skills and knowledge needed to carry out the systematic process of instructional development could not be possessed by one person. The organization should involve people representing the following areas: (1) curriculum, (2) communication, (3) specialist in content, (4) learning theorists, (5) evaluation specialist, (5) content specialist, and (6) media specialist, as well as, the instructor who is directly involved. The coordinator of the team should be the instructional developer.[83]

Klasek indicates ". . . that the most significant change now being introduced into the schools is the systems approach to education . . . and that this approach that has emerged from the technological sector of our society has the potential to restructure much of the thinking about ways of attaching educational problems."[84]

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[82]Marvin Earl Duncan, op. cit., p. 2.

[83]Ibid., pp. 23-24.

[84]Charles B. Klasek, op. cit., p. 13.

Results of research have shown that there is a distinct advantage to instructional techniques and strategies that make imaginative use of instructional media. The key to the instructional success of media was provision of adequate resources, utilization of unique qualities of the various media, and the integration of media into the instructional program to meet specific behavioral objectives. For this specific reason media use is expanding within a systems or instructional development concept. Both students and teachers have found instructional development very effective in planning of units of instruction within a particular subject area.[85]

Instructional Development

Seattler describes the introduction of instructional development into education in the following manner:

> During the 1953-1960 period, the systems analyst, programmer, and systems designer emerged, and the term 'systems approach' was introduced to combat prevailing engineers' concept that hardware was the key to a successful system. About 1960 the phrase 'total systems approach' came to be used to describe the interaction of men and machines within the context of an organization in terms of specific tasks and outcomes.[86]

As a result of pioneer military applications, there is an accelerating development of systems technology in

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[85]Ibid., pp. 15-18.

[86]Paul Seattler, _A History of Instructional Technology_ (New York: McGraw-Hill, 1968), p. 269.

industrial, scientific, business and governmental sectors, as well as in education. Ever since the early beginning, educators have been urged, in the literature, to take a systems approach to solving its problems.[87] A number of authors have attempted to define instructional development, which is known at various levels by a number of names, such as systems approach, systems analysis, instructional technology, as well as instructional development. In the first definition offered by Webster's Seventh New Collegiate Dictionary, as system is: "A regularly interacting or independent group of items forming a unified whole."[88]

Erickson and Curl further define instructional development to include an audiovisual communication system as an integrated collection of media and materials designed to get a definite message across with predicted results to an identified audience under specified conditions.[89] Wittch and Schuller indicate that instructional development means the application of an instructional systems approach to the analysis of and development of practical solutions

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[87]Jack E. Bratten, "The Systems Approach to the Improvement of Instruction," Media and Methods: Instructional Technology in Higher Education, ed. by Derick Unwin (New York: McGraw-Hill, 1969), p. 159.

[88]Carlton W. H. Erickson and David H. Curl, Fundamentals of Teaching with Audiovisual Technology (New York: The MacMillan Co., 1972), p. 65.

[89]Ibid., p. 65.

to teaching and learning problems.[90] Brown, Lewis, and

Harcleroad offer this definition for those who are not well

acquainted with the terminology of instructional technology:

> . . . instructional technology goes beyond any particular medium or device. In this sense, instructional technology is more than the sum of its parts. It is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based upon research in human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction.[91]

This definition implies that, for improvement of instruc-

tion, systematic planning and the wise and skillful use

of the products of technology are basic.[92]

The President's Commission on Instructional Tech-

nology has offered the following definition of instructional

technology which also serves as a most comprehensive and

exacting definition of the concept of instructional develop-

ment:

> . . . a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives based on research and human learning and communication and employing a combination of human and non-human resources to bring about more effective instruction.[93]

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[90]Walter A. Wittich and Charles F. Schuller, op. cit., p. 631.

[91]James W. Brown, Richard B. Lewis, and Fred F. Harcleroad, A V Instruction: Technology, Media and Methods (New York: McGraw-Hill, 1973), p. 3.

[92]Ibid., p. 3.

[93]Commission on Instructional Technology, op. cit., p. 5.

A systems approach to curriculum development is a problem-solving method of analyzing the educational process and making it more effective. All of its parts and aspects of the process taken as a whole are to be incorporated into the system including content, the instructional materials, the instructional strategy, the physical environment and the evaluation of instructional objectives.[94]

Bratten further states that system problems are specific and real, not abstract, and that the approach is not a single-event search for a solution but, rather the embedding of a specific problem-solving mechanism in a larger process that will systematically alter solutions based on observed outcomes and varied availability of resources.[95]

The development of instruction is a process based on a network of people, resources and facilities. It is a continuous process involving refinement, feedback and improvement. According to Urbach, instructional development is ". . . a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of objectives, based on research in human learning and communication, and employing a combination of

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[94]Thomas E. Cyrs, Jr. and Rita Lowenthal, "A Model for Curriculum Designing Using a Systems Approach," _Audiovisual Instruction_, Vol. 15, No. 1 (January, 1970), p. 16.

[95]Jack E. Bratten, _op. cit._, p. 165.

human and non-human resources to bring about more effective instruction."[96]

Gustafson is even more emphatic and explicit with respect to the emphasis which must be placed upon the human component. He expresses this view as follows:

> Without a doubt the most important element of the instructional development system is people. People are its energy, its insight, its product and its consumer. To engage in ID is to change people. . . . To ignore any segment of the population is to invite frustration and probably failure. . . . A balance must be struck between product development and people development.[97]

Instructional development is not well-known among educators, even today. Erickson and Curl point out that:

> the implications of the shift in technological focus from classroom to curriculum planning-from tactics to strategy--are not at all well accepted, particularly as they affect roles of personnel, instructional management rearrangements, budgetary considerations, and research requirements.[98]

Erickson and Curl suggest that planning is the secret of systematizing or recombining ideas. It is helpful to begin by drawing a map--called a flow diagram of the desired behavior or activity. The flow diagram should indicate all components of the system or learning process and show the

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[96]Floyd Urbach, op. cit., p. 7.

[97]Kent L. Gustafson, "Toward a Definition of Instructional Development: A Systems View," a paper presented to the Symposium on Instructional Development, Michigan State University, May 3 and 7, 1971, p. 1.

[98]Carlton W. H. Erickson and David H. Curl, op. cit., p. 65.

paths and alternatives that may be followed by the learner
as he proceeds through each step of the process. A flow
diagram is an abstract graphic model of a process. Such
a model makes it easier to visualize the system at the
planning or design stage, while changes may still be made
easily. Each segment of the system represents a minute
individual part of the system, including decisions, and
activities, each of which is related to the whole system.[99]

One nine-step instructional development model in
use in instructional development institutes being offered
by the National Special Media Institutes (NSMI) is pre-
sented here as an example of instructional development
block-and-arrow diagrams assisting in the clarification
of the process called instructional development (see
Figure 2).

Another method of presenting the model is in outline
form, which identifies each stage and the steps in each
stage:

    I. Define Stage

        1. Identify Problem

        2. Analyze Setting

        3. Organize Management

   II. Develop Stage

        4. Identify Objectives

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[99]Ibid., pp. 75-76.

I DEFINE	1 *Identify Problem*	2 *Analyze Setting*	3 *Organize Management*
	Assess needs Establish priorities State problem	Audience Conditions Relevant resources	Tasks Responsibilities Time lines

II DEVELOP	4 *Identify Objectives*	5 *Specify Methods*	6 *Construct Prototypes*
	Terminal (TO) Enabling (EO)	Learning Instruction Media	Instructional materials Evaluation materials

III EVALUATE	7 *Test Prototypes*	8 *Analyze Results*	9 *Implement/ Recycle*
	Conduct tryout Collect evaluation data	Objectives Methods Evaluation techniques	Review Decide Act

Figure 2. The nine-step Instructional Development model in use by (National Special Media Institute) groups.

5. Specify Methods

6. Construct Prototypes

III. Evaluation Stage

7. Test Prototypes

8. Analyze Results

9. Implement/Recycle

In order to further identify the various steps in the concept of instructional development process which an individual or an instructional development team needs to go through, the following discussion is presented to amplify and clarify the block-and-arrow chart illustrated on the preceding page.

I. Define Stage

1. Identify Problem: This beginning definition step is of critical importance. It involves the assessment of needs, the ideal situation, identification of causes of the problem, a commitment to apply the necessary time and energy, and resources to carry through to an adequate solution. Substantial amounts of relevant information are necessary in order to carry out other phases of the instructional development process. At this point it may be beneficial to indicate that the instructional development process is not, in the stricted since, a linear process. The several stages must be dealt with consecutively and simultaneously during the process.[100]

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[100]Walter A. Wittich and Charles F. Schuller, op. cit., p. 636.

2. <u>Analyze Setting</u>: This phase deals with
the human and functional factors involved in any signifi-
cant change in the existing system. The members of the
instructional development team need to be able to recognize
and identify the people in the institution who serve as
decision makers, opinion leaders and change agents. These
considerations need special care and thoroughness when an
important new program is at stake.[101]

Input data on the student population for whom the
curriculum will be developed must be gathered, as well as
the development of new tests to be used. Level of skill
development, knowledge level, and attitudes that each
student will bring with him must be established at this
time. Students need to be pretested to determine to what
degree they have already mastered the unit objectives.[102]

3. <u>Organize Management</u>: As a systematic
process, instructional development requires well-defined
organization, management and scheduling. Controls must
be established to assure that task assignments are carried
out, that expert assistance is identified and arranged for
when needed, and that appropriate communications take place
with others on ideas, problems, and other developments as
they occur.[103]

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[101]Ibid., p. 636.

[102]Thomas E. Cyrs, Jr. and Rita Lowenthal, <u>op</u>. <u>cit</u>.,
p. 17.

[103]Walter A. Wittich and Charles F. Schuller,
<u>op</u>. <u>cit</u>., p. 638.

II. Develop Stage

4. <u>Identify Objectives</u>: Specific objectives must be spelled out in terms which will permit determination of whether or not they have been met. There are several kinds of objectives, but there are two which are important in the instructional development process. These are terminal performance objectives and enabling objectives. Enabling objectives are intermediate steps to attainment of the terminal or ultimate objectives. The instructional development team must know whether or not terminal objectives have been achieved.[104] Objectives must be stated in terms of student performance. Students must know exactly what is expected of them and how they will be evaluated.[105] Instructional development principles imply a careful study of the kind of treatment required by each student, and the time when it is needed, in order to attain the objectives sought.[106]

5. <u>Specify Methods</u>: Once objectives have been established, the best methods and materials to employ under the circumstances must be selected. The instructional development team must consider what is practicable in terms

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[104]<u>Ibid</u>., p. 638.

[105]Thomas E. Cyrs, Jr. and Rita Lowenthal, <u>op</u>. <u>cit</u>., p. 17.

[106]William Clark Trow, <u>Teacher and Technology</u> (New York: Appleton-Century-Crofts, 1963), p. 119.

of available resources, personnel, equipment, and facilities. At this point in the process, "trade-offs" must be made to reach a workable decision. Some types of alternatives may be too costly or not available. The team must find the best practical alternatives.[107]

6. Construct Prototypes: This is the design, procurement, and production phase of the instructional development process. This stage may involve considerable review and examination of available materials as well as consideration of a variety of instructional approaches.[108] Once the content has been chosen, the media considered most suitable for its presentation will be selected.[109] Production of those instructional materials not available commercially is suggested for consideration at this point. A media production and duplication center should be established locally to help develop the kinds of materials necessary to ensure achievement of the objectives.[110]

III. Evaluation Stage

7. Test Prototypes: During this part of the evaluation stage the team is ready to try out the

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[107] Walter A. Wittich and Charles F. Schuller, op. cit., p. 638.

[108] Ibid., p. 638.

[109] Thomas E. Cyrs, Jr. and Rita Lowenthal, op. cit., p. 17.

[110] Ibid., p. 18.

package that has been selected or produced. It is very probable that certain revisions will be needed before the new system is tried out in a regular classroom, which is the next step in the process.[111]

8. <u>Analyze Results</u>: During this stage of the evaluation process the team will observe all aspects of the program closely and note further adjustments that may be needed. They will test along the way to ascertain how well the enabling objectives are being met, and how well the terminal objectives are being achieved. In addition, data and information for an overall assessment and evaluation by the team will be given consideration.[112]

9. <u>Implement and Recycle</u>: A decision as to whether or not the new system is ready to put into a regular classroom for use must be made by the team during this stage of the evaluation. More than likely, however, it will require certain revisions and retesting before the instructional development team is satisfied with its product. Provisions should be made for continued evaluation and modification even after the product goes into regular use. This implementation is the final step of putting the course or program into practice. We must recognize, however, that continuous feedback should be obtained from learners which

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[111]Walter A. Wittich and Charles F. Schuller, <u>op</u>. <u>cit</u>., p. 639.

[112]<u>Ibid</u>., p. 639.

will eventually lead to a cycle of updating and modification.[113] These field tests and validation procedures provide opportunities to try out newly developed instructional units with a representative sampling of students.[114]

Perhaps the chief value in using a model is to assure that when a full scale instructional development project is attempted all steps or design elements are at least considered. Until recently, the human factors, as they relate to instructional development, have not been given very much attention. Witt notes that leaders in instructional development have not paid as much attention to these factors as they have to the process of designing instruction.[115] Gustafson warns that continued neglect of human factors will result in more and more of what he calls "ID casualties." He goes on to say that he has seen:

> . . . too many examples of faculty members begged, conjoled, and wheedled through an ID project from which a fine product emerged. . . . He (the faculty member) is proud of his product as is the returning war veteran of his purple heart but neither wishes to return to the battle.[116]

The project should probably be considered a failure since the faculty member will more than likely have a

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[113]Carlton W. H. Erickson and David H. Curl, op. cit., p. 77.

[114]Ibid., p. 77.

[115]Paul W. F. Witt, op. cit., p. 16.

[116]Kent L. Gustafson, op. cit., p. 7.

negative attitude toward instructional development and

not wish to engage in it again. In dealing with the human

factor or people aspect of instructional development, it

seems important that peoples' attitudes toward instructional

development be assessed as their attitudes may in large

measure determine the nature of their initial or continued

involvement in ID procedures.[117]

The systems approach to instruction provides teachers

and curriculum designers, or instructional developers with

a bludprint for planning which assists them in examining

an instructional problem and establishing a procedure for

solving it.[118] As a result of this close examination of

the problem at hand more appropriate instructional materials

and teaching strategies can be selected to ensure achievement

of the state objectives.[119] These objectives are not possi-

ble unless they are embedded in an activity. The activity,

in turn, influences the choice and the nature of the

objectives.[120]

Probably the most difficult question to answer in

describing instructional development is the purposes or

[117]Ibid., p. 7.

[118]Charles B. Klasek, op. cit., p. 17.

[119]Thomas E. Cyrs, Jr. and Rita Lowenthal, op. cit.,
p. 17.

[120]James B. MacDonald and Bernice J. Wolfson, "A
Case Against Behavioral Objectives," The Elementary School
Journal, XXXVI, No. 6 (February, 1971), p. 24.

objectives of the system. It is necessary to name the system product that can be counted, weighed, or somehow evaluated to indicate how well the system performs. Crucial to a systems approach is agreement, by all persons viewing the system, on a definition of effectiveness.[121]

As is the case in many other situations, in teaching there are no cut and dried final answers, each situation is unique. The goals that instructional developers are trying to achieve is the improvement of learning and teaching and to permit teachers to interact as human beings in a climate where man controls the environment for their own best purposes. In the case of instructional development it is the students and their goals that most motivate and guide efforts of educational planners.[122] In many of the models that exist in the area of instructional development, the student is the central figure. When planning for teaching, as well as teaching itself, it should be student-centered.[123] Brown, Lewis, and Harcleroad further state that the goal of individualized instruction is to provide each student with appropriate experiences that will cause him to learn to the best of his ability and at his own rate. The central acceptance of each student as the

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[121]Jack E. Bratten, op. cit., pp. 165-166.

[122]James W. Brown, Richard B. Lewis, and Fred F. Harcleroad, op. cit., pp. 3-4.

[123]Ibid., p. 16.

central, all-important guide to processes and resources used to help him reach planned objectives.[124]

One top-priority problem is to increase the choices available to the learner. Already educators are trying, but unless educational technology can provide help for teaching, it won't go anywhere. Instructional technology is providing alternatives to the learners. Innovation must be fitted into the existing educational structure. This may create some difficulties.[125]

The only way we can agree on measures of effectiveness is to keep the student central. The learner always comes first. Even though we use such words as technology, objectives, resources, and efficiency in discussing instructional media, we are not, as some people are quick to assume, trying to program the lives of individual students. What thoughtful educators are attempting to systematize and regulate are facts and facilities, artifacts and apparatus, specimens and situations. What the systems approach does for education is not to confine or control the student so much as to make it possible for him to explore man's knowledge more quickly and to discover, with somewhat

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[124]Ibid., p. 13.

[125]Marilyn Judd, "Educational Technology Reappraisal," Educational Screen and Audiovisual Guide, Vol. 49, No. 2 (February, 1970), p. 33.

less frustration and anxiety, what his own place might be
in the general scheme of the universe.[126]

Haney writes that to enlarge the group who feel
that would benefit by change, it is necessary to do the
following:

> Individual teachers must be shown how the systemization
> of instruction can produce net gains for them for non-
> systematic alternatives, in increased time, money, or
> professional satisfaction; departmental administrators
> must be assigned performance objectives which cannot
> be accomplished by nonsystematic means; and individual
> students must be convinced of the practical advantages
> in scheduling and learning effectiveness without the
> feeling of dehumanization.[127]

Saettler states that if we are to compete adequately
with the urgent needs and problems of education in a swiftly
changing technological culture, a more systematic approach
to communication and learning is vital. He further states
that because the approach to instruction hitherto has been
piecemeal, the result has been a disconnected, fragmented
series of innovations. What is needed, he believes, are
integrated, organized systems of instruction, perhaps
computer-controlled, in which all components, including
teachers, of the instructional process are fitted together
into a system that is capable of providing individualized
instruction for each learner-communicant.[128]

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[126]Carlton W. H. Erickson and David H. Curl, op. cit.,
p. 67.

[127]John G. Haney, op. cit., p. 369.

[128]Paul Saettler, op. cit., p. 270.

Related Studies

Kelley (1960) studied the attitudes of selected teachers toward audiovisual materials. Age, which is closely related to experience was one of the independent variables studied. Kelley found:

> that younger teachers tend to have a more positive attitude toward the use of audiovisual materials than did older teachers. Teachers between the ages of forty and fifty tend to have less positive attitudes towards media than younger teachers and those over fifty years of age tend to be more moderate or conservative in their attitude toward these materials.[129]

A study directed by Ryans had as its major emphasis the dimensions of teacher attitudes, verbal understanding, educational viewpoint and emotional stability. The analysis of data analyzed the degree of difference or similarity which existed between verbally-expressed attitudes and exhibited classroom behavior as a function of: (1) age, (2) experience, (3) marital status, (4) sex, (5) school level, (6) grade, and (7) subject taught. Ryans found that trends with respect to extent of teaching experience are not substantially different from those noted when teachers were classified according to age.[130]

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[129]Gaylen B. Kelley, "A Study of Teachers' Attitudes Toward Audiovisual Materials," Educational Screen and Audiovisual Guide, Vol. 39, No. 3 (March, 1960), pp. 119-121.

[130]David G. Ryans, Characteristics of Teachers: Their Description, Comparison and Appraisal (Washington, D.C.: American Council on Education, 1960), pp. 79-116.

Boutelle indicated in his study that the results

of the analysis clearly indicated the lack of significance

when the respondents were classified as teachers, adminis-

trators, and specialists. In other words there was no

significant difference in attitude toward instructional

development among teachers, administrators, and specialists.

Further Boutelle found no significant difference

between teachers of non-academic (skill-centered) and aca-

demic (subject-centered) subjects.

Boutelle found no significant difference between

teachers with B.S. degrees and teachers with masters degrees.

In summary Boutelle found:

1. The level of professional responsibility (teacher, administrator, policy maker, and specialist) has no significant effect upon the attitudes which are expressed toward instructional development.

2. No significant differences in attitude toward instructional development were found to exist when teachers were classified as having an academic or non-academic curricular responsibility.

3. No significant differences in attitude toward instructional development were found when the teachers were grouped according to the degree held.[131]

Trombley tested three different groups and found

that administrators at the K-8 level had more positive

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[131]Richard J. Boutelle, "The Attitudes Expressed Toward Instructional Development by three Groups as a Function of Selected Professional Variables" (unpublished Ph.D. dissertation, Michigan State University, 1972), pp. 86-88.

attitudes toward instructional development than did adminis-

trators at the 9-12 level.

She also found that teachers at the 9-12 level had

significantly more positive attitudes toward instructional

development than did teachers at the K-8 level. However,

she states that this may have been attributable to chance.

No significant difference in attitude toward instructional

development between males and females was found irrespective

of groups.[132]

A study conducted by Kliejunas at Michigan State

University in 1969 was designed to systematically examine

the relationship between attitude and behavior. Kliejunas's

thesis was that an individual's behavior depends upon, or

is in some way directly influenced by his attitudes. The

result of his study revealed the following:

1. Attitudes, properly conceptualized and measured,
    can be accurate predictors of behavior.

2. The importance of situational attitudes and their
    interaction with attitudes toward objects has been
    generally overlooked in past research in the
    relationship between attitude and behavior.[133]

Perhaps, as Rokeach and Kliejunas point out, there

will remain inconsistent findings as long as the predictive

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[132]Sigrid Ann Trombley, "An Assessment of Attitudes
Expressed Toward Instructional Development by three Groups
as a Function of (1) Teaching Level and (2) Sex" (unpublished
Ph.D. dissertation, Michigan State University, 1971), p. 76.

[133]Peter J. Kliejunas, "Attitudes Toward Object and
Attitude Toward Situation as Predictors of Behavior" (un-
published Ph.D. dissertation, Michigan State University,
1969).

relationship is based solely on attitude toward object and failure to consider the importance of the interaction between the object and the situation.[134]

In a study conducted by Duncan, it was revealed that there was no significant difference between the age categories regardless of group. He tested three different groups, a control group consisting of teachers who had not been exposed to instructional development, an introductory instructional media class, and a group attending an instructional development institute. Duncan further found that the attitudes of respondents in the instructional media class and those of the participants in the instructional development institute were more positive toward instructional development than were the attitudes of respondents among the control group consisting of teachers who had not been exposed to instructional development. He further found no significant difference in the correlation between the variable age and that of attitude, and no significant difference between the variable of experience and that of attitude.[135]

Summary

Authors of attitude studies indicate that knowing an individual's attitude toward an object or situation

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[134]Ibid.

[135]Ibid., pp. 80-85.

makes it possible to predict his response to that object
or situation with some degree of certainty. It is believed
that changing an individual's behavior is one of the best
ways of causing change in the individual's beliefs and
attitudes. Likert-type attitude scales have been widely
used to measure intensity of attitude expression. Atti-
tudes change and develop because they satisfy psychological
needs. Change-agents need to know what need is being
serviced by an attitude in order to determine the nature
of the change.

Changes in educational modes are taking place
rapidly in higher education. Change-agents or instructional
developers must keep instructors alerted to new developments
in the area of instructional technology. With a climate of
strong resistance to change, it is essential that assess-
ment of educator's attitudes toward change be made so that
strategies can be worked out for approaching individual
instructors.

Early adopters of an innovation are usually opinion
leaders, who adopt new ideas early and then influence their
colleagues to accept them. Instructional development is an
innovative process and should be studied accordingly. In-
structional development is a regularly interacting or
independent group of items forming a unified whole. For
the improvement of instruction, systematic planning and

the wise use of technology are basic. It is a problem-solving method of analyzing the educational process and making it more effective.

CHAPTER III

DESIGN OF THE STUDY

Introduction

The purpose of this study was to determine the
express-knowledge of, attitude toward, and experience with
instructional development among Andrews University faculty
members. This chapter consists of descriptions of the
population, procedures that were followed, descriptions
of the instruments: Knowledge of Instructional Development
Profile, Attitude Toward Instructional Development, and
Experience With Instructional Development Profile. The
chapter contains the questions to be answered, the research
hypotheses, the statistical procedures and a short summary.

The results of this study will not be generalized
to other populations. No inferences are to be made to
populations that may be similar to the faculty at Andrews
University.

Procedure

The Procedure for this study include:

1. Origination of a multiple-choice knowledge
profile of the various concepts of instructional develop-
ment identified as, Knowledge of Instructional Development
Profile.

2. Permission to slightly modify, and use, <u>Attitude
Toward Instructional Development</u>, an attitude assessment
scale produced under a grant from the United States Office
of Education, Bureau of Libraries and Educational Technology,
Division of Educational Technology (see Appendices A and F).

3. Development of an experience questionnaire,
<u>Experience with Instructional Development Profile</u>. The
experience profile assesses course credits, hours with
specialists, and courses formally developed.

4. A pilot study with the three-part instrument
with a random sample of the Loma Linda University faculty
at Riverside, California. Loma Linda University is a
sister Seventh-day Adventist institution of higher edu-
cation with a faculty population similar to that of Andrews
University.

5. Modification of the knowledge profile section
of the instrument based on the analysis of results from
the pilot study.

6. Administration of the instrument to the Andrews
University faculty members.

7. The conduction of interviews with department
heads and other administrative officers at Andrews University
who have responsibility for the development and improvement
of instruction.

Instrumentation

Knowledge of Instructional Development Profile was
developed because no other instrument existed to assess
individual's expressed knowledge of instructional develop-
ment. The instrument consists of an eighteen-item multiple-
choice questionnaire. The instrument was administered to
a stratified random sample of the Loma Linda University
faculty to determine its suitability with respondents similar
to those who would make up the target population.

After the questionnaires were returned from the
pilot sample, the various multiple-choice questions were
examined through an item-difficulty discrimination index
(see Appendix G). Using this as a basis for analyses and
with the assistance of instructional development specialists,
one item was discarded, one item was re-written, and several
items were reworded for clarification. Reliability is
unknown.

Attitude Toward Instructional Development was
chosen for use in this study because it is one of the few
instruments available designed specifically to assess indi-
vidual's attitudes toward instructional development. The
instrument consists of a fifty-item Likert-type scale based
on a questionnaire developed by four leading universities
specializing in instructional development. The instrument
has been administered to over 200 groups with nearly 200,000
respondents, undergoing numerous revisions for improvement.

A few words were in the instrument were changed so make it more appealing to respondents in higher education.

Experience With Instructional Development Profile was developed because no instrument existed to gather data concerning respondent's expressed experience with instructional development. The instrument consists of three direct questions asking about credit for course work in the area of instructional development as defined specifically for respondents, clock hours with instructional development specialists, and courses developed with the assistance of instructional development specialists.

The three-part questionnaire was administered to the Andrews University faculty in general session with instructions to complete the area on knowledge prior to referring to the definition of instructional development. After completing the section on knowledge, that section was handed in and the sections on attitude and experience were completed and collected. Following the faculty meeting members who were absent received by mail the entire three-part questionnaire with instructions to complete the know-ledge section before referring to the definition on instructional development. The completed instruments were then returned by inter-department mail.

Interviews

Interviews were conducted with heads of departments and other administrative officers responsible for the

development and improvement of instruction at Andrews
University. No attempt was made to convert interview
responses to quantitative form for purposes of statistical
analysis. Summaries of the responses are reported in
Chapter IV. The interview schedule is listed in Appendix D.

Analysis

The 18 item multiple-choice knowledge profile section
of the three-part questionnaire was presented to a sample
of the Loma Linda University faculty as a 19 item, four
alternative, multiple-choice instrument. Thirty respond-
ents returned the completed questionnaires, which were
analyzed for internal consistency reliability. Some of
the items were termed "too easy" and others somewhat mis-
leading. As a result, one item was discarded, one item was
restructured, and four items were reworded slightly for
clarification.

The three-item experience instrument did not undergo
any changes following the pilot study. Each item was left
open-ended, permitting each respondent to complete them
based on interpretation of his own experience with instruc-
tional development.

The three-part instrument was administered to the
Andrews University faculty. Scores for each of the sections
were summed for each respondent. Means and standard devi-
ations were computed for each of the various faculty groups,

professional responsibility, highest degree held, profes-

sional experience, and sex. Comparisons were made among

means of the various categories of faculty members.

Research Hypotheses

The following research hypotheses were generated

from the questions to be answered by the study. They will

be tested to determine if there is a difference among the

various faculty categories specified. The areas to be

tested are expressed knowledge of, expressed attitude

toward, and expressed experience with instructional develop-

ment among Andrews University faculty members:

1. There is no difference in expressed <u>knowledge</u>
   of instructional development as a function of
   <u>professional responsibility</u> among teachers,
   administrators, and specialists.

2. There is no difference in expressed <u>attitudes</u>
   toward instructional development as a function
   of <u>professional responsibility</u> among teachers,
   administrators, and specialists.

3. There is no difference in expressed <u>experience</u>
   with instructional development as a function
   of <u>professional responsibility</u> among teachers,
   administrators, and specialists.

4. There is no difference in expressed <u>knowledge</u>
   of instructional development as a function of
   <u>highest degree held</u> among faculty members with
   baccalaureate degrees, masters degrees, special-
   ist degrees, and doctorate degrees.

5. There is no difference in expressed <u>attitudes</u>
   toward instructional development as a function
   of <u>highest degree held</u> among faculty members
   with baccalaureate degrees, masters degrees,
   specialists degrees, and doctorate degrees.

6. There is no difference in expressed <u>experience</u> with instructional development as a <u>function</u> of <u>highest degree held</u> among faculty members with baccalaureate degrees, masters degrees, specialist degrees, and doctorate degrees.

7. There is no difference in expressed <u>knowledge</u> of instructional development as a function of <u>professional experience</u> between teachers with less than five years of experience and those with five or more years of experience.

8. There is no difference in expressed <u>attitude</u> toward instructional development as a <u>function</u> of <u>professional experience between</u> teachers with less than five years experience and those with five or more years experience.

9. There is no difference in expressed <u>experience</u> with instructional development as a <u>function</u> of <u>professional experience</u> between faculty members with less than five years experience and those with five or more years experience.

10. There is no difference in expressed <u>knowledge</u> of instructional development as a function of <u>sex</u>, comparing male faculty members and female faculty members.

11. There is no difference in expressed <u>attitude</u> toward instructional development as a <u>function</u> of <u>sex</u>, comparing male faculty members with female faculty members.

12. There is no difference in expressed <u>experience</u> with instructional development as a <u>function</u> of <u>sex</u>, comparing male faculty members with female faculty members.

<u>Limitations</u>

Findings from this study will be limited to the 1973-74 Andrews University faculty members as the population and may not be applicable to other groups.

The three dependent variables (knowledge, attitude, and experience) will be examined separately. No attempt will be made to determine interaction among them.

Summary

The population of this study consisted of 215 of the 235 members of the Andrews University faculty at Berrien Springs, Michigan. The University is made up of the undergraduate college, the School of Graduate Studies, the Seventh-day Adventist Theological Seminary, and the Laboratory School. A three-part questionnaire, Knowledge of Instructional Development Profile, Attitude Toward Instructional Development, and Experience With Instructional Development Profile was used. A demographic data sheet was developed in order to gather information relative to the variables investigated in the study. This data was gathered at the time the instrument was administered. The data was analyzed by direct analysis.

CHAPTER IV

ANALYSIS OF RESULTS

Analysis of Instruments

Before administering the instrument, Knowledge of,
Attitude Toward, and Experience with Instructional Develop-
ment, it was necessary to determine if the instrument was
reliable. See Appendix (A) questionnaire. The knowledge
section was adjusted after pilot questionnaires were returned
to eliminate ambiguous items and to correct vocabulary. The
attitude section was reworded to adjust the vocabulary for
instructors and professors in higher education. Since na-
tional norms exist for the attitude section, reliability
was not a factor. The section on experience with instruc-
tional development did not require refinement since it
was open-ended. The experience section consists of term
credits earned, clock hours spent with instructional
development specialists, and courses developed with the
aid of specialists. Since these three areas could not con-
veniently be combined, they are handled as three separate
dependent variables.

After the instruments were modified, they were ad-
ministered to the entire Andrews University faculty as the
total population. Of approximately 235 full-time and

92

part-time faculty members, 92% returned the completed questionnaires. Approximately 100 respondents completed the instrument during a faculty meeting, with the remainder using the university's interdepartment mail system. The composite scores for each of the dependent variables was subjected to statistical analysis.

Presentation of Population Data

Data for the population, the 215 faculty members, includes the five dependent variables: knowledge, attitude, credits, hours, and courses. Credits, hours, and courses, are a part of the dependent variable, experience. The five areas are each part of the four independent variables: professional responsibility, degree held, professional experience, and sex.

The population data in Table 4.1 identifies for each dependent variable the possible range of scores, the mean

TABLE 4.1. Population Data.

	Total Pop.	Possible Range	Pop. Mean	Actual Range	Pop. Standard Deviation
Knowledge	215	0-90	53.60	15-85	13.29
Attitude	215	50-250	174.04	90-240	27.64
Experience					
Credits	215	1-7	1.40	1-7	.98
Hours	215	1-7	1.43	1-7	1.04
Courses	215	1-7	1.17	1-7	.64

for each variable, the actual range and the standard deviation. The population data provides basic information for interpreting analysis of data in the various tables dealing with written questionnaire information in Chapter IV.

Statistical Analysis

When dealing with population statistics, all differences between means are true differences. Inferences are not usually needed. Ninety-two per cent of faculty members at Andrews University responded to the written questionnaire. "Significant difference" is defined as a difference which would arise with a probability of $\leq$ .10 if random samples of the given sizes were taken from the given finite population with known means and known standard deviations. The probability level of .10 selected as alpha level is not a consideration, that is, the probability of making a type I error (rejection of a true null hypothesis). Inferences are not being made to other populations.

Having found the population means and standard deviations for each dependent variable for the total population and each of the sub-populations, comparisons were made. Statistical procedures are given here for the independent variable, sex, and the dependent variable, knowledge, as an example. The population mean for knowledge in the category of sex is 53.60. For the 151 male faculty members, the sub-population is 52.28, and for the 64 female faculty

members, the sub-population is 56.64. With the above data, the following comparisons were made.

The mean of 52.28 for the 151 male faculty members was placed on a normal curve and compared with the mean of 56.64 for the 64 female faculty members. The means of the two sub-populations were compared as follows:

$$\sigma_{\bar{x}_1} - \bar{x}_2 = \sqrt{\sigma_{\bar{x}_1}^2 + \sigma_{\bar{x}_2}^2} = \sqrt{.5941^2 + 1.3941^2} = 1.5154$$

$$Z = \frac{56.64 - 52.28}{1.5154} = \frac{4.36}{1.5154} = 2.8771$$

The probability that two random samples of the given sizes would differ so greatly is .004 (p=.004).

Such comparisons were made for each of the five dependent variables on each of the four independent variables. In each case comparisons were made of all possible pairs of means among the sub-populations for a given independent variable.

Sub-Population Data and Analysis

Each of the independent variables has two or more sub-populations. Means and standard deviations were recorded for sub-populations for each of the five dependent variables. Professional responsibility consists of teachers, administrators, and specialists. Highest degree held is made up of baccalaureate degrees, masters degrees, specialist degrees, and doctorate degrees. Professional experience

consists of faculty members with four or less years of professional experience and those with five or more years of professional experience. Male faculty members and female faculty members make up the category of sex.

Table 4.2 shows, for the professional responsibility sub-population, the differences of means in scores in column 2. In column 3, the Z relates the sub-population along the normal curve; a difference between two sub-population means along a normal curve with a mean equal to zero (mean = 0). The fourth column P shows the probability of this Z arising by random sampling from the whole population.

Professional Responsibility

Knowledge

In the dimension of professional responsibility, the population is divided into three categories, or sub-populations: teachers, administrators, and specialists. For each of the five dependent variables, the mean scores of the sub-populations were compared to each other.

The sub-population means for the three categories of faculty members are: 144 teachers, 54.58; 43 administrators, 54.76; 28 specialists, 51.25.

It will be noted that all of the figures in the "P" column in Table 4.2 are greater than .10. Therefore, in

TABLE 4.2. Professional Responsibility--Knowledge Contrasts.

Contrasts		Difference of Means	Z	P
Teacher	N=144 X̄=54.58			
Administrator	N=43 X̄=54.76	.28	.15	.88
Teacher	N=144 X̄=54.58			
Specialist	N=28 X̄=51.25	3.33	1.37	.17
Administrator	N=43 X̄=54.76			
Specialist	N=28 X̄=51.25	3.61	1.22	.22

*Denotes a significant difference.

accordance with the criterion established on page 94, none of the differences is significant.

The data presented in Table 4.2 fail to reject the following hypothesis:

> There is no difference in expressed knowledge of instructional development as a function of professional responsibility among teachers, administrators, and specialists.

Attitude

In the dimension of professional responsibility, the sub-population mean for the three categories of faculty members are: 144 teachers, 170.95; 43 administrators, 175.95; 28 specialists, 187.00.

98

It will be noted in Table 4.3 that only one of the figures in the "P" column is greater than .10. The other two figures in the "P" column are smaller than .10. Therefore, in accordance with the criterion established on page 94, the difference between the mean scores of teachers and administrators is not significant. However, specialists attitude scores are significantly more positive than the scores of the teachers. Likewise, specialists attitude scores are significantly more positive than that of the administrators.

TABLE 4.3. Professional Responsibility--Attitude Contrasts.

Contrasts		Difference of Means	Z	P
Teacher	N=144 $\overline{X}$=170-95			
Administrator	N=43 $\overline{X}$=175.95	5.01	1.25	.21
Teacher	N=144 $\overline{X}$=170.95			
Specialist	N=28 $\overline{X}$=187.00	16.06	3.18	.002*
Specialist	N=28 $\overline{X}$=187.00			
Administrator	N=43 $\overline{X}$=175.95	11.05	1.79	.075*

*Denotes a significant difference.

The data presented in Table 4.3 fail to reject part of the following hypothesis:

> There is no difference in expressed attitudes toward instructional development as a function of professional responsibility among teachers, administrators and specialists.

Experience (Credits)

In the area of professional responsibility, the subpopulation means for the three categories of faculty members are: 144 teachers 1.38; 43 administrators 1.58; 28 specialists 1.29.

It will be noted in Table 4.4 that all of the figures in the "P" column are greater than .10. Therefore, in

TABLE 4.4. Professional Responsibility—Credits Contrasts.

Contrasts		Difference of Means	Z	P
Teacher	N=144 X̄=1.38			
Administrator	N=43 X̄=1.58	.20	1.41	.16
Teacher	N=144 X̄=138			
Specialist	N=28 X̄=1.29	.09	.50	.62
Administrator	N=43 X̄=1.58			
Specialist	N=28 X̄=1.29	.29	1.32	.19

*Denotes a significant difference.

accordance with the criterion established on page 94, none of the differences is significant.

The data presented in Table 4.4 fail to reject the following hypothesis:

> There is no difference in expressed experience (term credits earned) with instructional development as a function of professional responsibility among teachers, administrators and specialists.

The independent variable, professional experience consists of: (1) the number of term credits earned by faculty members in the area of instructional development, (2) the number of clock hours spent with instructional development specialists, and (3) the number of courses, currently being taught, developed with the aid of instructional development specialists.

Because the three areas of professional experience could not be combined into one summed score, they are being treated as separate dependent variables. Scores were compared, statistically analyzed, and reported in conjunction with related hypothesis.

Experience (Hours)

In the area of professional responsibility, the sub-population means for the three categories of faculty members are: 144 teachers, 1.44; 43 administrators, 1.49; 28 specialists, 1.39.

It will be noted in Table 4.5 that all of the figures in the "P" column are greater than .10. Therefore, in

TABLE 4.5. Professional Responsibility--Experience (Hours)
                Contrasts.

Contrasts	Difference of Means	Z	P
Teacher N=144 $\overline{X}$=1.44			
Administrator N=43 $\overline{X}$=1.49	.05	.33	.74
Teacher N=144 $\overline{X}$=1.44			
Specialist N=28 $\overline{X}$=1.39	.05	.26	.80
Administrator N=43 $\overline{X}$=1.49			
Specialist N=28 $\overline{X}$=1.39	.10	.43	.67

*Denotes a significant difference.

accordance with the criterion established on page 94, none of the differences is significant.

The data presented in Table 4.5 fail to reject the following hypothesis:

> There is no difference in expressed experience (hours) with instructional development as a function of professional responsibility among teachers, administrators, and specialists.

Experience (Courses)

In the area of professional responsibility, the sub-population means for the three categories of faculty members are: 144 teachers 1.15; 43 administrators 1.35; 28 specialists 1.04.

It will be noted in Table 4.6 that only one of the figures in the "P" column is greater than .10. The other two figures in the "P" column are smaller than .10. Therefore, in accordance with the criterion established on page 94, the difference between the mean scores of teachers and administrators is significant. Administrators scored significantly higher than teachers. The difference of means between teachers and specialists is not significant. The administrators scored significantly higher than the specialists in the area of courses developed by instructional development specialists.

The data presented in Table 4.6 fail to fully reject the following hypothesis:

TABLE 4.6.   Professional Responsibility--Experience (Hours)
Contrasts.

Contrasts		Difference of Means	Z	P
Teacher	N=144 $\overline{X}$=1.15			
Administrator	N=43 $\overline{X}$=1.35	.20	2.18	.03*
Teacher	N=144 $\overline{X}$=1.15			
Specialist	N=28 $\overline{X}$=1.04	.11	.95	.34
Administrator	N=43 $\overline{X}$=1.35			
Specialist	N=28 $\overline{X}$=1.04	.31	2.19	.03*

*Denotes a significant difference.

There is no difference in expressed experience
(courses) with instructional development as a
function of professional responsibility among
teachers, administrators, and specialists.

Highest Degree Held

Knowledge

In the area of highest degree held, the sub-population
means for the four degree levels are: 12 faculty members
with baccalaureate degrees, 52.91; 102 faculty members with
masters degrees, 54.75; 11 faculty members with specialist
degrees, 49.09; 90 faculty members with doctorate degrees
52.94.

It will be noted in Table 4.7 that all of the figures in the "P" column are greater than .10. Therefore, in accordance with the criterion established on page 94, none of the differences is significant.

TABLE 4.7. Degree Held--Knowledge Contrasts.

Contrasts		Difference of Mean	Z	P
Baccalaureate Degrees	N=12 X̄=52.91			
Masters Degrees	N=102 X̄=54.75	1.84	.48	.63
Baccalaureate Degrees	N=12 X̄=52.91			
Specialist Degrees	N=11 X̄=49.09	3.82	.71	.48
Baccalaureate Degrees	N=12 X̄=52.91			
Doctorate Degrees	N=90 X̄=52.94	.03	.01	.99
Masters Degrees	N=102 X̄=54.75			
Specialist Degrees	N=11 X̄=49.09	5.66	1.41	.16
Masters Degrees	N=102 X̄=54.75			
Doctorate Degrees	N=90 X̄=52.94	1.81	1.26	.21
Specialist Degrees				
Doctorate Degrees	N=90 X̄=52.94	3.85	.95	.35

*Denotes a significant difference

The data in Table 4.7 fail to reject the following hypothesis:

> There is no difference in expressed attitudes toward instructional development as a function of highest degree held among faculty members with baccalaureate degrees, masters degrees, specialist degrees, and doctorate degrees.

Attitude

In the area of highest degree held, the sub-population means for the four degree levels are: 12 faculty members with baccalaureate degrees, 180.58; 102 faculty members with masters degrees, 174.77; 11 faculty members with specialist degrees, 170.91; 90 faculty members with doctorate degrees, 172.72.

It will be noted in Table 4.8 that all of the figures in the "P" column are greater than .10. Therefore, in accordance with the criterion set up on page 94, none of the differences is significant.

The data in Table 4.8 fail to reject the following hypothesis:

> There is no difference in expressed attitudes toward instructional development as a function of highest degree held among faculty members with baccalaureate degrees, masters degrees, specialist degrees, and doctorate degrees.

Experience (Credits)

In the area of highest degree held, the sub-population means for the four degree levels are: 12 faculty members with baccalaureate degrees, 1.42; 102 faculty members with

TABLE 4.8. Degree Held--Attitude Contrasts.

Contrasts		Difference of Means	Z	P
Baccalaureate Degrees	N=12 $\overline{X}$=180.58			
Masters Degrees	N=102 $\overline{X}$=174.77	5.81	.72	.47
Baccalaureate Degrees	N=12 $\overline{X}$=180.58			
Specialist Degrees	N=11 $\overline{X}$=170.91	9.67	.86	.39
Baccalaureate Degrees	N=12 $\overline{X}$=180.58			
Doctorate Degrees	N=90 $\overline{X}$=172.72	7.86	.97	.33
Masters Degrees	N=102 $\overline{X}$=174.77			
Specialist Degrees	N=11 $\overline{X}$=170.91	3.86	.46	.65
Masters Degrees	N=102 $\overline{X}$=174.77			
Doctorate Degrees	N=90 $\overline{X}$=172.72	2.05	.69	.49
Specialist Degrees	N=11 $\overline{X}$=170.91			
Doctorate Degrees	N=90 $\overline{X}$=172.72	1.81	.21	.83

*Denotes a significant difference.

masters degrees, 1.50; 11 faculty members with specialists degrees, 1.45; 90 faculty members with doctorate degrees, 1.28.

It will be noted in Table 4.9 that all, but one of the figures in the "P" column are greater than .10. Therefore, in accordance with the criterion set up on page 94, only one comparison is significantly different. Comparison of means of faculty members with masters degrees (mean of 1.50) is significantly higher than the mean of faculty members with doctorate degrees (mean of 1.28). Therefore the data in Table 4.9, in all but one comparison, fail to reject the following hypothesis:

> There is no difference in expressed experience (credits) with instructional development as a function of highest degree held among faculty members with baccalaureate degrees, masters degrees, specialist degrees, and doctorate degrees.

Experience (Hours)

In the area of highest degree held, the sub-population means for the four degree levels are: 12 faculty members with baccalaureate degrees, 1.42; 102 faculty members with masters degrees, 1.34; 11 faculty members with specialist degrees, 1.45; 90 faculty members with doctorate degrees, 1.56.

It will be noted in Table 4.10 that all, but one of the figures in the "P" column are greater than .10. Therefore, in accordance with the criterion set up on page 94,

TABLE 4.9. Degree Held--Experience (Credits) Contrasts.

Contrasts		Difference of Means	Z	P
Baccalaureate Degrees	N=12 X̄=1.42			
Masters Degrees	N=102 X̄=1.50	.08	.28	.78
Baccalaureate Degrees	N=12 X̄=12			
Specialist Degrees	N=11 X̄=1.45	.03	.08	.94
Baccalaureate Degrees	N=12 X̄=1.42			
Doctorate Degrees	N=90 X̄=1.28	.14	.48	.63
Masters Degrees	N=102 X̄=1.50			
Specialist Degrees	N=11 X̄=1.45	.05	.17	.87
Masters Degrees	N=102 X̄=1.50			
Doctorate Degrees	N=90 X̄=1.28	.22	2.07	.04*
Specialist Degrees	N=11 X̄=1.45			
Doctorate Degrees	N=90 X̄=1.28	.17	.57	.57

*Denotes a significant difference.

TABLE 4.10. Degree Held--Experience (Hours) Contrasts.

Contrasts	Difference of Means	Z	P
Baccalaureate Degrees N=12 $\overline{X}$=1.42			
Masters Degrees N=102 $\overline{X}$=1.34	.08	.26	.79
Baccalaureate Degrees N=12 $\overline{X}$=1.42			
Specialist Degrees N=11 $\overline{X}$=1.43	.03	.07	.94
Baccalaureate Degrees N=12 $\overline{X}$=1.42			
Doctorate Degrees N=90 $\overline{X}$=1.50	.14	.46	.65
Masters Degrees N=102 $\overline{X}$=1.34			
Specialist Degrees N=11 $\overline{X}$=1.45	.11	.35	.73
Masters Degrees N=102 $\overline{X}$=1.34			
Doctorate Degrees N=90 $\overline{X}$=1.56	.22	1.95	.05*
Specialist Degrees N=11 $\overline{X}$=1.45			
Doctorate Degrees N=90 $\overline{X}$=1.56	.11	.33	.74

*Denotes a significant difference.

only one comparison is significantly different. Comparison

of means of faculty members with masters degrees (mean of

1.34) is significantly smaller than the mean of faculty

members with doctorate degrees (mean of 1.56). Therefore

the data in Table 4.10, in all but one comparison, fail

to reject the following hypothesis:

> There is no difference in expressed experience
> (hours) with instructional development as a
> function of highest degree held among faculty
> members with baccalaureate degrees, masters degrees,
> specialist degrees, and doctorate degrees.

In the area of highest degree held, the sub-population

means for the four degree levels are: 12 faculty members

with baccalaureate degrees 1.17; 102 faculty members with

masters degrees, 1.20; 11 faculty members with specialist

degrees, 1.09; 90 faculty members with doctorate degrees, 1.16.

It will be noted in Table 4.11 that all of the figures

in the "P" column are greater than .10. Therefore, in

accordance with the criterion set up on page 94, none of

the differences is significant. The data in Table 4.11

fail to reject the following hypothesis:

> There is no difference in expressed experience
> (courses) with instructional development as a
> function of highest degree held among faculty
> members with baccalaureate degrees, masters
> degrees, specialist degrees, and doctorate degrees.

Professional Experience

Knowledge

In the area of professional experience, the sub-

population means for the two levels are: 31 faculty members

TABLE 4.11. Degree Held--Experience (Courses) Contrasts.

Contrasts	Difference of Means	Z	P
Baccalaureate Degrees N=12 $\overline{X}$=1.17			
Masters Degrees N=102 $\overline{X}$=1.20	.03	.16	.87
Baccalaureate Degrees N=12 $\overline{X}$=1.17			
Specialist Degrees N=11 $\overline{X}$=1.09	.08	.31	.76
Baccalaureate Degrees N=12 $\overline{X}$=1.17			
Doctorate Degrees N=90 $\overline{X}$=1.16	.01	.05	.96
Masters Degrees N=102 $\overline{X}$=1.20			
Specialist Degrees N=11 $\overline{X}$=1.09	.11	.57	.57
Masters Degrees N=102 $\overline{X}$=1.20			
Doctorate Degrees N=90 $\overline{X}$=1.16	.04	.58	.56
Specialist Degrees N=11 $\overline{X}$=1.09			
Doctorate Degrees N=90 $\overline{X}$=1.16	.07	.36	.72

*Denotes a significant difference.

with less than five years of professional experience, 51.45;
184 faculty members with five or more years of professional
experience, 53.96.

It will be noted in Table 4.12 that the figure in
the "P" column is greater than .10. Therefore, in ac-
cordance with the criterion set up on page 94, the differ-
ences are not significant. The data in Table 4.12 support
the following hypothesis:

> There is no difference in expressed knowledge of
> instructional development as a function of pro-
> fessional experience between faculty members with
> less than five years of professional experience
> and those with five or more years of professional
> experience.

TABLE 4.12. Professional Experience--Knowledge Contrast.

Contrasts		Difference of Means	Z	P
Four or Less	N=31 $\bar{X}$=51.45			
Five or More	N=184 $\bar{X}$=53.96	2.51	1.12	.26

*Denotes a significant difference.

Attitude

In the area of professional experience, the sub-
population means for the two levels are: 31 faculty members
with four or less years of professional experience, 175.06;

184 faculty members with five or more years of professional experience 173.87.

It will be noted in Table 4.13 that the figure in the "P" column is greater than .10. Therefore, in accordance with the criterion set up on page 94, the difference is not significant. The data in Table 4.13 support the following hypothesis:

> There is no difference in expressed attitudes toward instructional development as a function of professional experience between teachers with less than five years professional experience and those with five or more years of professional experience.

TABLE 4.13. Professional Experience--Attitude Contrast.

Contrasts		Difference of Means	Z	P
Four or Less	N=31 $\overline{X}$=175.06			
Five or More	N=184 $\overline{X}$=173.87	1.19	.26	.80

*Denotes a significant difference.

Experience (Credits)

In the area of professional experience, the sub-population means for the two levels are: 31 faculty members with less than five years of professional experience, 1.13; 183 faculty members with five or more years of professional experience, 1.46.

It will be noted in Table 4.14 that the figure in the "P" column is less than .10. Therefore, in accordance with the criterion established on page 94, there is a significant difference between the number of term credits earned in the area of instructional development between faculty members with four or less years of professional experience and those with five or more years of professional experience. Those with five or more years have a mean score significantly greater than faculty members with less than five years. The data presented in Table 4.14 fail to reject the following hypothesis:

> There is no difference in expressed experience (credits) with instructional development as a function of professional experience between faculty members with less than five years of professional experience and those with five or more years of professional experience.

TABLE 4.14. Professional Experience--Experience (Credits) Contrast.

Contrasts		Difference of Means	Z	P
Four or Less	N=21 $\overline{X}$=1.13			
Five or More	N=184 $\overline{X}$=1.46	.33	1.95	.05*

*Denotes a significant difference.

Experience (Hours)

In the area of professional experience, the sub-population means for the two levels are: 31 faculty members with four or less years of professional experience, 1.30; 184 faculty members with five or more years of professional experience, 1.46.

It will be noted in Table 4.15 that the figure in the "P" column is greater than .10. Therefore, in accordance with the criterion established on page 94, there is no significant difference between faculty members with four with less than five years of professional experience, 1.30; 184 faculty members with five or more years of professional experience, 1.46.

> There is no difference in expressed experience (hours) with instructional development as a function of professional experience between faculty members with less than five years of professional experience and those with five or more years of professional experience.

TABLE 4.15.   Professional Experience--Experience (Hours) Contrast.

Contrasts		Difference of Means	Z	P
Four or Less	N=31 $\overline{X}$=1.30			
Five or More	N=184 $\overline{X}$=1.46	.16	.89	.37

*Denotes a significant difference.

Experience (Courses)

In the area of professional experience, the sub-population means for the two levels are: 31 faculty members with less than five years of professional experience, 1.13; 184 faculty members with five or more years of professional experience, 1.18.

It will be noted in Table 4.16 that the figure in the "P" column is greater than .10. Therefore, in accordance with the criterion set up on page 94, the difference between the two mean scores is not significant. The data in Table 4.16 support the following hypothesis:

> There is no difference in expressed experience (courses) with instructional development as a function of professional experience between faculty members with less than five years of professional experience and those with five or more years of professional experience.

TABLE 4.16. Professional Experience--Experience (Courses) Contrast.

Contrasts		Difference of Means	Z	P
Four or Less	N=31 $\bar{X}$=1.13			
Five or More	N=184 $\bar{X}$=1.18	.05	.47	.64

*Denotes a significant difference.

Sex

Knowledge

When comparing male faculty members and female faculty members, the sub-population means for the two categories are: 64 female faculty members, 56.64; 151 male faculty members, 52.28.

It will be noted in Table 4.17 that the figure in the "P" column is smaller than .10. Therefore, in accordance with the criterion established on page 94, the difference of the means between male faculty members (mean of 52.28) and female faculty members (mean of 56.64) is a significant difference. The females scored significantly higher than the male faculty members. Therefore, the data in Table 4.17 fail to support the following hypothesis:

> There is no difference in expressed knowledge of instructional development as a function of sex, comparing male faculty members with female faculty members.

TABLE 4.17. Sex--Knowledge Contrast.

Contrast	Difference of Means	Z	P
Female N=64 $\overline{X}$=56.64			
Male N=151 $\overline{X}$=52.28	4.36	2.88	.004*

*Denotes a significant difference.

Attitude

When comparing male faculty members with female faculty members, the sub-population means for the two categories are: 151 males, 172.13; 64 females, 178.41.

It will be noted in Table 4.18 that the figure in the "P" column is smaller than .10. Therefore, in accordance with the criterion established on page 94, the difference of the means between the female faculty members (mean of 56.64) and the male faculty members (mean of 52.28) is a significant difference. The female faculty members scored significantly higher than the male faculty members. Therefore the data in Table 4.18 fail to support the following hypothesis:

> There is no difference in expressed attitude toward instructional development as a function of sex, comparing male faculty members with female faculty members.

TABLE 4.18.   Sex--Attitude Contrast.

Contrast	Difference of Means	Z	P
Female N=64 $\overline{X}$=178.41			
Male N=151 $\overline{X}$=172.13	6.28	1.99	.046[*]

[*]Denotes a significant difference.

Experience (Credits)

When comparing male faculty members with female faculty members, the sub-population means for the two categories are: 151 male faculty members, 1.40; 64 female faculty members, 1.40.

It will be noted in Table 4.19 that the mean of the male faculty members is equal to the mean of the female faculty members. No difference exists between them.

TABLE 4.19. Sex--Experience (Credits) Contrast.

Contrast		Difference of Means	Z	P
Females	N=64 $\overline{X}$=1.40			
Male	N=151 $\overline{X}$=1.40	0	-	-

*Denotes a significant difference.

Experience (Hours)

When comparing male faculty members with female members, the sub-population means for the two categories are: 151 male faculty members, 1.38; 64 female faculty members, 1.53.

It will be noted in Table 4.20 that the figure in the "P" column is greater than .10. Therefore, in accordance with the criterion established on page 94, the

TABLE 4.20. Sex--Experience (Hours) Contrast.

Contrast		Difference of Mean	Z	P
Females	N=64 $\overline{X}$=1.53			
Males	N=151 $\overline{X}$=1.38	.15	1.26	.21

*Denotes a significant difference.

difference between the scores is not significant. The data

presented in Table 4.20 support the following hypothesis:

> There is no difference in expressed experience
> (hours) with instructional development as a func-
> tion of sex, comparing male faculty members with
> female faculty members.

Experience (Courses)

When comparing male faculty members with female

faculty members, the sub-population means for the two

categories are: 151 male faculty members, 1.11; 64 female

faculty members, 1.33.

It will be noted in Table 4.21 that the figure in

the "P" column is smaller than .10. Therefore in accord-

ance with the criterion established on page 94, the differ-

ence is a significant difference. Female faculty members

have developed a meaningfully larger number of courses than

have male faculty members. The data presented in Table 4.21

fail to support the following hypothesis:

TABLE 4.21. Sex--Experience (Courses) Contrast.

Contrast	Difference of Mean	Z	P
Females N=64 $\overline{X}$=1.33			
Males N=151 $\overline{X}$=1.11	.22	3.02	.0026*

*Denotes a significant difference.

There is no difference in expressed experience (courses) with instructional development as a function of sex, comparing male faculty members with female faculty members.

Interviews

The interview questions were structured carefully and revised a number of times before they were tested. Several members of the Department of Education, who carry responsibility for coordinating specific areas, were used as interviewees during the pilot study. Only a few questions needed further clarification. It was decided to leave the questions as they were in printed form and expand their definitions during the actual interviews. As it turned out, this procedure proved to be very practical, as a variety of different concepts were explored for each interview question. Interview questions are displayed in Appendix .

Interviews were conducted with 94% (39 of 42) of Andrews University department heads and other administrative officers responsible for the development and improvement of instruction. All administrative officers participated in the interviews in a serious and professional manner. Nearly all had completed the written questionnaire earlier. Nearly all had studied in advance the definitions of instructional development, the graphic model, and the interview outline of questions. Nearly all of them expressed further interest in the subject of instructional development.

Related Fields or Departments

The following departments were grouped according to related fields:

Mathematics and Science Departments--Seven departments: Agriculture, Biology, Chemistry, Engineering, Mathematics, Nursing, and Physics.

Humanities Departments--Five departments: Behavioral Science, English, Geography, History and Political Science, and Modern Languages.

Religion Departments--Six of seven departments: Religion department of the undergraduate school; Church History, Church and Ministry, Mission, New Testament, Old Testament, and Theology departments of the Seminary.

Educational Skills Departments--Fourteen of sixteen departments: Home Economics, Business Administration, Communications, Library Science, Secretarial Science, Technology and Industrial Education, Occupational

Education, Physical Education, Education. The
following sub departments of Education: Student
Teaching, Research, Administration, Curriculum and
Supervision, Counselling and Guidance. The Labo-
ratory School.

Fine Arts Departments--Two responding: Music and
Art.

Administrative Officers--Five responding: President,
Vice President for Academic Administration, Dean of
Arts and Sciences, Dean of the School of Graduate
Studies, and Dean of the Seventh-day Adventist
Theological Seminary.

Interview Questions

Nine basic questions were used in the interview out-

line. Respondents were given the interview questions,

definitions of instructional development, and a graphic

model prior to the actual interview. The nine interview

questions, along with suggested alternative responses are

listed in Appendix .

A summary of each of the questions is reported here

in table format.

Question 1: Are you aware of committees that are
             currently responsible for the develop-
             ment and improvement of instruction at
             Andrews University?

Twenty-seven respondents indicated that they were

aware of university-wide committees responsible for the

development and improvement of instruction. Twelve indi-

cated that they were not aware of university-wide committees.

TABLE 4.22. Data Compiled from Question One.

Related Fields	Responses	
	Aware	Not Aware
Mathematics and Science	6	1
Humanities	4	1
Religion	2	4
Educational Skills	8	6
Fine Arts	2	-
Administrative Officers	5	-

University-wide Committees

Four university-wide committees for the development and improvement of instruction were identified: Fourteen interviews identified the "Courses and Curricula Committee." Eight persons identified the "Academic Policies Committee." Thirteen officers identified the "Instruction and Research Committee." Six of them identified the "Teacher Education Committee."

Committee identification and descriptions of responsibilities are listed in Appendix . The four committees for establishing and approving course offerings, rather than for the purpose of developing or improving instruction using instructional development techniques.

Question 2: Are you aware of steps currently being taken for the development or improvement of instruction at Andrews University?

TABLE 4.23.   Data Compiled from Question Two.

Related Fields	Responses	
	Yes	No
Mathematics and Science	6	1
Humanities	4	1
Religion	-	6
Educational Skills	9	5
Fine Arts	1	1
Administrative Officers	5	-

Twenty-five respondents indicated that they were aware and fourteen indicated that they were not aware of steps currently being taken for the development and improvement of instruction at Andrews University.

University-wide Procedures

Twelve department heads and other administrative officers identified a seminar conducted by the Vice-president for Academic Administration for new faculty members. Seven of them identified "student evaluation of faculty members" as a university-wide procedure for the improvement of instruction. One member indicated that a faculty meeting on "behavioral objectives" had been conducted during the 1972-73 calendar year.

Question 3: What steps are being taken to evaluate, develop, or improve instruction in your department?

TABLE 4.24. Data Compiled from Question Three.

Related Fields	Responses	
	Some	None
Mathematics and Science	2	5
Humanities	5	-
Religion	5	1
Educational Skills	9	5
Fine Arts	2	-
Administrative Officers	5	-

Twenty-eight respondents indicated that some steps were being taken in their department or school to improve instruction. Eleven indicated that no steps were being taken to improve instruction in their departments. Question number three invited respondents to "list" the steps being taken to evaluate, develop, or improve instruction in their departments. A summary of their responses follows.

Summaries of Question Number
Three Responses

Respondents in the Mathematics and Science departments indicated that most instructional improvement among their faculty members is being handled in department

faculty meetings and on an informal basis. Professional literature is shared and teaching methods are given consideration as new programs are being formulated for approval. The Engineering department is in the process of completely revising its courses as a result of becoming part of the newly established College of Technology.

Respondents in the Humanities Departments reported that they usually attack the problems of instructional improvement on an informal basis, as well as in formal department faculty meetings. Matters of grading procedures, laboratory usage, teaching methods, and professional journal articles are given formal consideration. Experienced teachers assist new faculty members on a team arrangement as syllabi are formulated and revised. Some are using and considering various instructional media as alternative approaches to present teaching practices.

In the religion departments, surveys are being conducted among students to assist in determining effective instructional procedures. Behavioral objectives are being formulated for some courses. New courses are being structured for the newly approved Doctor of Ministry program in the Seminary. Most evaluative procedures are currently subjective and informal in nature.

A variety of instructional improvement procedures were reported by department chairmen in the area of Educational Skills. One department is in the process of

finalizing its philosophy and getting into the areas of goals and objectives. National tests to consider the competency of teachers is a consideration of another. Brain storming sessions on the evaluation and assessment of both the undergraduate and graduate programs are conducted by joint student-faculty committees.

One department chairman indicated that the evaluation, improvement and development of courses is being left up to each individual teacher. Many members are veterans who have tried various methods and know which ones will work effectively.

NCATE (The National Council on Accrediting Teacher Education) requirements are prompting an examination of methods, goals, objectives, textbooks, and syllabi. Courses are being structured in sequence, audiovisual materials are being evaluated, and faculty-student committees are assigned to evaluate procedures and methods.

In the Fine Arts departments, regular department faculty meetings are scheduled to discuss instructional and curricula problems, thereby attempting to increase teacher efficiency. In this field, subjective and self-evaluation are considered appropriate, since much instruction is handled on a one-to-one basis.

Administrative officers are conducting surveys among faculty members and students as a means of looking for areas

of weakness. The deans are meeting with department faculties in an effort to identify better instructional methods. Club subscriptions to several instructional journals are shared among groups of faculty members. At present, comprehensive examinations are undergoing critical examination by select faculty committees, classrooms are visited, syllabi are inspected, and evaluations are made to assist in determining effective methods of instruction.

Question 4: Have members of your department been involved in in-service training, professional meetings, or assigned committee work to develop or improve instruction in your department?

TABLE 4.25. Data Compiled from Question Four.

	Responses	
Related Fields	Yes	No
Mathematics and Science	7	-
Humanities	5	-
Religion	6	-
Educational Skills	10	4
Fine Arts	2	-
Administrative Officers	5	-

Thirty-five respondents indicated that members of their departments had been involved in in-service training,

professional meetings or local committees for the purpose

of improving instruction. Only four indicated that members

of their department had not been involved in such activi-

ties.

Question 5: How familiar are you with instructional
development as defined in accompanying
materials?

TABLE 4.26. Data Compiled from Question Five.

Related Fields	Very Familiar	Familiar	Vaguely Familiar	Unfamiliar
Mathematics and Science	-	6	1	-
Humanities	-	2	1	2
Religion	-	3	-	3
Educational Skills	4	4	3	3
Fine Arts	-	-	1	1
Administrative Officers	-	1	3	1

Four respondents indicated that they were "very

familiar" with instructional development. Nine of them

indicated that they were "familiar." Sixteen of them

suggested that they were "vaguely familiar," and ten indi-

cated that they were "unfamiliar" with the concepts of

instructional development as defined for them.

Question 6: Are you interested in having a concerted effort for in-service training in instructional development by specialists for faculty members in your department?

TABLE 4.27. Data Compiled from Question Six.

Related Fields	Very Interested	Interested	Merely Interested	Uninterested
Mathematics and Science	2	5	-	-
Humanities	-	3	2	-
Religion	1	3	1	1
Educational Skills	7	4	2	1
Fine Arts	-	1	-	1
Administrative Officers	-	3	-	2

Ten of the respondents indicated that they were "very interested" in learning more about instructional development. Nineteen indicated that they were "interested." Five suggested that they were "merely interested," and five indicated that they were "uninterested" in having a concerted effort for in-service training in the area of instructional development.

Question 7: Do you believe that present practices and procedures at Andrews University in the area of instructional development are adequate?

TABLE 4.28. Data Compiled from Question Seven.

Related Fields	Very Adequate	Adequate	Undecided	Nearly Inadequate	Inadequate
Mathematics and Science	-	-	-	6	1
Humanities	-	-	4	1	-
Religion	-	-	3	2	1
Educational Skills	-	-	1	8	5
Fine Arts	-	-	1	1	-
Administrative Officers	-	-	-	2	3

None of the respondents indicated that they felt the instructional development procedures and practices at Andrews University were "very adequate," or even "adequate." Nine respondents indicated that they were "undecided" about the adequacy of ID practices at Andrews. Twenty felt that they were "nearly inadequate," and ten believed them to be "inadequate."

Question 8: What recommendations would you give to instructional developers in order to improve instruction and instructional development procedures at Andrews University?

Chairmen of the Mathematics and Science Departments recommended that various approaches to the development of instruction be presented. Those who sincerely desire to

get involved in instructional development are likely to do

so without being prompted. If faculty members are not

forced into ID, and permitted to proceed on a voluntary

basis, the results will be more effective. Rather than

approaching ID on a university-wide basis, working with

individual departments may be more appropriate. One person

suggested that instructional development techniques would

be more effectively presented by a professional instructional

developer employed full-time by the university.

The Humanities Department personnel indicated that

ID procedures should be spelled out specifically. Most

teachers have strong desires to teach more effectively and

are looking for procedures and assistance from professional

instructional developers.

Religion Department respondents suggested the small

group approach with instructional developers meeting with

individual departments. They further indicated that instruc-

tional development workshops be conducted without credit

or grades explicitly for college and university teachers.

The Educational Skills departments made a number of

suggestions that require in-depth consideration. It was

felt that a public relations procedure is necessary to

assist faculty members in becoming aware of instructional

development techniques and their value in improving instruc-

tion in all areas. Several members believe that released

time is essential and that faculty members ought to be

employed for 52 weeks, but not be required to teach during one of the four quarters. This would give time to work with other faculty members and ID specialists, perhaps during the summer months. Lighter teaching loads over a longer period of time would be another alternative to the released time concept.

Care should be taken when approaching faculty members from the content departments. Many instructors are hesitant to become involved in the use of new methods and new instructional media. Developers must be aware of such resistance and make indirect approaches through the use of newer instructional media, for example. The identification of innovation leaders and change agents among faculty members appears to be essential. Avoid the use of specialized vocabulary that may tend to offend those who are not familiar with it. Provide more time and assistance from the Teaching Materials Center and the Audiovisual Center so that faculty members have access to materials, equipment, and graphic procedures.

Fine Arts department heads believe that instructional developers must restrict their work along departmental lines in order to successfully work in a cooperative manner with faculty members. Encouragement from administrative officers in making available released time, available space, appropriate assistance, materials, media, and finances were suggested.

Administrative officers suggested a low-profile ap-
proach to avoid departmental resistance, getting feedback
while explaining the instructional development process.
Stand-by to assist instructors and professors when requested,
rather than attempting to "teach and tell" them how it should
be done. Continue to expose them to instructional develop-
ment in workshops and informal procedures, as motivation is
one of the essential elements necessary for the improvement
of teaching methods.

Question 9: How do you feel about "rewards" or
"compensation" for faculty members in
your department who involve themselves
in instructional development to improve
their courses?

TABLE 4.29. Data Compiled from Question Nine.

Related Fields	Strongly in Favor	Somewhat in Favor	Undecided	Against	Strongly Against
Mathematics and Science	3	4	-	-	-
Humanities	1	4	-	-	-
Religion	4	1	1	-	-
Educational Skills	6	6	1	1	-
Fine Arts	1	-	1	-	-
Administrative Officers	3	2	-	-	-

Eighteen respondents were "strongly in favor" of appropriate rewards or compensation to teachers who were involved in instructional development. Seventeen indicated that they were "somewhat in favor" of the practices. Three were "undecided" in the matter. One person was "against," and none felt "strongly against" the practice. It was understood by the respondents that "rewards or compensation" were not to be interpreted as of a personal nature, but more in terms of time, space, assistance, materials, equipment, and financial assistance.

Summary

When dealing with population statistics, all differences between means of sub-populations are true differences. The probability level of .10 was selected, since alpha level is not a consideration. Having found the population means and standard deviations for each dependent variable for the total population and each sub-population, comparisons were made. Results were reported in conjunction with the hypotheses.

Department heads and other administrative officers responsible for instructional development and improvement at Andrews University were interviewed, using a nine-question oral interview procedure. Thirty-nine officers, or 94 per cent of the potential, responded to the interview questions, expressing their views, familiarity, interest,

and recommendations. Responses were summarized into related fields or departments for convenience of reporting. Tables displaying the summarized responses reveal awareness of, interest in, and attitudes toward instructional development. Some of the instructional development activities being carried out by the various departments and their recommendations are identified.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS,

OBSERVATIONS AND RECOMMENDATIONS

Summary

Purpose of the Study

The purpose of this study was to determine the degree
of difference, if any, in expressed knowledge of, expressed
attitude toward, and expressed experience with instructional
development among faculty members at Andrews University.

Comparisons were made among (1) teachers, administra-
tors and specialists; (2) among faculty members with
baccalaureate degrees, masters degrees, specialist degrees,
and doctorate degrees; (3) between those with five or more
years of professional experience and those with less than
five years; and (4) between male faculty members and female
faculty members.

Limitations

The study was limited to the 1973-74 full-time and
part-time faculty members at Andrews University. No inferences
are made to other populations or Andrews University faculties
for future years.

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Statistical Findings

1. In the area of professional responsibility, administrators had significantly higher experience scores (courses developed) than did teachers and administrators.

2. In the area of professional responsibility, specialists had significantly more positive attitudes toward instructional development than did teachers and administrators.

3. In the area of highest degree held, faculty members with masters degrees scored significantly higher in experience (credits earned and clock hours) than did faculty members with doctoral degrees.

4. In the area of professional experience, faculty members with five or more years of professional experience scored significantly higher in experience (credits earned) than did faculty members with fewer than five years of professional experience.

5. In the area of sex, female faculty members scored significantly higher in knowledge of, attitude toward, and experience with (courses developed) instructional development than did male faculty members.

6. In all other comparisons no significantly different probability scores resulted at the .10 level. Mean scores of the various sub-populations compared were not significantly different from each other.

TABLE 5.1.--Summary of Statistical Findings.

Independent Variables	Knowledge	Attitude	Experience Credits	Hours	Courses
Professional Responsibility					
Tch-Adm	–	–	–	–	^{A}.03
Tch-Spc	–	^{S}.002	–	–	–
Adm-Spc	–	^{S}.075	–	–	^{A}.03
Highest Degree Held					
BA-MA	–	–	–	–	–
BA-EdS	–	–	–	–	–
BA-Doc	–	–	–	–	–
MA-EdS	–	–	–	–	–
MA-Doc	–	–	^{M}.04	^{M}.05	–
EdS-Doc	–	–	–	–	–
Professional Experience					
5+/5-	–	–	$^{5+}$.05	–	–
Sex					
Fem-Male	^{F}.004	^{F}.046	–	–	^{F}.0026

A dash indicates that the comparisons made were not significantly different.

The numbers in the cells indicate that "P" was in excess of .10.

The letter in the upper left hand corner of the cells showing significance indicates which comparison received the higher scores.

Conclusions

Administrators indicated that they developed more courses with the aid of ID specialists than teachers or specialists. Most administrators bring to their current positions a broad background of experience in teaching, curriculum development, and budgeting. Such backgrounds may give them a total view or ID, or at least the capacity to realize the advantages of instructional development.

It is the view of the investigator that those presently in the category of administrators, including department heads, are teaching very few courses and consider them well developed. In addition, those in administrative positions were once considered excellent or above average teachers, in order to be considered for administrative posts.

Specialists expressed more positive attitudes toward ID than teachers or administrators. Because of the positions they hold, such as counsellors or librarians, they may have viewed the development of instruction from a more objective, total viewpoint. It is also possible that specialists have a disposition to a team approach, since they view their roles as assisting people.

It is the belief of the investigator that specialists expressed more positive attitudes toward instructional development because it is the nature of their role to assist instructors to improve their courses. Because of the

supportive type positions they hold, they may be more familiar with the systems approach to solving instructional problems.

Faculty members with masters degrees indicated that they earned more term credits in instructional development and spent more clock hours with instructional development specialists than did those with doctoral degrees. Respondents with masters degrees may have looked at instructional development more broadly as curriculum development resulting in some distortion of the data. Those with doctoral degrees may have defined instructional development more accurately as a result of their broader experience and additional coursework. Those with doctoral degrees perhaps viewed instructional development to include problem identification, objectives, development and evaluation.

It is the conclusion of the investigator that probably the Laboratory School faculty members, most of whom hold masters degrees, influenced the scores and caused the skewed curve. More of the masters degree respondents are in disciplines giving greater consideration to involvement of the students in motorskill type activities including objectives stated in behavioral terms.

Faculty members with five or more years of professional experience indicated that they earned more term credits in instructional development than those with fewer than five years of experience. Experienced respondents may

have taken more courses and they may have interpreted the definition of instructional development more broadly distorting the data.

It is the opinion of the investigator that the findings are inconclusive. Respondents may have defined instructional development too broadly to include courses other than those defined as instructional development.

Women faculty members scored higher in the knowledge section, had more positive attitudes toward instructional development and indicated that they developed more courses with the aid of instructional development specialists than men. Such findings could be the result of two departments working cooperatively in the development of co-department courses. It is believed that they have advanced more rapidly in the area of instructional development as a result of this unique experience. Their cooperative experience probably influenced the higher scores for the female-sub-population in the areas of knowledge of, and attitude toward instructional development.

It is the opinion of the investigator that since related studies do not indicate differences between men and women when it comes to knowledge of and attitude toward instructional development. At Andrews University the women's involvement in a cooperative program of developing co-courses caused them to acquire more knowledge of and

express more positive attitudes toward instructional development.

Interview Findings

Interviews were conducted with nearly all Andrews University department heads and other administrative officers responsible for the development and improvement of instruction.

1. Seventy per cent of those interviewed indicated that they were aware of university committees responsible for the development and improvement of instruction at Andrews University (see Appendix E). The four committees identified are basically responsible for establishing and approving course offerings.

2. Sixty-four per cent of the interview respondents identified steps taken for the development and improvement of instruction at Andrews University. Procedures identified were basically inservice meetings for new faculty members and procedures for establishment and approval of new course offerings.

3. Seventy per cent of the interview respondents stated that they were taking steps in their departments to evaluate, develop or improve instruction. Procedures revealed indicated that there are a number of formal and informal ways in which department heads and other administrative officers view the process of instructional development

at Andrews University. Professional literature is being shared, teaching methods are being discussed at faculty meetings, student surveys are being conducted and alternative approaches to present teaching practices are being considered. Administrative officers are meeting with departments in faculty sessions in an effort to identify better instructional methods.

4. Ninety per cent of those interviewed indicated that members of their departments or schools had been involved in in-service training, professional meetings or local committees for the purpose of improving instruction.

5. About fifty per cent of the interview respondents stated that they were very familiar or familiar with instructional development as defined. The remaining fifty per cent indicated that they were vaguely familiar or completely unfamiliar with instructional development.

6. Approximately ninety per cent of those interviewed expressed some degree of interest in behalf of their departments or schools in learning more about instructional development. Interest was expressed in having instructional development personnel assist in further explaining instructional development concepts to them.

7. About twenty-five per cent of those interviewed were undecided about the adequacy of instructional development procedures and practices at Andrews University. Fifty per cent stated that they were nearly inadequate, while

another twenty-five per cent believed them to be totally
inadequate.

8. Nearly all interview respondents suggested
recommendations as to how Andrews University faculty
members could improve instruction and instructional develop-
ment procedures. The following is a summary of suggestions:

a. Those who are sincerely interested in instructional
    development do not need to be prompted to get
    involved.

b. Do not force instructional development upon
    faculty members.

c. Work with individuals rather than large groups.

d. Employ a full-time instructional developer.

e. Many faculty members already have strong desires to
    improve teaching. They are looking for better
    methods.

f. Instructional developers should meet with each
    department in faculty session.

g. Instructional development workshops should be
    conducted which are especially designed for
    university faculty members.

h. Assist faculty members in becoming aware of
    instructional development procedures.

i. Released time by way of lighter teaching loads
    is essential.

j. Be aware of resistance on the part of some faculty
    members.

k. Identify innovative faculty members early.

l. Avoid the use of specialized vocabulary.

m. Provide assistance and materials from the Teaching
    Materials Center and the Audio Visual Center.

n.   Use a low-profile approach.

o.   Stand by to assist when faculty members indicate
     that instructional developers are needed

p.   Use informal procedures to motivate faculty
     members.

9.   About ninety-nine per cent of those interviewed
indicated that they were in favor of rewards or compensation
for faculty members getting involved in the instructional
development process.   It was understood by the respondents
that "rewards and compensation" were to be interpreted in
terms of time, space, assistance, materials, equipment, and
financial assistance.

Implications

The primary implications of this study, which are
directed at the improvement of instructional development
procedures, are aimed at the unique population, the Andrews
University faculty and those interested in instructional
development.   However, it is believed that these findings
do have implications for instructional developers other than
those at Andrews University.

Instructional developers at Andrews University must
take into consideration the indication that administrators
support the idea of well-developed courses and may provide
assistance when needs are expressed.   Responses from the
interviews reveal that most administrative officers recog-
nize the need for released time, lighter teaching loads,

adequate work space, paraprofessional assistance and provision for financing the construction or selection of instructional materials.

Instructional developers at Andrews University must be aware of the more positive attitudes toward instructional development expressed by the specialists. When working with individual instructors, assistance can be obtained from specialists other than in the areas of administration and teaching. Flexibility in approaches and application are essential when dealing with a wide variety of professional personnel from diversified backgrounds. Instructional development among faculty members at Andrews University has been basically an individual matter.

It may not be important to distinguish among the various degrees held by faculty members. Factors other than degree, such as the large number of masters degree respondents in the Laboratory School and specific departments with unique characteristics, should be given greater consideration.

Instructional development workshops, using professionally developed materials and media should be conducted for small groups of faculty members at a time. The implications of some of the data indicates that faculty members should be grouped in seminars based on their interests, attitudes toward instructional development, and backgrounds rather than as members of the same department.

The findings from the data indicate a difference between faculty members with five or more years and less than five years of professional experience. Since the investigator believes the differences to be the result of probable misinterpretation of the definition of instructional development, this finding can probably be ignored. It may be of greater value to look for other more meaningful differences.

Recognition of the departments that are working together will be of value to instructional developers as they approach various individuals. It may be that a combination of findings needs to be given consideration.

The findings showing lack of significant differences among most of the various sub-populations cause the investigator to conclude that there may not be enough evidence to warrant approaching the different categories of faculty members differently, except in those areas specifically identified. The indication is that the factors are probably individually determined, rather than only in the areas of professional responsibility, degree held, experience, and sex.

As knowledge of instructional development spreads to other faculty members, those who have experience can serve to communicate the innovation to other members. Those who become skilled in the use of instructional development

can serve on an informal basis with those who express
interest in pursuing systematic approaches to the improve-
ment of instruction. This multiple effect may then cause
instructional development concepts to diffuse into other
departments and eventually throughout the university.
Experienced faculty members then become experts in assisting
other individuals in the area of instructional development.

Observations

At the time the questionnaire, <u>Knowledge of</u>,
<u>Attitude Toward, and Experience with Instructional Develop-</u>
<u>ment</u>, was administered to the Andrews University faculty,
most respondents appeared to be somewhat unfamiliar with
the concepts of instructional development. Completion of
the written questionnaire by department heads and other
administrative officers responsible for instructional
development and improvement served to lay the foundation
for the verbal interviews. Most officers interviewed
expressed pleasure and appreciation for the opportunity to
answer questions and further discuss instructional develop-
ment. In addition to the interviews, further discussion
took place among other faculty members about instructional
development. Individuals made further inquiries about the
research project, instructional development in general, and
how it applied to Andrews University in particular.

Comments from faculty members indicated that extremes of exposure to and experience with instructional development resulted in extreme attitudes expressed toward it. However, the mean score on the attitude section of the questionnaire indicates that attitudes toward instructional development among Andrews University faculty members are more positive than negative. Most members initiating conversations about the research project and instructional development viewed the process as having definite advantages over present practices.

Many faculty members are currently involved in instructional procedures for improving their courses independently of instructional development specialists and formal processes. Informally, some are working together with colleagues in their own departments. A variety of instructional improvement procedures were reported by department chairmen during the interviews. Most of the procedures appear to be informal in nature.

Instructional developers at Andrews University serve in the capacity of change agents with the responsibility of establishing a firm communication link between those advocating the use of instructional development procedures and the Andrews University faculty. One of the foremost barriers to effective communications is the problem of specialized vocabulary used by instructional development

specialists in contrast to that used by faculty members in the verious disciplines. Instructional developers have to establish credibility with the faculty in order to be effective communicators of new ideas.

The written questionnaire served as a formal intro-duction to instructional development by offering a brief definition and exposing them to a variety of instructional development concepts. This awareness sparked enough interest to elicit a number of comments, questions, and in-depth inquiries about instructional development.

In conjunction with the research, invitations have come to present and discuss the merits of instructional development in formal department faculty meetings. Chairmen of some departments already look favorably upon the process to assist them in providing excellent instructional procedures for present and future courses.

The exposure of instructional development through the written questionnaire served to give faculty members an early view of instructional development and paved the way for the second exposure by department heads and other administrative officers responsible for the improvement and development of instruction.

The interviews, or second level of exposure, had a tendency to break down former barriers as administrative officers began to look more deeply into the process. Numerous

concepts were explored, as comparisons were made among other forms of developing instruction that appear to be similar in nature. CBTE, Competency-based Teacher Education, was one of the areas explored. The merits of CBTE and the instructional development process need to be further examined to determine the role of the systematic process of instructional development as it relates to Competency-based Teacher Education.

It remains the responsibility of instructional development personnel and the university administration to continue to identify Andrews University faculty members who may be more interested and receptive to the use of instructional development techniques. Associated instructional media and evaluation procedures that reflect systematic improvements in instructional procedures may be an avenue to pursue in reaching faculty members.

The role of instructional developers is to work effectively as coordinators and catalysts in the communication of innovation. In this situation, the diffusion of information about instructional development among the faculty members at Andrews University.

It must be recognized that the evidence from the analyzed data is the result of informataon compiled from "expressed" information by faculty members about instructional development. No parallel research that supports or

fails to support the results of this research were found in the literature. Attitude studies are not usually afforded the status of being totally reliable ways of adequately assessing actual attitudes. Inclinations to change are not usually the result of expressed attitude change. University instructors are frequently deeply rooted in their own specific social structure and are not readily subject to change.

One does not need statistical results or written evidence to recognize that nearly all of the faculty members at Andrews University have been affected by their contact with instructional development. Completion of the written questionnaire and participation in the verbal interviews has contributed to the broad communication base on which a positive instructional development program can be built. An introduction to common vocabulary of instructional development has been established. The effects of these contacts with instructional development are difficult, if not impossible, to measure.

The personal educational experience of the researcher during this study is of inestimable value. Contacts during the interviews provided information and rapport that can continue to be most useful as further interest in instructional development is expressed.

In-service information to faculty members in addition to the two major contacts in the form of presentations to

department faculty meetings and department assemblies had already become a part of the communication process prior to the completion of this research project.

Actual "instructional development" with instructors and specialists should be a consideration as individuals who recognize its merits begin to use and advocate the use of systematic approaches to the development of instruction.

It has been of interest to the researcher to participate in the communication of innovation in the form of instructional development at Andrews University. Various individual faculty members are progressing through the stages of the innovation-decision process. The research procedures served as the knowledge stage and persuasion toward or away from the acceptance of ID. Each respondent has made or must eventually make a decision to accept or reject the innovation, ID. Confirmation of the decision is part of an individual mental process through which each faculty member must pass.

In addition to the abstract, a brief official report of the study will be available to the faculty. The investigator is most appreciative to the administration and the faculty of Andrews University for the assistance and cooperation received during this research project.

Recommendations for Further Research

1. This study should be replicated with the Andrews University faculty members after concerted effort has been given to thoroughly expose them to the concepts of instructional development over a period of time.

2. A similar study should be conducted to determine relationships among the various faculty categories with "experience" as one of the independent variables.

3. Another study should be conducted whereby the variables of "age," "department," and "school" are used as the independent variables.

4. Researchers from other institutions may wish to use the improved instruments to initiate an instructional development program for other populations. This study offers a positive approach to the communication of the innovative concept of instructional development.

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APPENDICES

APPENDIX A

EXPRESSED KNOWLEDGE OF, ATTITUDE TOWARD, AND

EXPERIENCE WITH INSTRUCTIONAL DEVELOPMENT

DEMOGRAPHIC DATA

Please respond to each of the following items in order to provide es-
sential background data:

SEX: Male   Female

AGE: Please circle the appropriate age range:

20-24; 25-29; 30-34; 35-39; 40-44; 45-49; 50-54; 55-59; 60+

YEARS OF EMPLOYMENT: Please indicate the number of years of your
employment in an educational capacity: _____

LEVELS OF EXPERIENCE (yrs.) _____Elem. _____Secondary _____Higher Ed.

PRESENT POSITION: Please check your present position(s) in the following
list and then indicate the number of years which you have held this
position.

            (Position)   (Years)

·Teacher_____   _____

Administrator_____(Head dept., etc.)   _____

Specialist_____(Counselor, libr.)   _____

If other, please list and explain:_____

_____

DEPARTMENT: Please list the department(s) in which you are now a
teacher, an administrator, or a specialist:

(1)_____(2)_____(3)_____

TEACHING AND ADMINISTRATIVE LEVEL: Please circle the appropriate level(s):

(K-6)   (7-8)   (9-12)   (College)   (Graduate School)   (Seminary)

DEGREE: Please circle your present degree level:

(Bachelor's)   (Master's)   (Specialist)   (Doctoral)

INSTRUCTIONAL DEVELOPMENT PROFILE

PLEASE CIRCLE THE APPROPRIATE LETTER - CHOOSE THE ONE BEST ANSWER

1. Behavioral objectives are about:

   A. Organizing course content

   B. Terminal performance of the student

   C. Pre-course student performance

   D. Institutional goals

   E. Undecided

2. Evaluative information about the on-going results of instructional development is known as:

   A. Formative evaluation

   B. Feedback

   C. Summative evaluation

   D. Behavioral objectives

   E. Undecided

3. In the process of developing instruction, the following should be considered before the others:

   A. Course content

   B. Instructional media

   C. Instructional procedures

   D. Behavioral objectives

   E. Undecided

4. When designing a new course, the most important consideration should be:

   A. The methods of presentation

   B. The course instructor

   C. The needs of the students enrolled

   D. The course content

   E. Undecided

5. Instructional development is:

   A. Process oriented

   B. Product oriented

   C. Instructional media oriented

   D. Textbook oriented

   E. Undecided

6. The primary purpose of student evaluation should be:

   A. To separate the good and able student from the less able

   B. To grade and classify students

   C. To make sure the students are learning what the teacher intends for them to learn.

   D. To improve teaching and learning

   E. Undecided

7. In writing behavioral objectives which of the following is **NOT** essential:

   A. What the student will be doing

   B. The conditions under which the student will be doing it

   C. The criteria for evaluating him

   D. How well his classmates perform

   E. Undecided

8. Instructional development should give utmost attention to:

   A. The end product

   B. Teaching materials

   C. The human factor

   D. Instructional media

   E. Undecided

9. The first step in instructional development should be:

   A. To write behavioral objectives

   B. To determine what the problem is

   C. To administer pre-tests to students

   D. To determine course content

   F. Undecided

10. Analysis of audience and teaching conditions should come during:

    A. The definition stage of instructional development

    B. The development stage of instructional development

    C. The evaluation state of instructional development

    D. Before instructional development takes place

    E. Undecided

11. Evaluation of the instructional development system should take place:

    A. During the definition stage of instructional development

    B. During the development stage of instructional development

    C. During the evaluation stage of instructional development

    D. During all stages of instructional development

    E. Undecided

12. Prototypes for instructional purposes should be:

    A. Constructed with local resources

    B. Selected from commercially available media

    C. Either constructed or selected

    D. Selected from validated constructed modules

    E. Undecided

13. The several stages in instructional development should be
    dealt with:

    A. Consecutively

    B. Simultaneously

    C. Consecutively and simultaneously

    D. Independently

    E. Undecided

14. Instructional development is best carried on:

    A. By the instructor alone

    B. By administrators

    C. By a group of selected specialists

    D. By teachers and administrators only

    E. Undecided

15. The main task of education is to:

    A. Transmit knowledge to students

    B. Change students in desirable ways

    C. Separate the good students from the others

    D. Have a quiet classroom

    E. Undecided

16. In instructional development the product:

    A. Is subject to revision

    B. Should not be changed after completion

    C. Can be used effectively by other teachers

    D. Is the same as the process

    E. Undecided

17. Summative evaluation takes place:

A. When needed remediation is evident

B. During the early educational process of the student

C. At the time behavioral objectives are formulated

D. At the end of the unit, chapter, course, or term

E. Undecided

18. Formative evaluation:

A. Takes place only at the end of the unit, chapter, course, or term

B. Is primarily for the purpose of grading and classifying students

C. Is seldom used for product improvement

D. Takes place within the current unit, chapter, course, or term

E. Undecided

ATTITUDE TOWARD INSTRUCTIONAL DEVELOPMENT

DEFINITIONS

Instructional Development or I.D. is a system approach to solving instructional problems. It involves a definition stage where the problem and all related instructional elements and resources, including management organization are identified; a development stage where the behavior necessary to solve the problem is specified in measurable terms and a prototype learning experience is developed which employs the most effective methods and media that learning theory and practical experience can suggest; and finally, it involves a testing and application stage where the prototype system is tried out and revised repeatedly until some version(s) successfully teaches the desired behavior. Only then is the resulting system used by teachers who have been thoroughly trained to use it properly with qualified learners.

INSTRUCTIONS

When you answer the following statements please try to express the way you honestly feel about this idea of instructional development or I.D. Your answer is correct if it expresses your true opinion. PLEASE ANSWER EVERY ITEM. In each case encircle the letter which represents your own ideas as follows:

SA if you agree completely with the statement

A if you agree in general but wish to modify it somewhat

U if your attitude is undecided

D if you disagree but with certain modifications

SD if you completely disagree

1. I.D. should be a part of the professional preparation of   SA A U D SD
   all teachers.

2. I.D. places too much emphasis on programming, media and   SA A U D SD
   technology.

3. I.D. makes one realize that you have to be specific on   SA A U D SD
   problems and objectives to communicate effectively.

4. I.D. really gives primary consideration to the learner's   SA A U D SD
   needs.

5. I.D. is a waste of time.   SA A U D SD

6. I.D. is so significant that it is urgent to promote   SA A U D SD
   its wide adoption.

7. I.D. allows each student to start from where he is and   SA A U D SD
   progress as far as he is capable.

8. I.D. enables students to find capabilities within them-   SA A U D SD
   selves that they wouldn't have been able to find with-
   out it.

9. I.D. is nothing new.   SA A U D SD

10. I.D. seems like a better solution to our problems than   SA A U D SD
    anything else currently being considered.

11. I.D. will be ineffective unless all members of a team   SA A U D SD
    have a thorough understanding of the system and are
    committed to it.

12. I.D. is a flexible approach that allows for expansion   SA A U D SD
    and change.

13. I.D. is simply the old problem-solving method.   SA A U D SD

14. I.D. is the most challenging idea in education at the   SA A U D SD
    present time.

15. I.D. is the only really effective way to evolve a   SA A U D SD
    relevant curriculum.

16. I.D. requires too many alternatives to be practical.   SA A U D SD

17. I.D. enables the instructor to better see the pur-   SA A U D SD
    poses of his instructional program.

18. I.D. cannot be compared with traditional approaches to   SA A U D SD
improving instruction.

19. I.D. will work only when everyone directly involved in   SA A U D SD
instruction is favorable and familiar with it.

20. I.D. requires concentrated effort at first but it be-   SA A U D SD
comes less demanding as it becomes better understood.

21. I.D. is something every educator can use.   SA A U D SD

22. I.D. enables people to better work together to meet   SA A U D SD
the needs of students.

23. I.D. enables instructors to develop new and more ef-   SA A U D SD
fective methods for meeting student needs.

24. I.D. may have some advantages but I haven't been sold   SA A U D SD
completely on it.

25. I.D. is the most productive in-service training that   SA A U D SD
I can conceive.

26. I.D. is the best answer yet for instructors who are   SA A U D SD
looking for an objective method for attacking
curriculum problems.

27. I.D. is a boring and uninteresting activity.   SA A U D SD

28. I.D. is the means to reduce the gap between "what is"   SA A U D SD
and "what should be."

29. I.D. provides a means for "getting a handle" on the   SA A U D SD
problems facing educational institutions.

30. I.D. can be the change agent that will elevate us from   SA A U D SD
the morass of problems that blind, confuse and be-
fuddle us.

31. I.D. is fine but I couldn't do it by myself.   SA A U D SD

32. I.D. is right on target—there is no better way or more   SA A U D SD
opportune time than to move on it right now.

33. I.D. enables you to get the most effect for the money   SA A U D SD
available.

34. I.D. has recognized and structured a systematic way to   SA A U D SD
resolve problems and all educators should become
committed to it.

35. I.P. is a giant step forward. SA A U D SD

36. I.D. really makes one think about all aspects of the educational task. SA A U D SD

37. I.D. provides a method to assess the goals of an instructional program realistically in terms of available resources. SA A U D SD

38. I.D. has taken curriculum improvement from the abstract to tangible evidence in dealing with educational objectives. SA A U D SD

39. I.D. is a procedure that will result in the improvement of an instructional program. SA A U D SD

40. I.D. is long overdue—think of how many students we have failed and blamed them for their failure. SA A U D SD

41. I.D. is a "must" for every administrator who assumes the role of instructional leader. SA A U D SD

42. I.D. helps teachers who have had little training on how to plan systematically. SA A U D SD

43. I.D. and the resulting more systematic instruction has become essential since the educational process has become so complex. SA A U D SD

44. I.D. is not an end in itself, but simply a means that educators can and must use to update schools. SA A U D SD

45. I.D. is the best alternative we have to accomplish the task at hand. SA A U D SD

46. I.D. seems to be the way to go. SA A U D SD

47. I.D. is essential to get the support so often refused because we're always dealing with generalities. SA A U D SD

48. I.D. is what we have been needing for years. SA A U D SD

49. I.D. will succeed because it places primary emphasis on the learner and learning. SA A U D SD

50. I.D. is the nearest thing we have to a panacea in education. SA A U D SD

EXPERIENCE PROFILE

DEFINITIONS

Instructional Development or I.D. is a system approach to solving in-
structional problems. It involves a definition stage where the problem
and all related instructional elements and resources, including manage-
ment organization are identified; a development stage where the be-
havior necessary to solve the problem is specified in measurable terms
and a prototype learning experience is developed which employs the most
effective methods and media that learning theory and practical experience
can suggest; and finally, it involves a testing and application stage
where the prototype system is tried out and revised repeatedly until
some version(s) successfully teaches the desired behavior. Only then
is the resulting system used by teachers who have been thoroughly
trained to use it properly with qualified learners.

PLEASE COMPLETE THIS SECTION USING THE APPROPRIATE NUMBER:

_____List the number of formal quarter credits you have in INSTRUCTIONAL
      DEVELOPMENT. (as defined on page two.)

_____List the number of clock hours you have spent with a team of IN-
      STRUCTIONAL DEVELOPMENT SPECIALISTS. (Education psychologists,
      materials specialists, evaluation specialists, etc.)

_____List the number of courses you are currently teaching that have
      been developed with the aid of INSTRUCTIONAL DEVELOPMENT SPECIALISTS.

APPENDIX B

KEY TO KNOWLEDGE PROFILE

KEY TO ATTITUDE TOWARD INSTRUCTIONAL

DEVELOPMENT

KEY TO <u>KNOWLEDGE PROFILE</u>

1 - B	9 - B	17 - D
2 - B	10 - A	18 - D
3 - D	11 - D	
4 - C	12 - C	
5 - A	13 - C	
6 - D	14 - C	
7 - D	15 - B	
8 - C	16 - A	

KEY TO <u>ATTITUDE TOWARD INSTRUCTIONAL DEVELOPMENT</u>
(Reverse Scored Items)

To avoid set the following items were reverse scored:

2 - R	24 - R
5 - R	27 - R
9 - R	31 - R
13 - R	
16 - R	

APPENDIX C

KEY TO DEMOGRAPHIC DATA

INSTRUCTIONAL DEVELOPMENT QUESTIONNAIRE

KEY TO DEMOGRAPHIC DATA

Professional Responsibility:

     1. Teacher

     2. Administrator

     3. Specialist

Highest Degree Held:

     1. Baccalaureate

     2. Masters

     3. Specialist

     4. Doctorate

Experience--In an Educational Capacity:

     1. Four years or less

     2. Five years or more

Sex:

     1. Male

     2. Female

Experience--With Instructional Development--Ranked scores:

Quarter Credits	Clock Hours	Courses Developed
1 - 0	1 - 0	1 - 0
2 - (1 - 5)	2 - (1 - 5)	2 - 1
3 - (6 -10)	3 - (6 -10)	3 - 2
4 - (11-15)	4 - (11-15)	4 - 3
5 - (16-20)	5 - (16-20)	5 - 4
6 - (21-40)	6 - (21-40)	6 - 5
7 - (41 plus)	7 - (41 plus)	7 - 6 plus

APPENDIX D

INTERVIEW MATERIALS

ANDREWS UNIVERSITY

February 26, 1974

Early in February, I administered a questionnaire to the Andrews Uni-
versity faculty on instructional development. I have about 85% returns
at the present time.

With sanction from the Andrews University administration, I plan to
conduct follow-up interviews with department heads and other adminis-
trative officers concerning the development and improvement of instruc-
tion. At this point in time, I merely wish to alert you to the forth-
coming request for a personal interview with you.

The attached materials define instructional development, with a related
graphic model, providing you with descriptions of the topic about which
the interview will be conducted. In addition to the definitions, the
actual interview questions are included to assist you in preparing for
the interview.

Answers to the questions listed should not be too lengthy. It is my
estimate that the interview should last only about fifteen minutes.
In order to save time, repetition, and misinterpretations, I wish to
use a tape recorder during the interview if there are no objections.

Names of respondents will not be identified in the study. It is not
the purpose of the report to identify individuals, specific depart-
ments, or reveal personal information of any kind.

I am looking forward to meeting with you within the next several days.

Sincerely yours,

Donald E. Van Duinen, Principal
Andrews University Elementary School
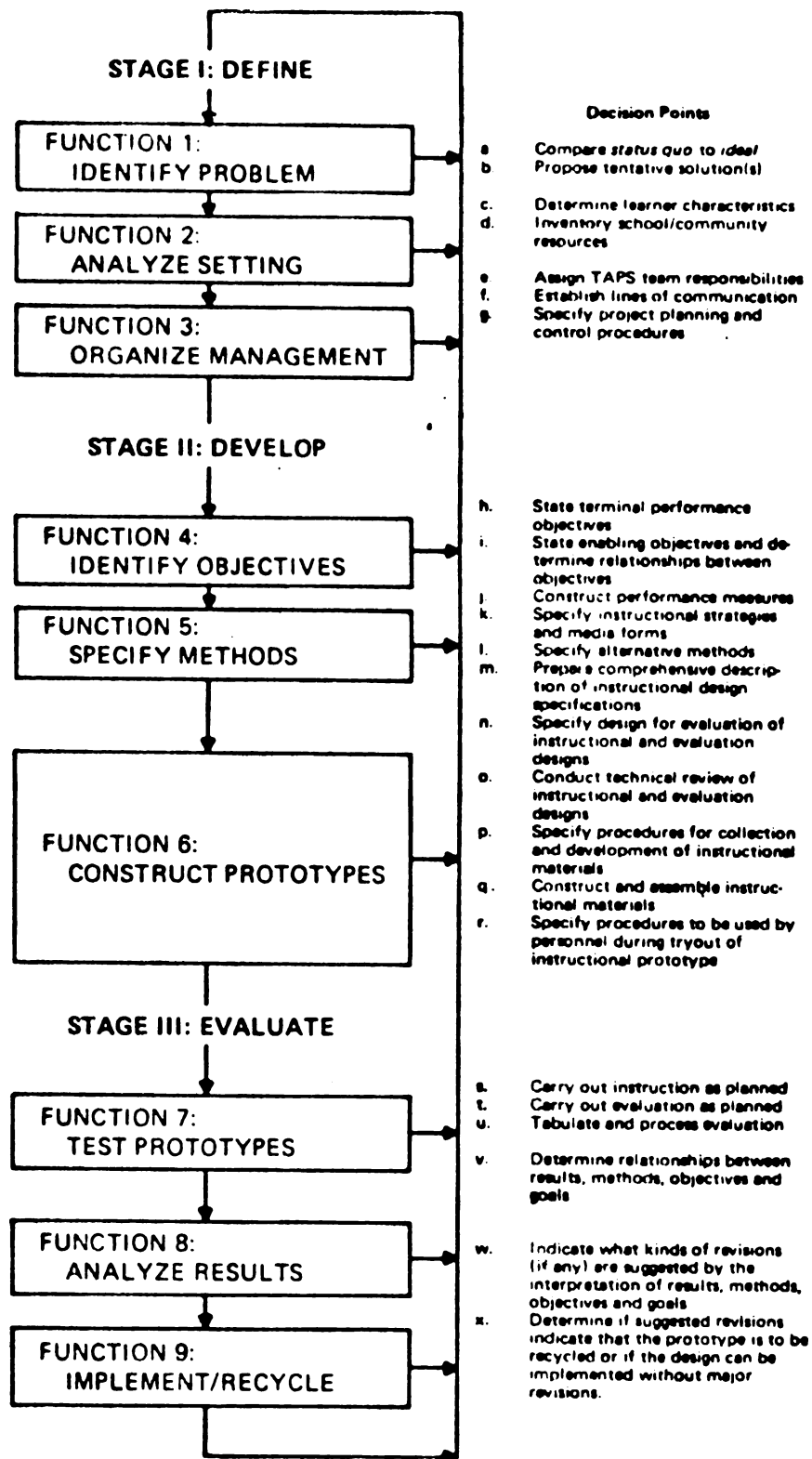

Enclosure

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DEFINITIONS OF INSTRUCTIONAL DEVELOPMENT

. . . a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives based on research and human learning and communication and employing a combination of human and non-human resources to bring about more effective instruction.

(Communication on Instructional Technology, 1970, page 5)

Instructional Development or I.D. is a system approach to solving problems. It involves a definition stage where the problem and all related instructional elements and resources, including management organization are identified; a development stage where the behavior necessary to solve the problem is specified in measurable terms and a prototype learning experience is developed which employs the most effective methods and media that learning theory and practical experience can suggest; and finally, it involves a testing and application stage where the prototype system is tried out and revised repeatedly until some versions(s) successfully teaches the desired behavior. Only then is the resulting system used by teachers who have been thoroughly trained to use it properly with qualified learners.

(National Special Media Institutes, 1971)

STAGE I: DEFINE

FUNCTION 1:
IDENTIFY PROBLEM

FUNCTION 2:
ANALYZE SETTING

FUNCTION 3:
ORGANIZE MANAGEMENT

STAGE II: DEVELOP

FUNCTION 4:
IDENTIFY OBJECTIVES

FUNCTION 5:
SPECIFY METHODS

FUNCTION 6:
CONSTRUCT PROTOTYPES

STAGE III: EVALUATE

FUNCTION 7:
TEST PROTOTYPES

FUNCTION 8:
ANALYZE RESULTS

FUNCTION 9:
IMPLEMENT/RECYCLE

Decision Points

a. Compare *status quo* to *ideal*
b. Propose tentative solution(s)

c. Determine learner characteristics
d. Inventory school/community resources

e. Assign TAPS team responsibilities
f. Establish lines of communication
g. Specify project planning and control procedures

h. State terminal performance objectives
i. State enabling objectives and determine relationships between objectives
j. Construct performance measures
k. Specify instructional strategies and media forms
l. Specify alternative methods
m. Prepare comprehensive description of instructional design specifications
n. Specify design for evaluation of instructional and evaluation designs
o. Conduct technical review of instructional and evaluation designs
p. Specify procedures for collection and development of instructional materials
q. Construct and assemble instructional materials
r. Specify procedures to be used by personnel during tryout of instructional prototype

s. Carry out instruction as planned
t. Carry out evaluation as planned
u. Tabulate and process evaluation

v. Determine relationships between results, methods, objectives and goals

w. Indicate what kinds of revisions (if any) are suggested by the interpretation of results, methods, objectives and goals
x. Determine if suggested revisions indicate that the prototype is to be recycled or if the design can be implemented without major revisions.

Popularized version of the NSMI model
showing substeps and decision points

Interview Questions

1. Are you aware of committees that are currently responsible for the development and improvement of instruction at Andrews University?

   Yes   No   (If yes - list)

2. Are you aware of steps currently being taken for the development or improvement of instruction at Andrews University?

   Yes   No   (If yes - list)

3. What steps are being taken to evaluate, develop, or improve instruction in your department?

   None   Some   (If yes - list)

4. Have members of your department been involved in in-service training, professional meetings, or assigned committee work to develop or improve instruction in your department?

   Yes   No   (If yes - list)

5. How familiar are you with instructional development as defined on accompanying materials?

   Very familiar, Familiar, Undecided, Vaguely familiar, Unfamiliar

6. Are you interested in having a concerted effort for in-service training in instructional development by specialists for faculty members in your department?

   Very interested, Interested, Undecided, Merely interested, Uninterested

7. Do you believe that present practices and procedures at Andrews University in the area of instructional development are adequate?

   Very adequate, Adequate, Undecided, Nearly inadequate, Inadequate

8. What recommendations would you give to instructional developers in order to improve instruction and instructional development procedures at Andrews University?

9. How do you feel about "rewards" or "compensation" for faculty members in your department who involve themselves in instructional development to improve their courses?

   Strongly in favor, Somewhat in favor, Undecided, Against, Strongly against

APPENDIX E

UNIVERSITY COMMITTEES

UNIVERSITY COMMITTEES

<u>Committee on Academic Policies</u>: This committee conducts a continuous study of the requirements for admission and for graduation, etc., and prepares recommendations for the faculty.

<u>Committee on Courses and Curricula</u>: This committee conducts a continuous study of the courses and curricula offered and those that should be offered, etc., and perpares recommendations for the faculty.

<u>Committee on Instruction and Research</u>: The membership of seven or nine from all schools of the University shall include professors, associate professors and assistant professors. Sessions shall be conducted regularly each month during the Autumn, Winter, and Spring quarters, and during the summer as determined by the chairman. The chairman may appoint sub-committees or individual members to study into and prepare draft recommendations regarding specific aspects of the committee's work. The chairman may call extra sessions.

The committee shall: (1) initiate studies into the educational philosophy, objectives, accomplishments, programs, procedures in any school within the University, reporting its findings, or (2) initiate studies into instructional and learning procedures, sequences and pre-requisites, student loads, evaluation of learning, extra-class and extra curricular learning programs, and such other aspects of campus affairs as may contribute to the scholarly climate of the university; (3) recommend plans for faculty research; (4) recommend plans and procedures for student research; (5) within the areas of instruction and research to be available as an integrating council to the faculties and the faculty committees, to the President, the vice-presidents, and the deans.

<u>Committee on Teacher Education</u>: The Committee on teacher education is responsible for the initiating or considering policies governing teacher education in all schools of the University. The chairman of the committee on teacher education shall serve the University as director of teacher education.

The committee shall consider the various teacher education curricula. In dealing with curriculum changes this committee shall make recommendations to the committee(s) on courses and curricula of the school(s) concerned.

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Conversely, recommendations by a committee on courses and curricula involving teacher education curricula will be referred for consultation to the committee on teacher education before being submitted to the faculty.

The committee shall prepare policies governing the admission of students to candidacy in the teacher education curricula; draft enrollment procedures by which applicants for admission to the teacher education curricula are identified, screened, and approved; and propose standards for continuance in the teacher education curricula and the satisfactory completion of the various requirements.

The progress of students in these professional programs will be reviewed periodically by this committee; on the basis of its evaluations the chairman will recommend (or withhold recommendation from) candidates for teacher certification.

The membership of the committee shall include the director of teacher education, the chairman of the Department of Education, the coordinator of directed teaching, the curriculum coordinators of elementary and secondary education, the curriculum coordinator of the Master of Arts in Teaching, five members from instructional departments offering majors and minors in teaching areas. In order to provide for coordination in planning with the organizations that employ large numbers of our teacher education graduates, the President may arrange for additional members of the committee as follows: one union conference secretary of education, two conference superintendents of education, one academy principal, one elementary school supervisor, the superintendent of the University's laboratory school, and one other professional educator.

APPENDIX F

PERTINENT LETTERS

LOMA LINDA UNIVERSITY

COLLEGE OF ARTS AND SCIENCES
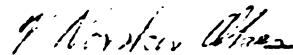OFFICE OF THE PROVOST

November 13, 1973

Mr. Donald E. Van Duinen, Principal
Elementary School
Andrews University
Berrien Springs, Michigan 49104

Dear Mr. Van Duinen:

Enclosed is a copy of our faculty list that you asked for to
use in administering a questionnaire in connection with your
doctoral program.

We wish you success in completing your doctoral studies.

Sincerely,

V. Norskov Olsen
Provost

VNO:loc

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Andrews University
Berrien Springs, Michigan 49104
Telephone (616) 471-7771

December 12, 1973

Dr. V. Norskov Olsen
College of Arts and Sciences
Loma Linda University
La Sierra Campus
Riverside, California 92505

Dear Dr. Olsen,

Thank you for your kindness in sending the names of your
faculty for my pilot study. Please distribute these
envelopes to the faculty as indicated. They contain all
the information necessary for them to complete the ques-
tionnaire and return it directly to me.

Sincerely,

Donald E. Van Duinen
Elementary School Principal

DEV:jd

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Michigan State University
East Lansing, Michigan 48824

July 26, 1973

Dr. Joseph G. Smoot
Vice-President for Academic Administration
Andrews University
Berrien Springs, Michigan 49104

Dear Dr. Smoot:

Recently, I received approval from my doctoral guidance
committee at Michigan State University to conduct a study
involving a survey of Andrews University faculty members.
The title of the study is:

>   Expressed Knowledge of, Attitude Toward, and
>   Experience with Instructional Development
>   Among Andrews University Faculty Members
>   As a Function of Selected Professional
>   Variables.

The committee and I feel that the results of the study will
be of value to instructional developers and administrators
at Andrews University for pursuing the merits of instruc-
tional development. The questionnaire will consist of
objective statements about instructional development.

At this time I am requesting permission to administer the
questionnaire to the faculty, perhaps during a faculty
meeting some time during the Fall quarter of 1973.

It is important that I get an early reply to this request
so that I know what steps to take in further pursuing this
study. I will be happy to discuss this with you further
if you feel that it is necessary. Please send your reply
directly to my home at 124 S. Maplewood Drive in Berrien
Springs.

Sincerely yours,

Donald E. Van Duinen
Elementary School Principal

INSTRUCTIONAL MEDIA CENTER · OFFICE OF THE DIRECTOR

July 24, 1973

Mr. Donald Van Duinen
340 Division Avenue
East Lansing, Michigan 48823

Dear Mr. Van Duinen:

This will authorize you to make use of the Attitudes
questionnaire from the NSMI Instructional Development
Institute package entitled "Attitude Toward Instructional
Development."

As indicated in your letter of July 17, I understand
this will be used only with faculty members of Andrews
University and not with possible IDI participants. It is
understood that the questions may have to be modified
somewhat. In that connection it is important for you to
note that the test as modified would not be a validated test
since the population sample for which we have data is atypi-
cal of your intended audience.

Good luck on your dissertation.

Cordially,

Charles F. Schuller, Director
Instructional Media Center

CFS/rm

cc - Curt
     Ton
     Barry