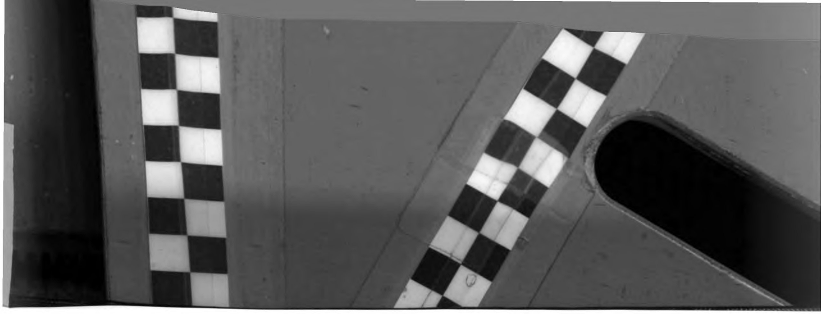

INSTRUCTIONAL ACTIVITIES
WHICH STIMULATE BEHAVIORAL CHANGE
AS PERCEIVED BY ADULT PARTICIPANTS

By

James Frederick Eggert

A DISSERTATION

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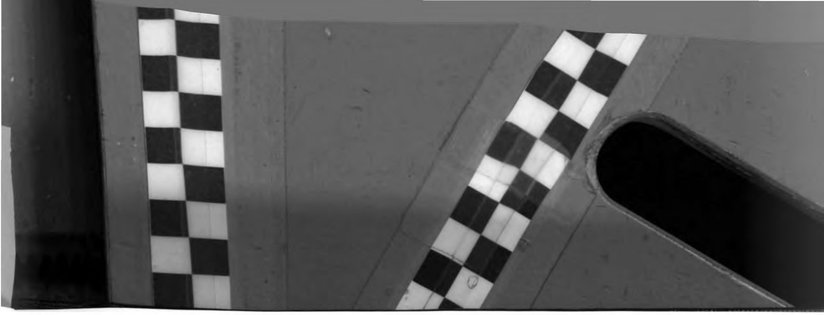


ABSTRACT

INSTRUCTIONAL ACTIVITIES WHICH STIMULATE BEHAVIORAL CHANGE AS PERCEIVED BY ADULT PARTICIPANTS

By

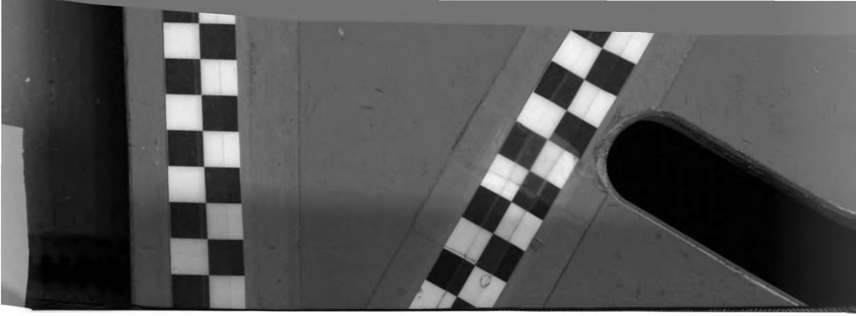
James Frederick Eggert

This research explored two primary issues: 1) the relationship between perceived behavioral changes and the instructional activities which participants report fostered those changes, and 2) the possible means by which those instructional activities initiated and fostered those changes. Other related issues were explored.

The research was conducted with graduates of eight programs of study for adult learners within diverse institutions (private vocational school, Bible college, community college, four year colleges, and universities). Quantitative and qualitative data were collected using questionnaires completed by 163 participants and follow-up interviews with 20 subjects.

Participants identified behaviors which they perceived had changed as a result of their programs of study and identified a type of instructional activity which they perceived had most influenced each change. Of the 535 behavioral changes, the percentage attributed to each type of instructional activity is as follows:

25.05	-	assignments requiring physical or active involvement
21.31	-	classroom participative activities
14.95	-	discussions and/or reflective thinking
14.95	-	classroom presentations of all kinds, including verbal, visual aids, audiovisuals, and demonstrations
10.84	-	reports or writing assignments
4.86	-	reading assignments
4.67	-	other
3.36	-	can't identify



Two primary rationales were given for the effect of assignments requiring active involvement: direct experience with real life processes and positive reinforcement (internal and external). Other rationales were mentioned less frequently: "forced" involvement, use of thoughts and feelings from the experience, and insights about need. Several rationales were given for the effect of participative activities: engagement or involvement, practice, insight, awareness, and model of the instructor.

Participants' perceptions of the percentage of classroom time spent in three types of activities and the percentage of outside-the-classroom time spent in three other types of activities revealed that the extent of use of the six types of instructional activities within the eight programs of study is significantly different, as indicated by F ratios ($p < .001$).

A significant relationship of .31982 ($p = .00003$) was found between participants' desire for change in behaviors and the amount of perceived change in behaviors. Significant relationships of .37570 to .46003 ($p = .00000$) were also found between anticipated changes and perceived changes in three categories: behaviors, attitudes or values, and knowledge and understanding.

ACKNOWLEDGMENTS

The Almighty God - Jesus Christ, His Father, and the Holy Spirit - is the center of my life. It is He who has given me capabilities, inspiration, and guidance directly and indirectly.

My family members have been tremendous supporters and allies. My wife, Liz, is a genuine partner in all of life. She and our children - Jay, Lisa, David, and Jennifer - have worked with me, covered for me in other responsibilities, and encouraged me. Life together is enjoyable for all of us.

My parents led my siblings and me to a love for learning through experiences and exposure. There is no end to this pursuit.

Dr. Howard Hickey has been my advisor and dissertation director but also an encourager and interested learner with me. His model in the classroom truly demonstrates the best in adult education.

My other committee members - Dr. Charles McKee, Dr. Ardin Moon, and Dr. Max Raines - have freely shared ideas, insights, and reactions which helped shape this project and my thinking.

My friends and colleagues have been supporters through many endeavors, including this one. Many have prayed for me.

I am grateful for all of you.

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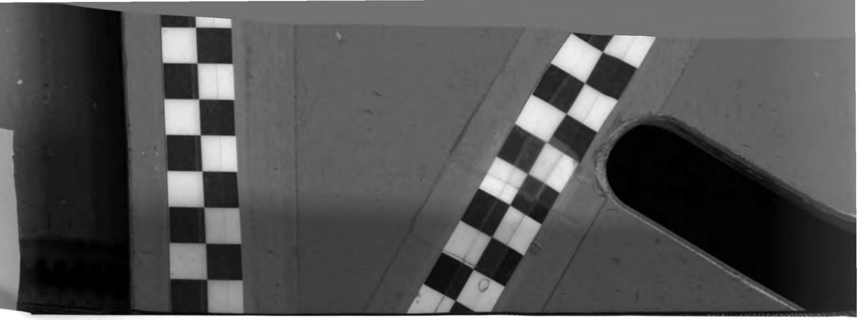

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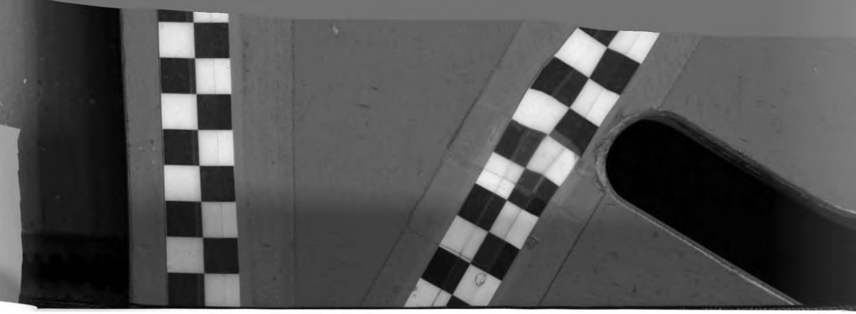


Chapter 1

INTRODUCTION TO THE RESEARCH

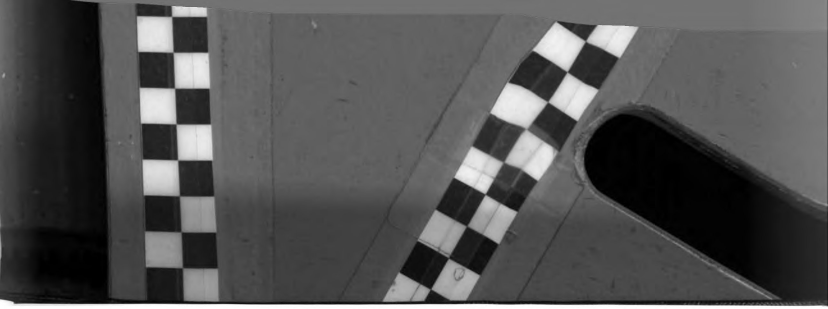
INTRODUCTION

Edgar Dale wrote: "The final goal of education is not memorized information; it is a changed individual, one who lives differently because he has learned." (Dale, 24) However, not all agree with that point of view. There are proponents for the position that the goal of education is to inform the learner, expand his/her knowledge, or give new insight. (Long, pp. 297-302))

Those differing viewpoints are evident in similar debates, such as the debate between proponents of vocational education and those of liberal arts. In essence, it is similar to the debate between those who favor practical learning and those who favor theoretical learning.

Many educators support the philosophy of relevant and practical outcomes. This includes such well-known people as John Dewey, Malcolm Knowles, Allen Tough, Edgar Dale, and Arthur Chickering.

The emphasis on relevant and practical outcomes is particularly common among adult educators and trainers. It is an emphasis that has no doubt been growing in strength and consistency ever since Malcolm Knowles emphasized two decades ago that adults engage in education because of a desire for "competence." (Knowles, 1970, p. 23)



Given that general desire for competence among adults, adult educators and trainers must consider the question of how to affect competence or how to change the individual. More specifically, to be effective, educators and trainers must in some way deal with the issues of identifying desired outcomes and choosing the methodology to achieve those outcomes.

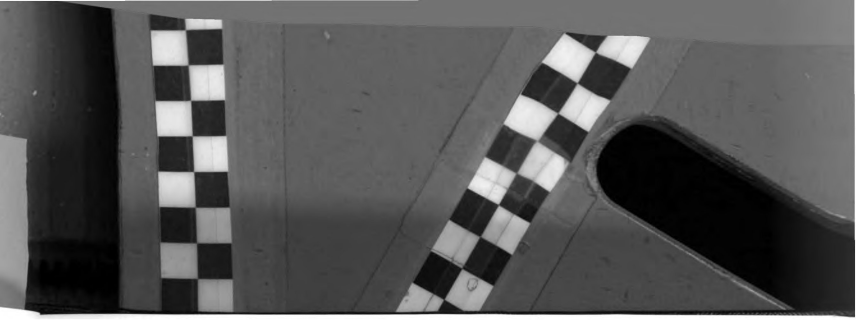
While there may be other goals and outcomes, this researcher is interested in changed behaviors (performance or actions) as the outcome. (Please see the definition of "behavior" later in this chapter.)

THE PROBLEM

Influencing behavioral change is difficult. Behavior is determined by many variables.

Research has established relationships between specific instructional activities and specific outcomes. Yet those connections between changed behaviors and specific instructional activities seem weak. It seems as if researchers ought to be able to establish with greater certainty what kinds of activities will stimulate behavioral change.

Furthermore, it seems as if there ought to be more than a relationship. There ought to be a logical explanation for those relationships. There ought to be some understanding of how or why certain instructional activities stimulate change. Understanding the means by which certain instructional activities affect behavioral change would enable those who strive for behavioral change as the outcome to enhance the effectiveness of educational and training processes.



Program designers, educators, and trainers struggle with the issue of affecting competence. Knowing **what activities** affect behavior and also **how or why** certain activities affect behavior may well enable all involved, including the learner, to better plan and utilize instructional activities in order to foster desirable behavioral outcomes.

PURPOSE OF THIS RESEARCH

The primary purposes of this research were to explore two things:

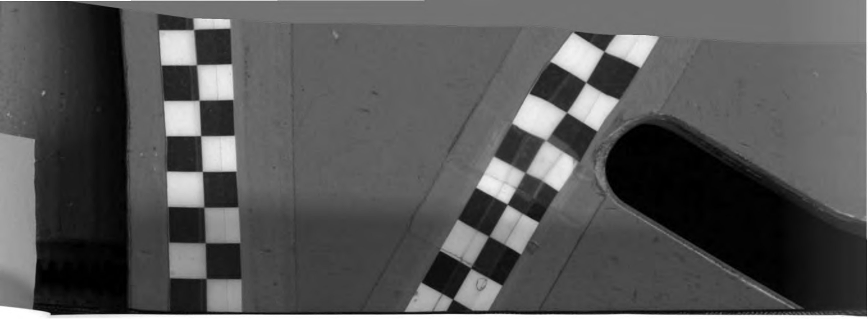
1. the relationship between behavioral changes perceived by learners and the instructional activities which learners report stimulated or affected the change

2. the possible means by which those instructional activities initiated and fostered the behavioral changes

This researcher wanted to explain more fully the basis for the effectiveness of certain instructional activities (methods, strategies, techniques).

In connection with the primary purposes, it was this researcher's intent to:

1. assess the extent of adult participants' desire for behavioral change and their anticipation of cognitive, affective, and behavioral change as they engage in an instructional experience (Psychomotor skills were not explored because the programs of study in which research participants were engaged emphasized few psychomotor skills.)



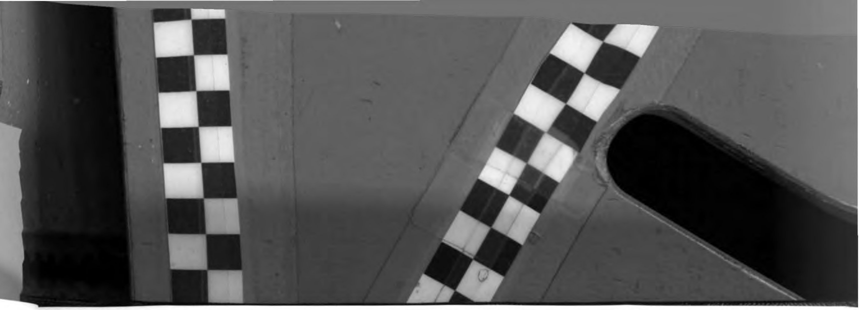
2. determine the extent of perceived change by adult participants in their actions or behaviors, their attitudes or values, and their knowledge and understanding as a result of that instruction, and determine if there are any relationships between desire for change, anticipation of change, and perceived change

3. determine what types of classroom instructional activities and/or outside-the-classroom instructional activities participants perceive have stimulated their behavioral changes, and determine if there are significant differences between the number of changes influenced by the different activities and the extent of change influenced by the different activities

4. determine what explanation participants have about the means by which those instructional activities affected their behaviors

5. assess how the instructional programs in which the subjects engaged differ in their use of various types of instructional activities and how any differences may affect outcomes

6. use research and theory on change and change processes from education and training with that from other practical fields to help explain how change occurs



IMPORTANCE OF THIS STUDY

A number of entities are expected to benefit from this type of research. Among them are individual learners, educational institutions, training organizations, businesses, educators and trainers, change agents, and counselors. They will benefit for two primary reasons.

The first reason is the need for behavioral changes in order for people to function in a changing world. As the elements of our society change, it is almost vital that people also adjust and change in order to exist within society. New technologies and information often leave present practices, patterns, and knowledge virtually obsolete. "Our survival depends on our ability to adapt not only in the reactive sense of fitting into the physical and social worlds, but in the proactive sense of creating and shaping those worlds." (Kolb, p. 19) "With the accelerating pace of change owing to the knowledge explosion and the technological revolution, an increasing proportion of adults of every age cohort will be seeking to continue learning in order to avoid become obsolescent." (Knowles, 1984, p. 422)

Indeed, the "increasing proportion of adults" to which Knowles referred are continuing their learning. Millions of adults in the United States are engaging annually in the pursuit of learning, both formally and informally. (Brookfield, pp. 3-5) A large percentage of those are pursuing learning because of life transitions. The changes that they must make to adapt to life situations stimulate their desire to learn. (Aslanian and Bicknell, 1980, cited in Schlossberg, Lynch, and Chickering, pp. 13-14)

Adult learners will therefore benefit from anything which can enhance or maximize the effectiveness of their pursuit of learning. Anything which can be done to improve the effectiveness and efficiency of their accommodation to change will be valuable.

In addition to the millions of individuals who seek practical learning, businesses of all kinds spend billions of dollars annually on training. (Eurich, p. ix) Finding and utilizing strategies which can increase the effectiveness of training will save effort, time, and money, and it will help achieve maximum behavioral change for each investment.

The second primary reason for the importance of this research is its potential effect on those who facilitate change. For adult educators, trainers, counselors, and change agents, it is desirable to utilize activities which are most effective for accomplishing desired changes.

Direction for those facilitators of change seems to be badly needed. While there is considerable research showing correlations between certain methods and specific outcomes, it appears that instructors most frequently use the traditional techniques. (Svinicki and Dixon, p. 141) Perhaps additional research which substantiates previous findings about effective instructional activities will influence instructors and their use of the most effective activities.

Something is needed. Huey Long reports that some involved with adult education say that, in spite of the research, we need to develop educational theory for adults because research has not influenced practice. On the other hand, he personally believes that "the greatest need in adult education studies does not lie in the further development of theoretical positions but in the translation of theory and research findings into applied practice." (Long, p. 31) In either case, the point is that something is needed to influence educators and trainers and their use of instructional activities.

In the desire to contribute to that influence, this researcher has explored specific behavioral changes among adult participants and the instructional activities to which those changes are attributed. Through this process, the researcher attempted to substantiate or refute previous research and to explain more fully the basis for the effectiveness of certain instructional activities.

It is this researcher's hope that with this project he has contributed something of importance to the knowledge base about effective instructional activities. Furthermore, it is his hope that this contribution will enable learners and organizations to more effectively implement the behavioral changes they deem desirable, further convince practitioners that certain instructional activities are truly more effective in producing behavioral changes, and also guide their use of those activities.

DESIGN OF THIS RESEARCH

This research was designed to explore two things:

1. the relationship between perceived behavioral changes and the instructional activities which respondents indicate stimulated or affected those changes

2. the possible means by which those activities are perceived to have initiated and fostered the change

The participants in this study were a sampling of adult graduates (non-traditional college students) who participated in one of eight programs of study (series of classes or training programs) at different Michigan institutions. The population used in this study consisted of a cross-section of the adult population. Thus there were males and females between the ages of 24 and 65 from diverse ethnic groups with various backgrounds and careers. Most were voluntary learners and most were non-residents at their institutions.

The primary means of collecting information was a questionnaire. Participants (subjects) were asked in a cover letter to complete a questionnaire. The questionnaire focused primarily on their interest in changes, their perception of actual changes, the instructional activities which they perceive affected their behavioral changes, and the extent of use of several types of instructional activities within their programs of study. Participants were also asked if they were willing to participate further with an interview.

A sampling of those who agreed to participate further were interviewed by phone. The primary thrust of the interview was to explore the subjects' perceptions of how and why they believe the specific instructional activities affected their behaviors.

The data from the questionnaires and interviews was, of course, processed and analyzed. Conclusions were drawn based on the data and statistics.

GENERALIZABILITY

Because of the nature of the population and programs of study used in this research, the findings should be generalizable to many situations and people. However, there are also some limits on generalizability.

As described earlier, the participants represented a broad cross section of the adult

population. However, they may not be representative of all adult learners. There is no particular reason to believe that the results from this research would not apply to other similar adults, but they may or may not apply to younger and older people or to people in other cultures.

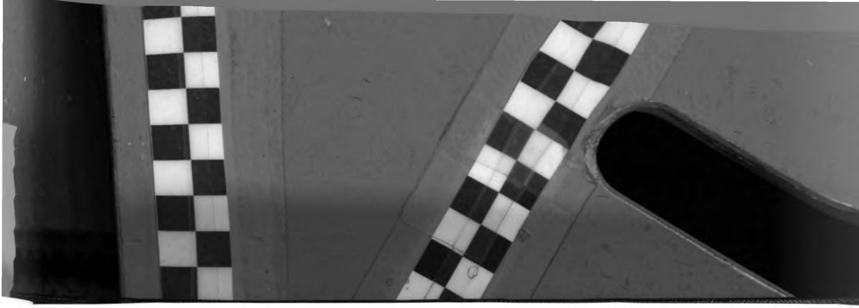
The adults involved in this study attended classes but did not reside at the institution (except for two people). This non-residential status no doubt has advantages and disadvantages for the learning process. The results should apply to other adults involved on a similar basis in adult education or training experiences, but it may or may not apply to those adults who reside at the institution.

Finally, the behavioral outcomes of instruction researched here are similar to the outcomes and goals desired by many higher education institutions and training organizations. The results of this research should be applicable wherever similar outcomes are desired.

However, some institutions or organizations desire either highly cognitive outcomes or physical skills. The findings from this research may be generalizable to instruction for those specific cognitive or psychomotor abilities, but this research does not attempt to prove or disprove that conclusion.

RESEARCH QUESTIONS

The problems and purposes stated earlier led to a variety of questions, some of which are quantitative and some of which are qualitative. The following research questions include the primary questions with related secondary questions:



1. To what extent do participants desire to change behaviors or performance when they pursue learning and to what extent do participants anticipate changing behaviors, attitudes or values, and knowledge and understanding?

2. To what extent do participants perceive changes in their behavior, actions, or performance as a result of their instructional experiences and to what extent do participants perceive changes in their attitudes or values and knowledge and understanding?

2a. Is there a significant relationship between a participant's desire for change in behaviors or actions and the amount of perceived change?

2b. Is there a significant relationship between a participant's anticipated change in behaviors, attitudes or values, and knowledge and understanding and the perceived change in each corresponding area?

2c. Is there a significant relationship between the perceived change in behavior (a dependent variable) and the desire for change and anticipated change (multiple independent variables)?

3. What instructional activities do participants perceive have influenced or affected their behavioral changes?

3x. Is the number of behavioral changes attributed to each type of instructional activity significantly different?

Note: Research Question 3x was added after data had been gathered.

3a. Is the relative number of times a specific type of instructional activity is identified as having affected behaviors by participants within a program significantly different for the different programs of study?

3b. How "new" are the behaviors which participants indicate have changed? (To what extent do they represent changes from previous behaviors?)

3c. When comparing the different instructional activities (to which subjects attribute changes in behavior), is there a significant difference in the extent of perceived behavioral change attributed to them?

4. According to the participants, to what extent do the instructors in their programs of study use each of the six types of instructional activities identified on the questionnaire?

4a. Is the extent of use of the six types of instructional activities significantly different in the different programs?

4b. Is the extent of perceived behavioral change among participants related to the perceived extent of use of the six types of instructional activities?

5. What explanations do interviewed participants give as to why some types of instructional activities affect change more than others or how

they affect change?

5a. Do interviewed participants perceive that the specific types of instructional activities (which affected their behaviors) had more effect on their capabilities or on their motivation?

5b. Is there a significant difference between the types of instructional activities (perceived to affect behavioral change) in terms of whether each affected capabilities or motivation?

5c. According to participants who identified participative activities or assignments which required physically doing something as effective, what percentage of the time were those learning activities followed by discussions, private reflective activities, or writing assignments?

5d. According to participants who identified presentations or reading assignments as effective in affecting behaviors, to what extent will they have had previous experience in this area of behavior?

STATISTICAL HYPOTHESES

Each of the above questions was researched. The participant responses in some cases can simply be described. Other responses can be statistically analyzed. The hypotheses for those latter questions are written here in the **null form** for statistical purposes. (The numbers correspond to the numbers on the research questions.)

2a. There is no significant relationship between a participant's desire for change in behaviors or actions and the amount of perceived change.

2b. There is no significant relationship between a participant's anticipated change in behaviors, attitudes or values, and knowledge and understanding and the extent of perceived change in each corresponding area.

2c. There is no significant relationship between the perceived change in behavior (a dependent variable) and the desire for change and anticipated change (multiple independent variables).

3x. The number of behavioral changes attributed to each type of instructional activity is not significantly different.

3a. The relative number of times that a specific type of instructional activity is identified as affecting behaviors by participants within a program is not significantly different for the different programs of study.

3c. When comparing the different instructional activities (to which subjects attribute changes of behavior), there is no significant difference in the extent of perceived behavioral change attributed to them.

4a. The extent of use of the six types of instructional activities is not significantly different in the different programs.

4b. The extent of perceived behavioral change among participants is not significantly related to the perceived extent of use of the six types of instructional activities.

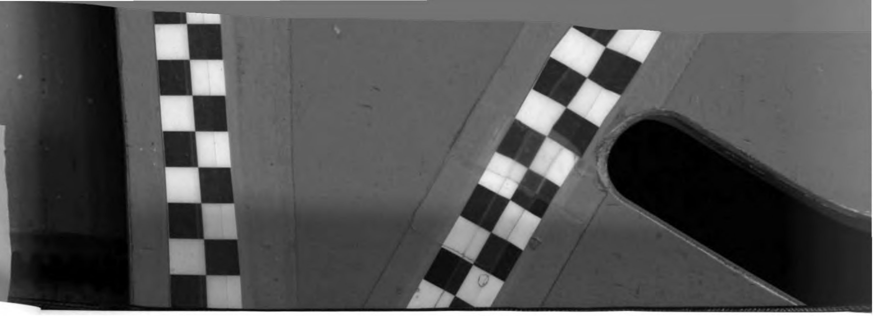
5b. There is no significant difference between types of instructional activity (perceived to affect behavioral change) in terms of whether each affected capabilities or motivation.

DEFINITION OF TERMS

Definitions for the following words are given in this section in the order listed:

participant
adult learner
non-traditional student
instructor, trainer, or facilitator
behavior
change process
methods, techniques, or strategies
instructional activity, training activity, or educational activity
training program or educational program
mental activity
participative activity
experiential activity
experiential learning
experiential base

PARTICIPANT: a common name for one who participates in a learning situation (a class, a workshop, or a training or development session). "Participant" is synonymous with "LEARNER" or "TRAINEE" and in this research also with "SUBJECT."



ADULT LEARNER: ". . . one who returns to study, on a full-time or part-time basis, after a period of time spent in other pursuits." (Rosenblum, p. 4)

NON-TRADITIONAL STUDENT: an adult participant in the instructional process who is not the traditional age for college students (18-23). However, other factors, such as part-time status or non-residential status, also contribute to non-traditional status. In this study, only age was used as a criteria.

INSTRUCTOR, EDUCATOR, TRAINER, or FACILITATOR: the instructional leader in a learning situation. These titles may connote different things to different people, but they are used interchangeably here.

BEHAVIOR: the conduct or actions of a human, such as planning, interviewing, coaching, cooking, golfing, listening, speaking, caring, encouraging, learning, mentoring, and selling. Behavior is commonly referred to as "ACTIONS" or "PERFORMANCE" and may be overt or covert. Behavior is usually dependent upon external factors and internal factors, such as knowledge and understanding (cognitive), attitudes and values (affective), physical ability (psychomotor), and motivation. Some people use the word "skill" in the same way that "behavior" is used here. However, in this research, behavior is not to be equated with physical skill or psychomotor ability.

Based on a synthesis of ideas from numerous sources, this researcher has concluded that actions or behaviors may be one of five types:

1. rational - decided upon through conscious thought. (Thus a person may consciously decide to write a letter, speak with a co-worker, or make a phone call.)

2. social-psychological - controlled by the subconscious. (A person's defensive response to criticism is usually social-psychological. However, some actions which are often social-psychological could be rational as well, e.g., the conduct of an instructor as he/she works with a group, including his/her verbal presentation, non-verbal cues, styles, and strategies or the conduct of an individual as he/she listens to another person or the action of putting off a project.)

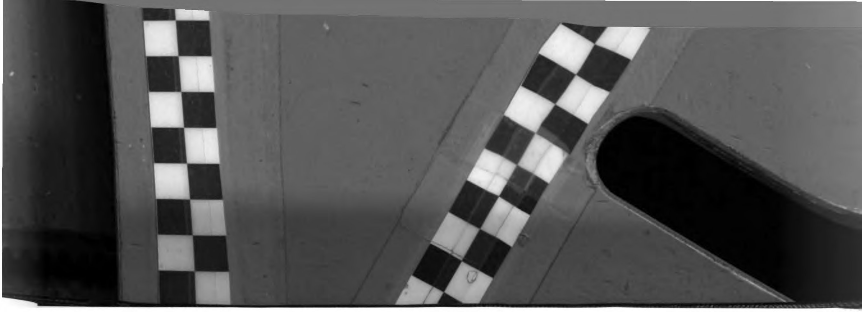
3. habitual - done mechanically without conscious thought after considerable repetition. (Shaving or brushing one's teeth in a certain series of steps may be habitual. Obviously, one can also do these through rational thought.)

4. emotional - derived from a pure emotion or feeling. (Crying in a time of pure joy is emotional behavior, but crying when one gets hurt is probably more social-psychological.)

5. physiological - done by the body in on-going processes or as reflexes. (Breathing fits the first category and knee jerks the second.)

CHANGE PROCESS: the sequential series of steps one goes through in adopting a new action or behavior.

METHODS, TECHNIQUES, or STRATEGIES: the manner of engaging a learner used by an instructor/trainer to facilitate learning by a participant. Some authors differentiate between these terms. However, there does not seem to be a consensus as to specific meaning, so they are used interchangeably here.



INSTRUCTIONAL ACTIVITY, TRAINING ACTIVITY, or EDUCATIONAL ACTIVITY: a particular segment of a training program or educational session which has a distinct beginning and end and usually a distinct purpose. An instructional activity may include a variety of methods, strategies, or techniques to accomplish one objective or it may include only one such method, strategy, or technique.

INSTRUCTIONAL PROGRAM, TRAINING PROGRAM, or EDUCATIONAL PROGRAM: a learning experience which may consist of one session or a whole series of sessions or courses. Within such a program, instructional activities, techniques, methods, or strategies are utilized to facilitate learning. (Some trainers and educators may approach training programs and educational programs differently, but they are used here as if they were the same.)

MENTAL ACTIVITY: a learning process which requires the involvement of the participant's mind. However, the level of involvement may vary considerably and the nature of that involvement may also vary.

One way to categorize mental activity is to use Benjamin Bloom's taxonomy of the cognitive domain, which describes the various levels of involvement: knowledge, comprehension, application, analysis, synthesis, and evaluation. (Bloom, 1956-1964)

Another way to describe levels of involvement, using Svinicki and Dixon (1987), Resnik and Klopfer (1989), Stadsklev (1974), Dale (1969), and Kolb (1984) as a basis, is as follows:

> **RECIPIENT MODE** - The participant is receiving input or information aurally and visually in one or more of the following forms:

a. At the lowest level, the individual is present and thereby apprehending his/her surroundings (as Kolb describes it), but the participant is primarily receiving information in the form of symbols through ears or eyes (hearing or reading).

b. At the next level, the participant is experiencing a situation as in the lowest level, but is also hearing or reading examples to which he/she may be able to relate.

c. At the next higher level, the participant is observing visuals designed to illustrate information or concepts, e.g., graph, maps, diagrams.

d. At the uppermost level of the recipient mode, the participant is experiencing the observation of models or audio-visual aids or demonstrations.

ENGAGEMENT MODE - The participant is mentally engaged in application, analysis, synthesis, and/or evaluation at one or more of the following levels:

a. The participant is asked to think about an idea or situation and speak or write about a reaction.

b. The participant is involved in a discussion.

c. The participant thinks about his/her own experiences, reflecting on what happened, why it happened, what conclusions can be drawn, and how that can be applied to a new situation. The participant may write

or speak about his/her thoughts.

(Unlike the recipient mode, in which there were different levels of complexity, in the response mode, the three different types of activity are similar in level of involvement.)

SENSORY-PARTICIPATIVE MODE - The participant is "apprehending" his/her environment through all or most of his/her senses. The learner is engaged as a receiver of stimuli through physical participation rather than as a receiver of information.

a. The participant is engaged in a simulation, a role play, or a practice session using a certain behavior.

b. The participant is involved in a real-life experience.

PARTICIPATIVE ACTIVITY: a training activity which involves the learner, usually mentally and physically and often verbally, e.g., role play, simulation, problem solving, demonstration with practice. Therefore a participative activity is a "sensory-participative mode" activity as described earlier. Some participative activities may involve the learner more fully than others, e.g., a simulation usually involves the person more than problem solving. Discussion in some ways fits the description of participative activity, but it is not included here.

Some activities may seem participative because the participant is physically present and thus "participating." However, activities in which the learner is only a passive participant, receiving through eyes and/or ears, are not considered participative. Even activities such as viewing films or videotapes, looking at exhibits, or observing demonstrations are not participative in the sense the word is used here.

"Participative activity" is sometimes used much more broadly to refer to the learner's involvement in designing learning experiences. Thus participative activities may include assessing needs, setting objectives, and so on. (For example, see Rosenblum, 1985.)

EXPERIENTIAL ACTIVITY: a training or educational activity which involves the learner. In this sense it is used synonymously with "PARTICIPATIVE ACTIVITY." However, there are two broad uses of this word, both of which fit the above description. Some educators/trainers, such as Morris Keeton (1976), use "experiential activity" to refer to the experiences of individuals outside the classroom. Thus one's job or family life is experiential activity. Other educators/trainers, such as David Kolb (1984), use "experiential activity" to refer to the planned activities which one experiences within the classroom and outside the classroom. Within this research project, experiential activity will refer to the latter use of the term unless otherwise noted.

EXPERIENTIAL LEARNING: learning which is accomplished through "direct participation by the learner in the world of reality . . . ." (Stadsklev, "Foreword") Reality can be experienced in activities such as internships, field placements, work/study assignments, structured exercises and role plays, and gaming simulations. (Kolb, p.3)

EXPERIENTIAL BASE: an experience or set of experiences which allow an individual to grasp the meaning of symbols related to that base. People have difficulty really grasping the meaning of words until they have experience with the real thing. (Stadsklev, p. 29) For example, people cannot fathom "fear" or "sorrow" until they

have experienced fear and sorrow. (Augustine, p. 224) They cannot comprehend "hip roof" until they have seen one. Nor can they comprehend "enter data" unless they have engaged in the process or observed others.

SUMMARY AND OVERVIEW

Chapter 1 contained an introduction, a statement of the problem and the purpose of this research, thoughts about the importance of this study and its generalizability, an introduction to the research design with the research questions and hypotheses, and finally the definitions of terms.

Chapter 2 contains a review of selected literature, primarily in three areas: the outcomes of education and training, factors affecting changes in behavior, and the activities for changing behaviors.

Chapter 3 describes the design of this research and the population, the procedures, and the delimitations and limitations.

Chapter 4 contains a report about the participants and the data from the questionnaires and interviews. It also reports the statistical analysis of the data.

Chapter 5 contains conclusions based on the data and analysis, ideas for the application of this research, reflections, and suggestions for further research.

Chapter 2

REVIEW OF SELECTED LITERATURE

INTRODUCTION

Allen Tough, in his book *Intentional Changes*, cites the reason for his exploration of intentional changes: "I have become convinced that we can all do much more to encourage and help intentional changes if we understand the person's natural process of change." (Tough, p. 13) It is with a similar interest that this researcher investigated personal change, especially changes of behavior, actions, or performance, and also investigated the processes of stimulating change, particularly the processes used within an instructional setting by an educator or trainer.

John Neimi, in *Involving Adults in the Educational Process*, writes: "Although the act of learning is an internal phenomenon, it comes about through interaction between the learner and other human beings or nonhuman entities or forces." (Rosenblum, editor, p. 3) This research investigated the nature of that interaction in an attempt to seek those external factors which cause the greatest effect on the internal phenomenon of learning. It is that pursuit to understand the individual change process and the desire to better utilize the instructional process to foster change which drove this research.

This review of the literature summarizes the reports, research, and writings relevant to this research project. While the emphasis is on behavioral change and the means to achieve it, there are several related issues which also merited investigation. Literature on these issues helped the researcher establish a base from which to focus on behavioral change and the means by which to achieve it.

The first major related issue is **the specification of outcomes.** As mentioned earlier, Knowles said that adults pursue education because of a desire for "competence." (Knowles, 1970, p. 23) Patricia Cross said that they want practical learning. (Cross, p. 90 and 96) However, when one says that adults desire competence or that they want practical learning, those are not especially explicit in terms of real outcomes. It is unclear whether adults perceive of that competence as greater knowledge and understanding, changed values and attitudes, improved physical skills, or new performance, i.e., cognitive, affective, psychomotor, or behavioral outcomes.

Furthermore, educators and institutions may define competence differently than learners or may choose different goals altogether. What is it that educators and institutions try to accomplish? Is it consistent with the interests of adult learners? What do theorists and philosophers believe institutions should accomplish?

The actual effects of education and training is another related outcome issue. What are the real outcomes of instructional programs for adults (whether in colleges, adult education classes, or training workshops and seminars)? What follow-up is done to determine 1) if the participants were changed by the class, 2) if the participants' competencies were affected, and 3) if the participants utilize what was taught in class? Perhaps the difficulty of assessing real outcomes has affected the research into cause and effect relationships.

The second major issue related to the central focus of this research is the **factors that**

affect behavior. Behavior is complex; it is affected by numerous internal and external factors. It is difficult to isolate the factors which affect behavior. Learning activities are only one such factor. Yet identifying factors seems essential to establishing a stronger relationship between behavioral change and specific activities.

Finally, the central issue in this research and literature review is the **activities which initiate, foster, enhance, or solidify behavioral change.** Researchers in several fields are interested in behavioral change. In order to increase our understanding of change, there is a need to incorporate the best available information into a synthesized whole. (Long, 32)

In keeping with the above, this literature review is presented under three major headings within this chapter as follows:

1. INTRODUCTION

2. OUTCOMES OF ADULT EDUCATION AND TRAINING
    a. Outcome orientation of adult learners
    b. Goals of education and training as stated by philosophers, theorists, and institutions
    c. Actual outcomes of education and training as identified by research
    d. Section summary

3. FACTORS AFFECTING CHANGES IN BEHAVIOR
    a. Internal characteristics of the learner
    b. Expectations of the learner
    c. Teachable moments and life transitions
    d. Environmental factors
    e. Change process
    f. Characteristics of the desired behavior (innovation)
    g. Characteristics of the instructor (trainer, educator, change agent, or counselor)
    h. Section summary

4. INSTRUCTIONAL ACTIVITIES (METHODS, TECHNIQUES, AND STRATEGIES) FOR CHANGING BEHAVIORS AS IDENTIFIED BY THEORISTS AND RESEARCHERS
    a. Experiential learning and information processing
    b. Apprehension and comprehension
    c. Abstract and concrete
    d. Behaviors affecting attitudes rather than vice versa
    e. Specific effective instructional activities
    f. Instructional activities used by instructors or trainers
    g. Section summary

5. CHAPTER SUMMARY

OUTCOMES OF ADULT EDUCATION AND TRAINING

OUTCOME ORIENTATION OF ADULT LEARNERS

The emphasis on practical learning (which affects one's abilities, actions, or behaviors) has been especially prominent among adult educators. Research into the goals and aspirations of adults who engage in learning experiences has revealed that this is indeed the primary interest of such adults.

K. Patricia Cross, synthesizing research findings from many studies, concluded that while adults may give multiple reasons as motivation for learning, "most adults give practical, pragmatic reasons for learning. Most are what Houle would call 'goal-oriented.'" (Cross, pp. 90 and 96)

As an example of that, Cross said that Allen Tough, who explored independent learners, discovered that "adult learners are most frequently motivated by the pragmatic desire to use or apply the knowledge or skill. Most often, they hope to take action - do something, produce something, or decide something." Over 80 percent of the people in Tough's study engaged in the learning project to take action and over 90 percent continued "in anticipation of using the learning in a concrete and pragmatic way." (Cross, p. 84) Cross thus seems to equate practical and pragmatic with the orientation toward performance or action.

As further evidence of the interest in practical learning, Cross said that "when subject matter interests are tallied, practical how-to-do-it courses rank far above subjects that

might be pursued because they satisfy intellectual curiosity . . . ." (Cross, p. 90)

However, the interest of adults in practical, performance-related behaviors is not unanimous, as Cross' review of the research attests. Likewise Brookfield discovered other interests as he reviewed numerous studies. He said that adults are "oriented toward a variety of cognitive, affective, psychomotor, and political ends . . . ." (Brookfield, p.2) (Those may be pragmatic outcomes, but they are not necessarily action- or performance-related.) Later, however, he said that adults engage in learning because of some "desire for developing new skills, acquiring new knowledge, improving already assimilated competencies, or sharpening powers of self-insight . . . ." (Brookfield, p. 11) (That list of outcomes seems much more performance-related.)

In summary, the motivation of adult learners is primarily practical and pragmatic. Within that orientation, there is a strong, but not entirely universal, interest in being able to take action or perform differently because of one's learning.

GOALS OF EDUCATION AND TRAINING AS STATED BY PHILOSOPHERS, THEORISTS, AND INSTITUTIONS

In the book, *Experiential Learning: Rationale, Characteristics, and Assessment*, edited by Morris Keeton, Cyril Houle wrote a chapter in which he briefly described the history of education and training. Historically, there have been two main trends in education and training: cognitive learning and practical performance learning. (Keeton, pp. 19-33)

There have been a variety of cultures throughout history which have fostered the accumulation of knowledge. The Greek and Roman scholars taught history and language. In the middle ages, the European universities began teaching subject matter

content through books and lectures. (Keeton, pp. 19-33)

Alongside that tradition, one can also see the fostering of personal skills for living and working. Children were trained in the practical skills of adulthood: preparing meals, hunting, tending flocks, farming, building shelters, and making garments. Later in the guilds of the middle ages, apprentices were taught the practical arts, crafts, and trades. Likewise, future knights were trained in chivalry. Unlike the methods used in the universities, **experiences** were used to develop these practical skills. (Keeton, pp. 19-33)

In the eighteen hundreds, some demands were placed on universities to incorporate professions which were formerly considered crafts, such as engineering, agriculture, architecture, and dentistry. The older forms of formal experiential training were gradually being eliminated. However, in many cases the experiential methods previously used for training were not integrated into the university; practical subjects were treated theoretically. (Keeton, pp. 19-33)

To overcome that situation in America, in the mid-eighteen hundreds, the land grant institutions were started and given a training mandate in practical subjects. Even then, however, adapting experiential strategies to the school setting was difficult. (Keeton, pp. 27-29)

On the other hand, there were some successes with that integration. In the late eighteen hundreds, for example, for the first time doctors in training were required to work with cadavers and to observe the treatment of patients by an experienced doctor. Such practical work has become standard in some professions in the form of practice teaching, moot court, and field work. (Keeton, pp. 19-33)

Yet, in many ways, practical learning was not made a part of the curricula in higher education. The two outcomes (cognitive and practical performance) were not synthesized. Practical training was often distinctly separated from the cognitive courses. (Keeton, pp. 19-33)

To this day, that dichotomy between the outcomes of knowledge and practical skills seems to exist. (In fact, the methodologies typically used to achieve the outcomes have frequently not been integrated and have been strenuously debated. As George Bonham wrote in an admitted exaggeration: "It is almost as if book learning and life learning do not spring from a common human experience, as if one must choose only one mode and repudiate the other.") (Chickering, p. 8)

However, while some promote extremes, it is doubtful that many promote either knowledge or practical skills to the total exclusion of the other. Some have certainly advocated a combination of the two. For example, Arthur Chickering, who has authored books emphasizing practical learning, still made an eloquent appeal for balance:

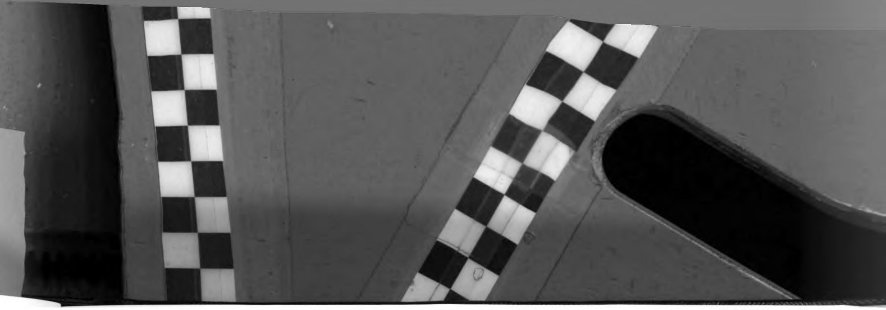
> Let us not underestimate the importance of achieving effective integration of professional/vocational preparation and liberal studies. The values are larger than improved employment and graduate school prospects for the young and increased educational effectiveness for older persons. If it is true that love and work are the basic ingredients for a meaningful existence, then we are attempting no less. For the liberal arts can expand the capacity to love life, to experience it more richly, to continually increase our range of satisfying activities. Effective professional/vocational studies, which not only prepare us for productive work but also help us grow in scope and capacity, offer the other essential. But one in the absence of the other leaves us crippled, negotiating tough terrain with difficulty, feeling less than we ought to, getting less from our lives than we know we should. (Chickering, pp. 67-68)

In a slightly different way, the emphasis on integration has also been advocated by theorists of cognitive development. With them, however, the thrust has been the effective utilization of knowledge in thinking (a performance) and other higher order cognitive skills. (See, for example, Resnik and Klopfer, p. 89.)

While individual educators, philosophers, and theorists have espoused a diversity of viewpoints, the institutional perspective must also be considered. Howard Bowen, an educator and researcher, assessed the multi-dimensional value of higher education in America on behalf of the Carnegie Council on Policy Studies in Higher Education. Prior to researching outcomes, he and his colleagues studied goal statements from 1500 "widely varied sources, historical and contemporary." (Bowen et al, p. 53) While pointing out divergent opinions, he summarized the predominant view regarding desired outcomes as follows:

> The goals of education are usually expressed as characteristics, skills, abilities, competencies, dispositions, motivations, sensibilities, orientations, commitments, understandings, and so on. To the extent that students achieve these personal qualities by the time of their graduation, it may be assumed that they are headed toward desirable lifetime behavior patterns. But behavior patterns are the ultimate goals. The basic purpose of instruction is to change lifetime behavior and thus to change lives, not merely to produce abstract dispositions or tendencies toward change that may never materialize. Each of the specific goals for higher education implies a future behavior pattern. For example, the goals of verbal skill, a subgoal under cognitive learning, implies effective verbal communication as a desired behavior of later life . . . . The goals of instruction are, in the first instance, to change students with respect to their dispositions and tendencies. But these immediate outcomes reach fruition only as they produce changes in lifetime behavior. (Bowen et al, pp. 41-42)

That assessment of the predominant view of outcomes from the institutional perspective begins with a statement that seems to emphasize practical learning. However, it



represents a blend of outcomes very similar to what Chickering advocated in that the behavior identified is not the behavior of professions or crafts or immediate practical application but life behavior, a "future behavior pattern." Bowen, however, did say that the balance in emphasis is now "swinging toward the practical side." (Bowen et al, pp. 41-42)

While the previous portion of this section has emphasized, somewhat historically, the dichotomy between knowledge and practical learning, there are other perspectives from which to look at the issue. Many authors, when addressing educational outcomes, identify three categories, not two: cognitive (knowledge and understanding), affective (attitudes and values), and psychomotor (physical skills). (For example, see Klingberg, 1970, cited in Lenning, p. 228.) None of those three specifically equates with behavior in its complex form, as in managing, performing surgery, problem solving, or interacting. In general, much of the literature in the field of education in the past few decades seems to overlook practical performance (in a behavioral sense).

There are exceptions to that general trend of identifying only cognitive, affective, and psychomotor outcomes. Some authors have expanded the typical three categories to include behavior. However, a number do that by expanding the physical skills category to include behaviors as follows: knowledge-understanding, attitudes-values, skills-behaviors. (For example, see Robinson and Robinson, p. 209.) This, of course, changes the nature of the psychomotor classification.

In Bowen's discussion of outcomes, he cited a number of people who heavily emphasize the cognitive and affective domains. They seem to imply the use of that learning in life situations, but do not specifically mention practical application or behavior as an immediate outcome. (Bowen et al, p. 33-35)

Bowen himself also identified three categories, but they are different. His categories are cognitive learning, emotional and moral development, and practical competence. (Bowen et al, p. 39) His third category, of course, incorporates the behavioral emphasis. Since he later identified five personal goals of education, it may be assumed that he saw these three as the primary goals.

In support of his contention that instruction must "transcend intellectual development" and that practical application is among the chief goals, he cited Sanford and Katz (1966, p. 400): "'We view as one of the chief goals of undergraduate education the application of rationality to the conduct of life. Mere exercise of cognitive skills is not enough.'" (Bowen, p. 34-35)

While Bowen, as previously cited, assessed viewpoints on higher education, others have assessed the broader field of adult education and reached similar conclusions. In fact, the emphasis on behavior is perhaps more prominent in adult education, where a number of well-known philosophers and theorists have emphasized the importance of practical learning. Among them are Malcolm Knowles and Paulo Freire. (Knowles, 1970, and Srinivasan, pp. 2-7)

The strength of conviction among some adult educators regarding behavioral outcomes is evident in the following bold statements by Verduin, Miller, and Greer:

> Adult instruction refers to a teacher's interaction with adults as a means of influencing their behavior. (Verduin, Miller, and Greer, p. 7)

> The educator's basic job is to bring about some new and desired behavior. Teachers, in essence, design and carry out the instructional experience so that students can gain a new behavior, practice it if necessary, and learn when to use it in an applied situation. Behavior, therefore, is the key

> consideration for adult educators as they carry out their professional duties, and learning (changing behavior) is the primary focus of instruction. (Verduin, Miller, and Greer, p. 9)

They thought of "behavior" as a function of the other outcomes. Thus a behavior is dependent on one's knowledge and understanding, one's attitudes and values, and one's skills. (Verduin, Miller, and Greer, pp. 16-17) In that sense, behavior is the fourth and ultimate outcome.

Not all emphasize behavior so totally. Huey Long described the purposes of adult education reported in seven studies. Each study identified four to seven purposes. Some are very cognitive, such as "cultivation of intellect" and "liberal education needs," but most of the purposes identified do have a practical orientation, such as "occupational improvement," "societal advancement," and "emotional and moral development." (Long, pp. 276-277)

One model which nicely summarizes the scope of purposes or goals of adult education is that of Harry Miller. His model, as described by Long, includes two axes. The ends of the vertical axis represent knowing and doing. The ends of the horizontal axis represent individual benefits and social (societal) benefits. He said that objectives encompassed within the quadrant which is enclosed by the doing and social axes could be expected to dominate the field. These involve "active behavior change to conform to social role-demands," including technical skills which one learns for the benefit of society. (Long, pp. 297-298)

However, there are three other quadrants in his model. They also represent learning goals, goals which are held by some learners as well as some educators or trainers.

(Long, pp. 297-298) Yet, in the end, Miller's viewpoint is like that of many others cited earlier, behavioral change is the predominant goal of education.

The same view is common in training organizations. Quoting Nadler and Wiggs (1986), Robinson and Robinson say that training, by definition, focuses on "learning the skills, knowledge, and attitudes required to initially perform a job or task or to improve upon the performance of a current job or task." (Robinson and Robinson, p. xiv)

Looking at the goals of higher education, adult education, and training, the dominant viewpoint held by theorists, philosophers, and organizations is that instruction should affect the lives of participants in a practical way. Their ability to function should be affected.

ACTUAL OUTCOMES OF EDUCATION AND TRAINING AS IDENTIFIED BY RESEARCH

Since learning implies an outcome, it seems likely that there would be considerable research into outcomes. In some ways there has been.

Yet it is interesting that a person of the stature of Cyril Houle wrote:

> Historians of education have not considered the evaluation of learning outcomes, however achieved, to be a topic worthy of sustained attention. Similarly, specialists in educational evaluation do not seem to care where they have been but only where they are or where they are going. (Keeton, pp. 19-20)

He then mentioned several avenues he and associates used to find outcome research, but he concluded:

> Every promising citation led to frustration. Even John S. Brubacher's magisterial volume, *A History of the Problems of Education*, which chronicles seventeen major topics with exquisite care, does not include among them evaluation, assessment, or credentialing. (Keeton, pp. 19-20)

Individual researchers have, of course, determined specific results:

1. Cognitive outcomes have been measured. For example, see the doctoral dissertation by Don Hall Grout, 1988, Vanderbuilt University, in which he reports the effects of computer-assisted algebra instruction for adults.

2. Affective outcomes have been assessed. For example, see the doctoral dissertation by DaeBong Kwon, 1989, Michigan State University, in which he describes changes in self-esteem.

3. Psychomotor outcomes have been determined. For example, see the doctoral dissertation by Gary Walker, 1987, Michigan State University, in which he describes the retention of defensive psychomotor skills among law enforcement officers.

4. Behavioral or performance outcomes have been observed. For example, see the doctoral dissertation by Richard Cunningham, 1989, Michigan State University, in which training results are reported for a custodial service, a sign shop, and a food store. See

> also the dissertation by Soemardi Hadisoebroto, 1980, Michigan State University, in which he reports training results among educational coordinators.

There have indeed been hundreds of research studies into the real outcomes of education and training. Nevertheless, perhaps it is because of a lack of "sustained attention," as noted by Houle above, that summary information on outcomes is not readily available. In other words, the results of individual research projects have rarely been connected into meaningful broad-based conclusions. Two major exceptions are the works of McKeachie (1986) and Bowen (1977). Yet three major works by Cross (1981), Long (1983), and Brookfield (1986) do not contain information on actual outcomes.

Cross devoted a whole chapter to "How and What Adults Learn - and Want to Learn." "What Adults Learn" seems to imply outcomes. However, what they learn is primarily reported in the research she reviewed as kinds of subjects in which learners enrolled. For example, in large-scale surveys in 35 states in 1975, 48.7% of the adult learners engaged in occupational training, 20.6% engaged in general education courses, 15.9% took courses in social life and recreation, 14.8% pursued personal and family living coursework, and 10.0% got involved in community issues courses. (Cross, p. 201)

Compared to 1969 and 1972 survey results, in 1975 every field of study attracted a greater percentage of learners except general education, which dropped 6.6%. Furthermore, Cross said that "data on the subject matter interests of adult learners are quite consistent from study to study." (Cross, pp. 201 and 207)

However, this information does not address outcomes. It says little about what adults really learn or how they change.

Brookfield devoted a chapter to "Evaluating Learning and Its Facilitation." Yet that chapter deals with the methodology for evaluation and assessment and not what those evaluations and assessments have determined.

The best information found on broad-based learning outcomes for a population similar to the population studied in this research project is the book by Bowen and his associates, *Investment in Learning* . . . , cited earlier. He focused on higher education in general. (Bowen, et al, 1977)

Bowen and his associates studied and synthesized the reports from hundreds of research projects on actual outcomes. They reported:

> Current knowledge of the consequences of higher education is substantial and is found in a vast literature derived mainly from research and scholarship in psychology, sociology, education, philosophy, social criticism, and economics. The literature is generally fragmentary, scattered, and of uneven quality and beset with many inconsistencies and unresolved issues. Nevertheless, it includes some solid studies that offer a great deal of information and insight into the consequences of American Higher Education. (Bowen et al, p. xiv)
>
> There are six principal kinds of studies: (1) investigations of changes in the achievements, personalities, attitudes, and behavior of students during the college years; (2) surveys of the views of students and alumni about their college experiences; (3) censuses, public opinion polls, and other explorations of attitudes, economic status, and behavior of adult respondents; (4) multiple regression studies for particular populations incorporating many variables and designed to sort out the separate impact of education on income, career choice, health, voting behavior, religion, and so on; (5) case histories of individuals; and (6) critical and analytical studies without empirical data. (Bowen et al, p. 27)

Before analyzing outcomes, Bowen and his associates established a standard of measurement. They utilized over 1500 goal statements as the basis for their synthesis

and final goal statement. The main categories in their "catalogue of goals" are as follows:

I. Goals for Individual Students
  A. Cognitive Learning
  B. Emotional and Moral Development
  C. Practical Competence
  D. Direct Satisfaction and Enjoyments from College Education
  E. Avoidance of Negative Outcomes for Individual Students

II. Goals for Society
  A. Advancement of Knowledge
  B. Discovery and Encouragement of Talent
  C. Advancement of Social Welfare
  D. Avoidance of Negative Outcomes for Society (Bowen et al, pp. 53-59)

In reviewing hundreds of studies which assessed these outcomes, Bowen and his associates were able to reach many conclusions. They discovered that, while there may be exceptions in individual students, college has a strong positive impact on cognitive outcomes. "On the average, higher education significantly raises the level of knowledge, the intellectual disposition, and the cognitive powers of its students." (Bowen et al, pp. 28 and 97-98)

In the case of affective results, the research results are more mixed. Whether one views the results as positive or negative depends on one's personal orientation. There are, for example, increases in the strength of theoretical and esthetic values and decreases in the strength of religious values. (Bowen et al, pp. 131-134)

In studying practical competence, Bowen found that college contributes to future orientation and adaptability, involvement in public affairs and community affairs, family life, efficiency in consumer affairs, and good health. Furthermore, it is influential in developing math and verbal skills, professional competence, and many other practical capabilities. (Bowen et al, p. 187 and 215-218)

In the final analysis, they reported:

> Many studies made over several decades have shown that at least two-thirds of students, alumni, and members of the public believe that higher education produces valuable outcomes for its students. The percentage of people who hold strongly negative opinions tends to be very small - of the order of 5 percent to 10 percent. (Bowen et al, p. 235)

SECTION SUMMARY

While educational institutions have not yet fully agreed that practical, behavioral outcomes are the primary goal of adult education and training, many adult educators, trainers, theorists, and philosophers do concur. Their orientation seems consistent with that of adult learners, a majority of whom attest to their interest in behavioral or performance outcomes in a variety of ways. Furthermore, changes in action or performance as a result of training and educational experiences are evident according to numerous studies.

FACTORS AFFECTING CHANGES IN BEHAVIOR

While the literature cited in the first section of this review indicated that behavior change can occur through educational or training experiences, it is also apparent that not everyone who goes through the same training or classroom experiences learns the same. This section explores a number of factors which affect one's learning and eventual utilization of learning.

INTERNAL CHARACTERISTICS OF THE LEARNER

One does not need to search very extensively to find literature which describes differences among adult learners, differences in demographics, motivation, background, learning style, and other factors. Some of these differences have no effect, some little effect, and others a greater effect. Age, for example, has little effect on learning. (See, for example, Schlossberg, Lynch, and Chickering, pp. 1-7, and Long, pp. 38-70 and 222-234.)

The learner's learning style is one internal factor that has been found to have an effect. However, that factor is not a single dimensional variable. Rita and Kenneth Dunn indicated that there are numerous aspects to one's learning style. Some people learn best alone; others together. Some learn best by reading; others by presentation. Some learn most efficiently with background music; others in silence. Some learn best by touching, others by hearing, others by seeing, others by being totally involved. Their list includes four broad categories (environmental, emotional, social, and physical) with eighteen characteristics. (Dunn and Dunn, p. 122) The array of possible learning style combinations is vast.

Their brief summary mentions many researchers who have identified selected components of learning, developed instruments to assess those components, and determined that learners do differ. Furthermore, those learning style preferences, in all their variations, do affect learning. For example, when people are separated on the basis of brain hemisphere dominance and trained in a style fitting for that dominance, learners do learn more quickly in their preferred mode. (Murray, pp. 80-87)

Huey Long identified other personal variables which affect learning. For example, prior experience related to the area of learning affects participants' learning positively. Other things being equal, intelligence has a positive correlation with achievement on a variety of learning tasks. (Long, pp. 222-224)

Howard Gardner isolated seven different forms of intelligence, each one of which affects learning in its particular area. His whole book describes the seven, which include linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, intrapersonal, and interpersonal intelligence. (Gardner, 1985)

Long also identified a number of affective factors. Anxiety seems to have a negative effect on performance in some situations and not in others. However, he said that the amount of research with adults is limited. According to Tough, curiosity is an especially important motivation for individually guided learning projects. However, Long said that for adults "relevance or perceived value has a marked bearing on the desire to learn, and this factor often outweighs any influence of curiosity." (Long, pp. 226-228)

EXPECTATIONS OF THE LEARNER

Victor Vroom's "expectancy theory" of motivation states that a person will be motivated to do something if 1) there is some desire for the outcome that is likely, and 2) one expects that a particular behavior will achieve the outcome that is desired. In fact, motivation is the product of the strength of the desire and the strength of the expectancy. (Davis, pp. 65-66) For example, if a person wants to become a better listener and believes that a class on listening will in fact help him/her to accomplish that outcome, then he/she will be motivated to attend that class. The greater the desire for the outcome and the higher the expectation, the greater the motivation.

Researchers have discovered that a teacher or trainer's expectation that a learner will learn has an influence on the extent of learning. Without overtly intending to treat some individuals differently, educators and trainers convey to the learners of whom they have the greatest expectation that they indeed expect them to learn, and those learners do learn better and more rapidly. This is called the "Pygmalion effect." (Rosenthal, pp. 407-410)

TEACHABLE MOMENTS AND LIFE TRANSITIONS

Robert Havighurst developed a list of developmental tasks for different stages of life. When there is a great urgency to learn something relative to a developmental task over a short time, a "teachable moment" occurs. (Long, p. 229)

Without using the term, Arthur Combs and his associates also addressed the issue of teachable moments. They said that learning and remembering only takes place in

response to some need, and the primary need is for adequacy. (Combs et al, pp. 64, 197 and 219)

Edgar Dale likewise spoke about teachable moments. "You cannot learn efficiently unless you develop a desire, a need for learning." (Dale, p. 47) "Indeed, most of us forget if we have no clear reason for learning, if the idea or skill to be learned appears to be unimportant, or it seems to lack a relationship to our lives - in short, when it has no significance for us." (Dale, p. 50)

Daley, in *Relapse Prevention* . . . , said that it is imperative that the learner have a desire to learn. Early in the treatment, it is possible to have an effect on participants even though some may have been pushed into treatment. However, for the program to have a lasting effect, the individual must acquire a personal desire to change. (Daley, p. 9)

Aslanian and Brickell did research which seems to strongly verify Havighurst's original concept of teachable moments because of life transitions. In their study, most learners engaged in learning because of transitions in their lives, especially career and family transitions. (Aslanian and Brickell, 1980, cited in Schlossberg, Lynch, and Chickering, pp. 1 and 13)

ENVIRONMENTAL FACTORS

The importance of the environment in behavior is indicated in a couple equations. The first is Kurt Lewin's "theoretical formulation, $B = f(P,E)$, indicating that behavior is a function of the person and the environment . . . ." (Kolb, p. 36) Dana and James Robinson frequently repeat the fundamental concept of their book *Training for Impact*: "Learning experience X Work Environment = Business Results." (See, for example, Robinson and Robinson, pp. 11, 210.)

The environment is influential because it contains the reinforcers. "A reinforcer is a stimulus that follows some behavior and increases or maintains the probability of the behavior." (Johns, p. 42) If specific behaviors are desirable, including new ones, they must be reinforced by the environment or they are likely to become extinct. Furthermore, because an individual can anticipate the reinforcers or lack thereof through previous experience, a behavior can be molded before it is even tried. (Johns, pp. 40-63)

According to Robinson and Robinson, N. Rackham discovered in research at Xerox Corporation that "87 percent of newly learned skills can be lost when there is no follow-up coaching by the boss after training." (Robinson and Robinson, p. 111) The environment is obviously powerful in affecting behaviors.

Daley, who wrote about addition, recovery, and relapse, would certainly concur. However, the environment not only reinforces new behaviors, the environment also contains the elements which stimulate both positive and negative behaviors. (Daley, pp. 3-4, 33, 44-45, 48)

That principle stated by Daley is related to a concept of physics, which D. T. Hall describes: "A body is at rest when the sum of all the forces acting upon it is zero." The forces which hold a body at rest are constant. If one wants to move that motionless body, something must be done to unbalance the forces acting on it. Either the forces on one side must be increased or the forces on the other side be decreased. (Hall, p. 219)

In learning, if it is desirable for an individual to behave differently in an environment, one must recognize that the environmental forces often remain unchanged. The people surrounding the individual are the same, and so are the policies, the procedures, the organizational structure, the layout of furniture and fixtures. Change in the individual can be facilitated by increasing the environmental forces which are pushing in the direction of the change and/or reducing the forces which are hindering the change. Reducing the hindering forces is considered more efficient because it results in "lower tension in the system." (Hall, p. 220)

Allen Tough, who studied intentional changes, identified several environmental factors which may stimulate change: "social norms, government actions, mass media, and other stimuli from the social and physical environment." (Tough, p. 56) He said that these external factors often lead to personal introspection which then leads to change. (Tough, p. 59)

CHANGE PROCESS

In his foreword to Tough's *Intentional Changes*, J. Roby Kidd explained the educator's interest in the change process: "Learning is the fundamental concept and is always involved in some kind of change." (Tough, p. 10) The study of changes, change

processes, and change agents is of interest in several fields, e.g., counseling, communication, and organizational development. Therefore, a review of literature in these fields of study provides significant insight into the process of influencing behavior through education or training.

The adoption of an innovation certainly constitutes a behavior change. Rogers and Shoemaker described the innovation-decision process, that process which an individual goes through in adopting an innovation. It incorporates: 1) knowledge, 2) persuasion, 3) decision, and 4) confirmation. (Rogers and Shoemaker, p. 25)

The knowledge stage incorporates both awareness of the innovation's existence and understanding of how it functions. The persuasion stage is critical in making the decision to adopt. Persuasion is more likely if an innovation has the five following features: 1) favorable relative advantage, 2) trialability, 3) compatibility, 4) observability, and 5) lesser complexity. (Rogers and Shoemaker, pp. 22-23) From their work, it appears that behavioral changes desired by an educator or trainer may likewise need these characteristics if the participants are expected to adopt the behavior.

In an expanded paradigm of the innovation decision process, Rogers and Shoemaker incorporated other factors which also affect the process. They identified the many individual variables (personality characteristics, social characteristics, perceived need), social system variables (social system norms, tolerance for deviancy, communication integration), innovation characteristics (as identified earlier) and communication sources. (Rogers and Shoemaker, p. 102) Many of these match the change-affecting variables identified earlier in this chapter.

They said that this later paradigm has been developed to be consistent with the learning

process.

> The way in which new ideas are adopted by an individual is essentially parallel to how any type of learning takes place. In the innovation-decision process, innovation messages reach the individual by various communication channels. The effect of each ensuing message (the stimulus) about the innovation accumulates until the individual interprets it and decides to adopt or reject (the response) the innovation. This is learning. (Rogers and Shoemaker, p. 103)

Thus a change in behavior which an individual adopts may be achieved by going through this process.

The innovation-decision process is also connected to the intentional change process studied by Allen Tough. Tough and his cohorts interviewed 150 adults, asking them about the intentional changes in their lives in the past two years. Tough defined an intentional change as one which was definitely chosen and intended and which a person took one or more steps to achieve. (Tough, p. 39)

The change process which Tough reports incorporates three steps:

> deciding to change something particular
> planning the change strategy
> achieving the change (Tough, p. 51)

Those three steps amplify upon the model presented by Rogers and Shoemaker. All three of Tough's steps correspond to and expand upon the decision step. The decision step is the intentional part of the process, which is, of course, what Tough was studying. However, his steps do not explain the beginning of the change process, the stimulation

of change.

While it is not a part of his three step process for change, Tough did address the issue of stimulators:

> An opportunity, a triggering stimulus, or a change in the external world will often play a part in fostering . . . self examination . . . It is common . . . for people to examine, reflect on, and assess various facets of themselves and their lives. These facets include their values, goals, hopes, needs, characteristics, lifestyles, knowledge, skill, performance, success, time or money budget, psychological and emotional functioning, physical functioning, and spiritual level. Such an examination can uncover a latent interest, a readiness for change, a deep dissatisfaction, a large gap between the actual and the ideal, a general problem or issue, or a desire to change. (Tough, p. 59)

His remarks, of course, are closely related to those earlier on motivation and teachable moments. In that connection, it may be noted that the changes that Tough discovered are not always the result of training, but they may also be the type of life changes (transitions) which precipitate training. His research indicated that intentional changes are particularly likely in four areas:

1) job, career, and training
2) human relationships, emotions, and self-perception
3) enjoyable activities
4) residence location (Tough, p. 25)

Those represented 75% of all the intentional changes identified by subjects. (Tough, p. 25) They also closely resemble the transitions identified by Schlossberg et al. (Schlossberg et al, pp. 14-15)

CHARACTERISTICS OF THE DESIRED BEHAVIOR (INNOVATION)

As noted briefly earlier, Rogers and Shoemaker identified five characteristics of innovations which past research indicates will affect the rate of adoption. They are as follows:

relative advantage
compatibility
complexity
trialability
observability

"Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes." "Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and the needs of the receivers." "Complexity is the degree to which an innovation is perceived as difficult to understand and use." "Trialability is the degree to which an innovation may be experimented with on a limited basis." "Observability is the degree to which the results of an innovation are visible to others." All of these except complexity are positively correlated with the rate of adoption. (Rogers and Shoemaker, pp. 22-23, 137-157)

Zaltman and Duncan, who like Rogers and Shoemaker synthesized research on change, identified several other characteristics of changes which affect adoption. One such characteristic is divisibility, "the extent to which a change can be implemented on a limited scale," which generally has a desirable effect on change. Reversibility refers to the ability to discontinue the innovation and return to the original status. The greater the

ease of reversing and the fewer the permanent consequences, the greater the positive effect on change. Communicability, the "ease with which information about a change can be disseminated," also positively affects change. The speed at which a change is introduced can be too fast or too slow. Risk, uncertainty, and social relations are also briefly identified, without mentioning their effect. And finally, the greater the commitment necessary (in time, money, and other resources), "the less likely change is to take place." (Zaltman and Duncan, pp. 13-16)

CHARACTERISTICS OF THE INSTRUCTOR (CHANGE AGENT, COUNSELOR, OR EDUCATOR)

Research from several fields reveals that the characteristics of the person helping to facilitate change do affect learning or change. Each field may contribute to our understanding of what kind of individual can best facilitate change.

In the field of counseling, where the emphasis is usually on behavioral change, Carl Rogers discovered that change is most likely to occur when a helper or facilitator is empathic and genuine and when he/she communicates positive regard. (Corsini, pp. 151-153) Lawrence Brammer, another researcher in counseling, reviewed numerous studies on counseling effectiveness. He concluded that change in a helpee is most likely if the helper communicates openness, warmth and caring, empathy, positive regard and respect, and concreteness and specificity. (Brammer, pp. 36-42)

The study of innovation and change also contributes to our understanding. Rogers and Shoemaker described several change agent factors which influence the adoption process. Success in helping to facilitate change is positively related to client orientation. The

change agent must be able to empathize with the client. Success is also more likely if the change agent is homogeneous with the client and is creditable in the eyes of the client. (Rogers and Shoemaker, pp. 236-245)

Educational researchers have identified similar instructor characteristics for effectiveness. "Teachers who rank high on empathy, respect, and genuineness are more likely to facilitate cognitive and affective growth in their students than teacher who rank low." (J. Miller, p. 95)

Citing Daloz (1986), who worked with adult external degree programs, Schlossberg, Lynch, and Chickering said: "Mentors are often the most effective teachers for adult learners." Mentors "hold a hand here, pat a shoulder there, and say words of comfort or praise, guiding their adult learners through the maze of learning obstacles." (Schlossberg et al, p. 119)

In the three fields in which literature was reviewed above, there is considerable consistency in the characteristics of effective helpers of change. It is evident that personal ability to care about and relate with the learner are very important, as is the ability to help learners through a process.

SECTION SUMMARY

In summary, change is affected by numerous factors:

1. internal characteristics of the learner
2. expectations of the learner

3. life transitions and other teachable moments
4. numerous environmental factors
5. movement through a standard change process
6. characteristics of the change itself
7. characteristics of the instructor (change agent, counselor, or educator)

The factor which affects one's learning and utilization of learning most notably is one's personal need for something which the learning seems to promise. That need, often precipitated by a transition, produces a force which may drive a participant toward change.

However, both the learner and the educator or trainer must be aware of the environmental factors which are likely to promote change or hinder change. Strategizing how to utilize positive forces or to reduce hindering forces is likely to improve the likelihood of change.

Similarly, helping the learner through the change process will also improve the likelihood of change. In that process, persuasion is a vital part; it is affected most by the characteristics of the innovation (characteristics of the desired behavior), but it is also affected by certain characteristics of the facilitator of change.

In summary, this study of the literature reveals that behavior change is more likely to occur in an individual under certain conditions. For a participant to learn and to apply learning outside the instructional setting, four key variables must support that change:

1. factors within the individual
2. factors within the environment

3. the nature of the new behavior
4. characteristics of the facilitator

A fifth key variable, the instructional activities utilized for helping the participants learn, is addressed in the next section.

THE INSTRUCTIONAL ACTIVITIES (METHODS, TECHNIQUES, AND STRATEGIES) FOR CHANGING BEHAVIORS AS IDENTIFIED BY THEORISTS AND RESEARCHERS

EXPERIENTIAL LEARNING AND INFORMATION PROCESSING

Researchers at Johns-Hopkins University studied outcomes from two modes of learning (information-processing and experiential-processing) for seven years. They found that experiential learning was much more likely to lead to behavioral outcomes than information-processing. (Stadsklev, pp. 26-32, and Keeton et al, pp. 49-61)

In information-processing, there is a basic four step process leading from the reception of information to action:

1. reception of information through a symbolic medium (spoken or written)
2. understanding the general principle relative to the information presented
3. inferring a particular application of the principle
4. acting or applying the principle in a new situation

According to the report, the greatest difficulty in this process is moving through step three. Learners using this mode can often perform well on paper and pencil tests which test recall and understanding but most often they do not act upon the principle. Thus, as the report says, learning is incomplete.

Similar conclusions are reported by John Bransford and Nancy Nye, in the volume by Resnik and Klopfer. They cite six studies, including some with college students, which they say "provide evidence that relevant knowledge often remains inert even though it is potentially useful." Prompting of some kind is often necessary in order to get people to use applicable information. (Resnik and Klopfer, pp. 188-193)

According to the Johns-Hopkins report, in the experiential mode of learning, there is also a four step process:

1. acting or experiencing something
2. understanding the experience in terms of cause and effect
3. building a generalization out of similar experiences (This does not imply being able to express that generalization.)
4. using the generalization in a new circumstance

As indicated earlier, the experiential mode leads more directly to the performance or action. The weakness in this process is in step three, building a generalization. Thus one may have an experience without learning from it. (Stadsklev, pp. 26-32) In a related thought, however, Edgar Dale observed that generalizations are built upon several similar experiences. Therefore instructors should not be too hasty in moving from the experience to the abstract. (Dale, pp. 70 and 101) Perhaps the "weakness" is not so much in the process but in the fact that there have not been enough similar experiences

upon which to build a generalization.

In addition to the fact that experiential learning leads directly to action, the Johns-Hopkins report indicates that "experiential learning appears to be less easily forgotten than learning through information processing. The reason may be that the associations which embed it in memory are associations with concrete action and events to which affect was attached, and are not merely associations with abstract symbols." (Stadsklev, p. 32) Thus when one experiences something, the whole being is involved in a way which does not occur in information-processing.

The findings of the Johns-Hopkins research seem to have been personally discovered by Carl Rogers long before that study. In a speech in 1952, while admitting that his viewpoint may sound extreme, he said: "I have come to discover that the only learning which significantly influences behavior is self-discovered, self-appropriated learning." Thus social learning, the accumulated learning of society, cannot be communicated in a way that changes behavior. (M. Miller, pp. 68-70)

The Johns-Hopkins researchers do not discount information-processing. However, they do conclude that "learning in school might be made considerably more effective by the appropriate mix of experiential and information-processing modes of learning." (Stadsklev, p. 32)

Others also advocate a blend. Bransford and Nye, who were quoted earlier saying that relevant information is not used, said: "Many cognitive researchers argue that effective learning requires that we spend more time having students actively use knowledge to solve problems . . . and spend less time simply reading about introductory facts and concepts." They advocate learning by doing, but indicate that even practical exercises

need to be used with caution, primarily because students may still be too confined to the book problems. (Resnik and Klopfer, p. 195) (Note that for cognitive researchers the learning process begins with information processing and ends with action.)

The two basic processes for learning which Paulo Freire addressed also closely parallel information processing and experiential processing. He referred to the first as a system of domestication in which information is transferred from the teacher's head to the student's head. This directive teaching promotes an authority-dependency relationship. (Srinivasan, pp. 2-7)

Freire advocated "praxis," which incorporates learner reflection on the reality in which he/she lives, action as a result of that reflection, and then further reflection. In this process, the learners are active and they critically examine, interact with, and transform their environments. (Srinivasan, pp. 2-7) (Note that for Friere the optimal learning process begins with the learner's life experience.)

Srivivasan said that Freire's reflection process led to action rather than content mastery. He wrote: "The end product of Freire's system may be summed up in terms of attitudes, feeling, and perceptions that provide the dynamics for action, not the mastery of content as such. It is the feeling of self-worth, the perception of oneself as an agent of change, the desire to be liberated, the enjoyment of dialogue, that contribute to changing the learner from an object into a subject and that promote action." (Srinivasan, p. 12) That conclusion matches the conclusion of the Johns-Hopkins study.

While Tough does not advocate a particular change process, it is his observation that thinking is a vital part of the change process. After exploratory interviews with 150 people regarding their changes, he wrote: "The person is often very thoughtful and

active in considering and tentatively choosing some major change, and then in deciding definitely to proceed with it. It is common, for example, for people to examine, reflect on, and assess various facets of themselves and their lives." (Tough, p. 59) What he seems to be describing is the experiential learning process in which one first experiences something (life), through thinking understands the experience, draws some conclusions, and then acts upon those conclusions.

Brookfield seems to have drawn heavily on Freire in forming his conclusions about what constitutes effective facilitation of learning. He listed six principles, two of which are particularly germane to the topic here:

> Praxis is placed at the heart of effective facilitation. Learners and facilitators are involved in a continual process of activity, reflection upon activity, collaborative analysis of activity, new activity, further reflection and collaborative analysis, and so on.
>
> Facilitation aims to foster in adults a spirit of critical reflection. (Brookfield, p. 10)

Brookfield's conclusions are cited and supported by Schlossberg, Lynch, and Chickering, who wrote that such processes are vital elements of meaningful learning experiences. "The cycle of exploration, action, and reflection is an essential ingredient of the practical, internships, co-op learning, and field experiences that can constitute some of the most meaningful learning for adults. This same cycle can be applied in classes and other curricular experiences of adult learners - if they learn the process." (Schlossberg, Lynch, and Chickering, p. 205)

The observations of Tough and the viewpoints expressed by Freire, Brookfield, and Schlossberg et al seem to support the conclusions about the experiential learning process

as described in the Johns-Hopkins' research. In similar support, on the basis of research rather than theory, Arthur Chickering wrote: "There is . . . a wealth of . . . research concerning college impacts and human development that suggests that institutional changes toward experiential learning will result in increased educational effectiveness." (Chickering, p. 75)

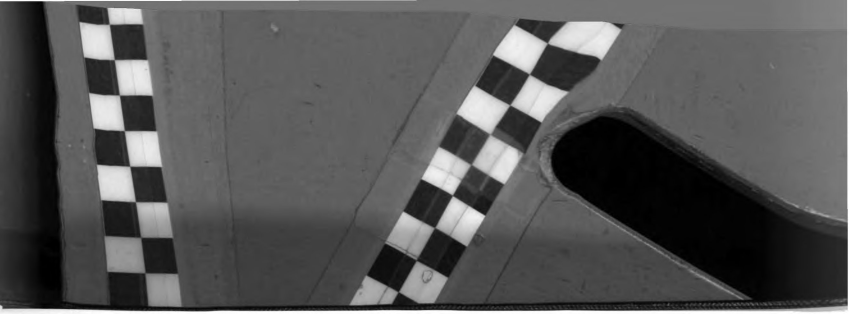
APPREHENSION AND COMPREHENSION

In the book *Experiential Learning*, David Kolb attempted to combine the ideas of a number of theorists and philosophers who espoused experiential learning, particularly John Dewey, Jean Piaget, and Kurt Lewin. Using a wide range of research, he proposed a model to explain the processes of learning.

While he did not discount learning through the sharing of information, he argued that our learning process "must be reimbued with the texture and feeling of human experiences shared and interpreted through dialogue with one another." With the explosion of information and knowledge, the pressure to simply give that information to students has become greater. (Kolb, p. 2)

As mentioned earlier, Kolb drew on the works of Dewey, an educational philosopher, who inspired a movement toward learning through experience. His advocacy has had a lasting effect on the training methodology for many vocations and professions. (Kolb, pp. 5-7)

Kolb drew on Lewin's work with groups. According to Kolb, a strategy evolved in Lewin's experimental work: a group experienced working together and then discussed



that experience. The discussion served to facilitate inquiry and understanding. (Kolb, p. 8-11) According to Lewin's model for experiential learning, there are four cyclical steps in the process (with the first at the top): 1) concrete experience, 2) observations and reflections, 3) formation of abstract concepts and generalizations, and 4) testing implication of concepts in new situations. (Kolb, p. 21) This is virtually identical to the four step process in the experiential mode identified in the Johns-Hopkins study.

As further basis for his own model, Kolb cited the theories of Freire, who similarly emphasized discussion of experiences as a means of bringing to consciousness one's social environment. Friere theorized that reflection and awareness would lead to action. (Kolb, p. 16)

Kolb relied heavily on Piaget, even though, according to Kolb, "Piaget's focus is on cognitive-development processes - on the nature of intelligence and how it develops." Piaget observed children and theorized that intelligence is developed through experiences. He concluded that an individual is not able to utilize symbols properly unless he/she has had experience with the real-life object or circumstance. (Kolb, pp. 12-13)

Of course, Piaget was not the first to draw that conclusion. In the fourth century, St. Augustine pointed out that one could not comprehend "fear" or "sorrow" or other words about emotion without having experienced that emotion. (Augustine, p. 224)

Piaget advanced a four-step model for the development of concepts or the accumulation of knowledge (intelligence): 1) concrete phenomenalism, 2) internalized reflection, 3) abstract constructionism, and 4) active egocentricism. (Kolb, pp. 23-25) In reality, the model is again very similar to the four-step process for experiential learning identified in the Johns-Hopkins research. However, Piaget's fourth step was not action, but rather

mental use of the concept. It demonstrates his interest in the acquisition of concepts or intelligence rather than in behavioral outcomes.

Another aspect of Piaget's work upon which Kolb built is his theory that an individual's ability to utilize the four steps grows with age. Thus at an early age, a child can only experience life. At the next stage, he/she experiences and reflects upon those experiences, and so on. (Kolb, pp. 23-25)

Kolb, however, digressed somewhat from the idea that learning is done through a sequential process. He utilized each of the steps (in the Piaget model) to represent a style of learning in itself. Those learning styles would not be relevant in this part of the literature review except that each also represents a method or technique for learning. Kolb wrote:

> Learners, if they are to be effective, need four different kinds of abilities - concrete experience abilities (CE), reflective observation abilities (RO), abstract conceptualization abilities (AC), and active experimentation (AE) abilities. That is, they must be able to involve themselves fully, openly, and without bias in new experiences (CE). They must be able to reflect on and observe their experiences from many perspectives (RO). They must be able to create concepts that integrate their observations into logically sound theories (AC), and they must be able to use these theories to make decisions and solve problems (AE). Yet this ideal is difficult to achieve. How can one act and reflect at the same time? How can one be concrete and immediate and still be theoretical? Learning requires abilities that are polar opposites, and the learner, as a result, must continually choose which set of learning abilities he or she will bring to bear in any specific learning situation. (Kolb, p. 30)

Kolb is saying that there is not only a four-step process, but that each step is in itself a discrete technique for learning. Kolb indicated that this distinction is debated by scholars. It is a debate between learning as a process which results in an end product

versus learning through one facet of the process in isolation. (Kolb, pp. 30-34)

Kolb elaborated on the four styles of learning, picturing them as two sets of polar opposites on two axes. The first sets of opposites on the vertical axis are "apprehension" and "comprehension" with apprehension at the top. (Kolb, pp. 40-51)

Apprehension is the grasping of a concrete experience through one's senses. Yet it is a grasping which does not include mental thinking processes. Thus, as he described, one may sit in a chair in a room and take in that experience through the senses, but may not think about what he/she is seeing, smelling, hearing, or touching. (Kolb, pp. 40-51)

Comprehension is the formation of concepts through the interpretation of symbols. Thus one could read or hear a description of a chair in a room and that receiver could comprehend that scene, forming a mental picture through the symbolic medium. (Kolb, pp. 40-51)

Another example may illustrate that distinction further. If a person drives a car around a corner, especially rather fast, he/she will apprehend the experience of centrifugal force. In the process of apprehending itself, it is not necessary to be conscious of the force that is pulling one's body and car outward or to think about it; it is sufficient to experience it. On the other hand, the comprehending process is often desired in the classroom by a teacher who uses the symbolic medium of words to describe centrifugal force. As the student grasps the concept through the medium, he/she has comprehended.

Kolb identified several scholars who in one way or another make this distinction between apprehension and comprehension. Most notably, he cited William James, the psychologist, who identifies several languages in which a distinction is made between

acquaintance (through involvement with something) and knowledge about something. (Kolb, pp. 44-45)

Kolb also referred to brain hemisphere research and said that "the modes of knowing associated with the left and right hemispheres correspond directly with the distinction between concrete experiential and abstract cognitive approaches of learning." The two brain halves have two "opposed modes for grasping reality." (Kolb, pp. 16, 46-48)

While one might wonder what one can do with apprehension, Kolb cited the studies of Robert Zajonc, saying that apprehension is apparently the basis for intuition. "Intuitive behavior is guided by affective judgment (the apprehension process) rather than cognitive judgment." (Kolb, pp. 49-50) Thus sensing that something is wrong or "having a feeling" that one ought to do this or that may be attributed to one's apprehension in similar situations. That apprehension (intuition) can be the basis for behavior directly without rational thought.

In his conclusion to this section, Kolb said: "The process of apprehension as a mode of grasping experience and understanding the world is gaining scientific respectability ... The view that concrete apprehension processes are coequal with comprehension processes represent a dramatic change from that of 40 years ago." Apprehension is not just a sign of a young brain or a damaged brain. (Kolb, p. 50)

The other set of polar opposites which Kolb described are "intention" and "extension," which he put on the horizontal axis with intention to the right. He described these as "transformation processes," processes by which one transforms what one has grasped through apprehension or comprehension into another form of learning. (Kolb, pp. 51-58)

While these are transforming processes which can be used in combination with apprehension and comprehension, Kolb argued that they are independent and are therefore usable as learning processes in themselves. The four are "equipotent." (Kolb, p. 52)

Intention is the process of inward reflections. It is thinking. Extension on the other hand is outward directed. It is action. (Kolb, p. 51-58)

Kolb did not cite as many other sources to substantiate this dimension of learning. In fact, he said that it has often been collapsed with the other, namely, extension (active experimentation) being paired with apprehension (concrete experience) and intention (objective reflection) being paired with comprehension (abstract conceptualization). (Kolb, pp. 51-60)

Yet, in support of his view, he referred to the work of others which may link intention and extension with introversion and extroversion respectively. He also explained some related brain research, indicating that any connection between one's orientation to intention or extension and particular areas of the brain is more tentative. (Kolb, pp. 51-60)

While stressing the importance and independence of the four learning styles, Kolb also recognized possible combinations of learning styles, e.g., comprehension informed by intention (reflective observation). In fact, he calls these higher level forms of learning. In the end, he concluded that the "combination of all four of the elementary learning forms produces the highest level of learning" because it makes use of the four styles of learning. (Kolb, pp. 65-66)

ABSTRACT AND CONCRETE

Edgar Dale, a theorist and professor of education, described three basic mediums through which learning takes place and arranged them on a spectrum from concrete through abstract. The three mediums are: experiential, iconic, and symbolic. He relates these to Jerome Bruner's categories: inactive, iconic, and symbolic. (Dale, pp. 13-14, 107) The continuum represents the amount of abstraction or the "amount of immediate sensory participation that is involved." (Dale, p. 110) Thus with the symbolic category, there are few senses involved, and with the experiential category, there are potentially many senses involved.

The ends of the spectrum, the experiential and symbolic mediums, seem to correspond to the two main processes studied in the Johns-Hopkins study described earlier, namely, experiential processing and information processing. In many ways, they also correspond directly to apprehension and comprehension, as described by Kolb.

Within the experiential category, the concrete end of the spectrum, Dale listed direct, purposeful experiences, contrived experiences, and dramatized experiences. At the other end of the spectrum, within the symbolic category, he included verbal symbols and visual symbols (which includes graphs, maps, charts, etc.). (Dale, p. 107) (See Appendix A.)

In the iconic category, which is in the middle, are those strategies through which one sees a representation of the real thing. Thus the category includes demonstrations, study trips, exhibits, television, motion pictures, and recordings, radio, and still pictures. (Dale, p. 107)

In applying those three categories, Dale believed that the basis for action or behavior was the formation of concepts, which had been developed through experience. His understanding of how concepts (generalizations or principles) are formed in the mind of the learner seem consistent with the Johns-Hopkins research. "A concept is a general idea that we form about several specific experiences. Such a general idea enables us to summarize or condense many of our actions and observations into an over-all statement of understanding or awareness. When you form a concept, you are able to express many particular details of your life by stating them as a generalized principle or rule or idea." (Dale, p. 70)

It is also quite clear that Dale, like Piaget, sees concrete experiences as essential to the formation of a concept:

> A common danger in our teaching is that we may move to generalization too quickly, without providing a good foundation of vivid, specific experiences. As a result, our students may be confused and perplexed when they confront a new abstraction.
>
> This consideration, and the many learning experiences that we have considered, may suggest that concept development is a process in which the concrete and the abstract interact. There is a shuttling back and forth in which generalizations help us to understand new concrete experiences and the concrete experiences in turn help us to enlarge or refine our generalizations. In short, we reconstruct - reclassify - our experiences. When we understand this dynamic relationship between concrete experience and the generalization, we get a fresh view of concept building in the classroom.
>
> Once we understand this interaction between rich, specific experiences and generalized ideas, we shall not make the mistake of exalting the general at the expense of the specific or the reverse. We need them both. We can move to the abstraction only through the concrete. And we move beyond the specific details of an experience only by building them into generalizations. (Dale, pp. 101-102)

Yet, formulation of generalizations is not sufficient for Dale. To him living differently, transferring the learning, or doing something with the learning is essential. (Dale, pp. 24, 57-58) He describes transfer as the ability to "move from one experience to a related experience . . . ." In support of his viewpoint, he quotes Cronback (1963): "'The only sure sign that the pupil has command of a principle is transfer . . . going beyond the words given by text or teacher and beyond the tasks he had previously practiced.'" (Dale, pp. 57-58) Thus transfer incorporates the fourth step in either mode of learning as identified in the Johns-Hopkins study, namely, application in action.

In summary, Dale believed that experiences are the basis for the formation of concepts. They in turn generate action. Concepts learned by other means do not transfer into action. Thus he attests to the power and influence of real-life experiences, contrived experiences, and dramatized experiences, which fit his experiential category.

On the other end of the spectrum are those who would approach the formation of concepts (as the basis for action) through the abstract, not the experiential. Lauren Resnik and Leopold Klopfer edited a book on cognitive research, a field closely related to the writings of Dale. Within that field there appears to be a growing interest in the discovery of knowledge and the development of concepts by the learner. While the various authors in their book offered different perspectives, what is advocated overall is a curriculum which involves the learner in thinking, primarily thinking to prepare for receiving information and thinking to integrate new information with old. That viewpoint is summed up by the following:

> A major assumption shared by a number of cognitive scientists is that new knowledge must be actively constructed by learners . . . . One cannot simply 'transmit' to students the secrets of expertise. This does not mean that information provided by teachers and texts is unimportant. However,

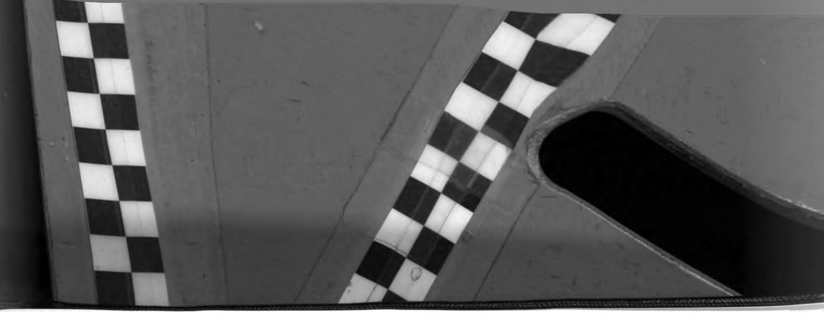
> it suggests that students must have the opportunity to actively use this information themselves and to experience its effects on their own performance. (Resnik and Klopfer, p. 188)

For some authors in this book, the intent of that thinking process for learners is clearly to facilitate use later to solve new problems. Generally these problems are solved on a cognitive level as a basis for action. (See, for example, Resnik and Klopfer, pp. 9-10.) Yet for some authors the emphasis seems to be the formulation of concepts. Representative of that viewpoint is this statement: "Meaningful learning occurs at the level of concept acquisition and conceptual change." (Resnik and Klopfer, p. 187) Here the end goal is seen as concept formation rather than action based on that concept. This view is more consistent with Piaget's.

Throughout Resnik and Klopfer's book, the various authors decried the transmission of information to be absorbed and remembered. The key point is that thinking is an effective means for enabling the learner to grasp concepts and utilize them. While that utilization is implied, references to studies where that has been shown to be true are not cited in this book.

BEHAVIORS AFFECTING ATTITUDES RATHER THAN VICE VERSA

As noted earlier, some authors contend that cognitive, affective, and psychomotor learning are the foundations for behaviors or performance. It might be surmised from that viewpoint that it is therefore imperative to change certain attitudes in order to affect behaviors. Without denying that changing attitudes would affect behavior, there are some who believe that changing behaviors will affect attitudes.

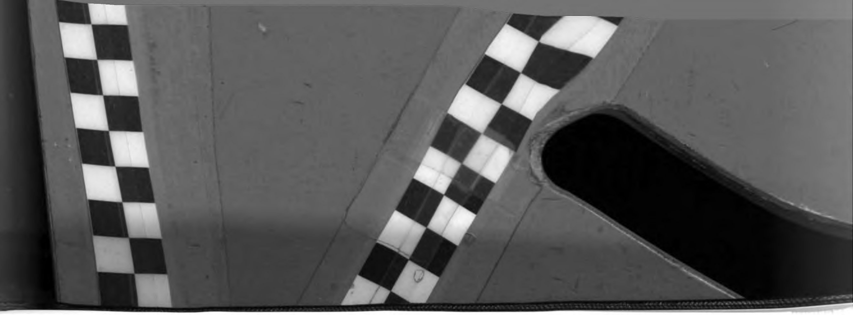


One such person is William Glasser, a psychiatrist, who through his experience came to disagree with Freudian psychology, which at the time was used extensively. His practice gradually evolved into what is called "reality therapy." Glasser used reality therapy with a variety of clients, including seriously delinquent adolescent girls, psychotic patients in a veterans' psychiatric hospital, and private clients. In each situation he found his methods to be more effective. (Glasser, pp. ix-xxv)

In the case of the patients in the veterans' hospital, reality therapy proved so effective that many who had been there for more than ten years were treated and released within months. In one group of 75 released, only three returned. (Glasser, pp. 131-164)

While many of Glasser's theories could be cited, the one most relevant to education and training and behavioral change is that on the relationship between attitudes and behaviors. "Waiting for attitudes to change stalls therapy whereas changing behavior leads quickly to a change in attitude, which in turn can lead to fulfilling needs and further better behavior." (Glasser, p. 34)

Another counselor, William Diehm, reached the same conclusion in his marriage counseling. He wrote that when people reported that their attitudes or affection had changed toward a spouse, he asked them to consider what they were doing differently. To enable them to return to more positive attitudes, he worked with them to get them to begin doing the things which previously had supported the more favorable attitude. In his experience, the return of behaviors precipitated the changing of attitudes. (Diehm, pp. 11-54)



SPECIFIC EFFECTIVE INSTRUCTIONAL ACTIVITIES

Wilbert McKeachie reviewed numerous research studies to determine whether lecture or discussion had proven to be most effective. He reported that while differences were often slight, there is a volume of research that supports one conclusion: participation in the process of learning definitely has some advantages. His findings can be summarized as follows:

1. When one compares the retention of information until a test is taken, lecture and discussion appear to produce the same results. (McKeachie, p. 48)

2. When one compares the attitude toward the subject and long-term retention, discussions are superior to lecture. (McKeachie, pp. 144-145)

3. Discussion seems particularly appropriate to "help students learn to think in terms of the subject matter by giving them practice in thinking." (McKeachie, pp. 27, 48-52)

4. Student-centered discussions are more effective than instructor-centered discussions for application of concepts, attitudes, motivation, and group membership skills. (McKeachie, pp. 48-52)

5. "The chief advantage of games and simulations is that students are active participants rather than passive observers. Students must make decisions. solve problems, and react to the results of their decisions." (McKeachie,

p. 170)

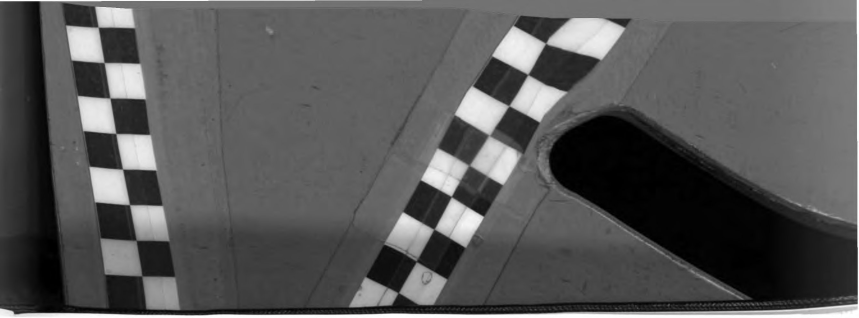
The conclusions of McKeachie's megastudy are certainly substantiated by individual researchers. Soemardi Hadisoebroto put thirty community education fieldworkers through training and measured several outcomes. The treatment modes were lecture-based and participatory-based. He found that subjects who were trained using a participatory approach did change behaviors as a result. The others did not. (Hadisoebroto, 1980)

Stephen Brookfield wrote a chapter assessing the value of discussion in the volume edited by Rosenblum. He summarized a viewpoint of Eduard Lindeman, whom he says is "still the most significant American philosopher of continuing education:" discussion is a method that gives students "an opportunity to reflect on their experiences and to assign meaning to them in a collaborative quest for understanding." (Rosenblum, p. 56) That sounds like Friere.

While Brookfield said that some claims for the effectiveness of discussion are over-stated, he cites many who attest to their value. For example, he cited Verner and Booth (1964): "'Discussion is definitely preferred in situation where the learning objective involves group behavioral or attitudinal change.'" (Rosenblum, p. 58)

Like McKeachie, Nathaniel Gage also reviewed numerous research projects and drew several conclusions about various strategies for changing behaviors of teachers and prospective teachers:

1. If knowing how to do something is desirable, practice is required. Knowledge of results or feedback on performance in that practice



enhances the learning. (Gage, p. 45)

2. Micro-teaching is very effective for training teachers. It involves practicing "only one or a few aspects" of a behavior in very short segments with a follow-up critique. In the research, the newly learned behaviors were evident immediately, in subsequent months, and in the first year of actual teaching. (Gage, pp. 47-48)

3. Similarly, mini-courses have long-term effectiveness when used for individualized in-service training for teachers. The mini-courses tested required the teacher to read about a set of skills, view a film explaining and illustrating the skills, plan and teach a lesson using the skills, and evaluate the lesson. (Gage, pp. 48-50)

4. Cognitive discrimination training is also effective. In the research, prospective teachers learned to distinguish between six types of responses to student comments using recorded examples. The training affected behaviors in subsequent teaching. (Gage, p. 50)

5. Receiving feedback and agreeing to work on changing behaviors is likewise effective. (Gage, p. 51)

The findings of Richard Cunningham in his doctoral research are similar to those of Gage, who looked at many such studies. Cunningham observed and studied the learning of work skills of employees in three different businesses: custodians, sign makers, and stock persons at a food store. He reported that experience was the essential ingredient. In all three work sites, "responsive engagement in the work is necessary." In that

process, the learners "attend to the goal, the activity and the result of what they are doing. They respond by making appropriate trials to achieve the goal, by evaluating the effectiveness of the trials and by modifying them to be more effective. Workers learn from experience, by self-evaluation and self-criticism. It is a process of trial, evaluation, modification and re-trial until the problem is resolved . . . ." Those trials can be mental or actual physical trials. (Cunningham, pp. 136-137)

Cunningham also found that workers could learn through directed experience, i.e., going through the process with an experienced worker directing every step. And he found that workers could learn the kinds of tasks required by observing another person either live or on videotape. (Cunningham, p. 137)

Cunningham distinguished between serial concepts and comprehensive concepts. Serial concepts consist of series of steps which are always followed in a procedure. The comprehensive concept also consists of a series of steps, but there are decisions that have to be made. When such decisions are called for, people rely on their "experiential bank." When they have enough variety in their experiences regarding a particular task, they can connect the different experiences, in a sense jumping from one to the other, to utilize a sequence fitting for the given situation. (Cunningham, pp. 138-141)

In his summary, he said:

> When people learn at work, they learn by acquiring and applying experience. They learn what they do. Then they organize what they learned from their actions by developing successful procedures in the actual practice of their work.
>
> What they do not do is learn a theoretical base to work from and project their practice from it. Their theory is built from their practical experience and it is reinforced and broadened by further experience.

> This kind of growth does not preclude a purely theoretical construct, but it does not depend on it either. It has a sense of reality and experiential truth about it that would appeal to a lot of students in the classroom who do not relate well to abstraction. However, according to observation on the worksite, the results are organized into concepts. This suggests the use of an activity and experience based approach to conceptualization in the classroom. (Cunningham, pp. 141-142)

In summary, the common finding for these researchers is that the more effective strategies involve the learner. All encourage active mental participation, and in some cases, emotional and physical participation. In each case, the learner's experiences from the past are connected to the present (as in discussion) or an individual has an experience, either as an activity from which he/she can build generalizations or as a practice.

Other researchers have likewise drawn similar conclusions from reading research reports. Brookfield wrote: "The importance of ensuring that new knowledge, concepts, skills, or frameworks of interpretation are presented to adult learners in a manner that is comprehensible in terms of their own experiences is a major reason for using participatory learning methods." (Brookfield, p. 12)

He also said with certainty that training sessions should be participatory. "'Participation' is not a fashionable phrase, a fad that will disappear in a few months or years. Research in education, management, and social science shows, over and over again, that the most effective training takes place when participants are actively involved in learning, not passive recipients of knowledge transmitted from above by 'experts.' This is crucial when dealing with adult learners." (Brookfield, p. 255)

Change in participant actions, performance, or behavior can indeed be stimulated

and facilitated through some instructional activities more than others. Those which are more effective are likely to incorporate higher order thinking processes, participation, experiences, and/or direct involvement.

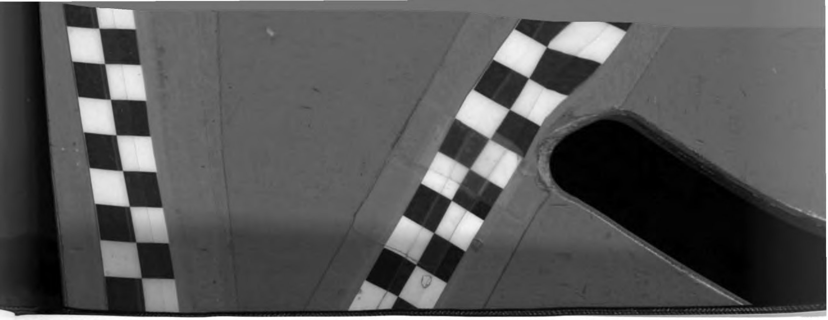
METHODS UTILIZED BY INSTRUCTORS OR TRAINERS

Practitioners throughout our society are already applying this information. Among them are therapists and counselors working with alcoholics, drug addicts, and others with destructive behaviors. In these fields, not only is it important to change the behavior but to keep it changed, to prevent relapse. Apparently many treatment centers are incorporating relapse prevention training into the treatment. Dennis Daley described five such programs in his book *Relapse Prevention: Treatment Alternatives and Counseling Aids*.

As described throughout the book, the strategies utilized for relapse prevention are very participative, and in most cases, experiential. For example, typical causes for relapse may be identified. Small groups then try to identify alternative patterns of behavior. (Daley, p. 61) This is a problem solving method.

In another case, to learn how to handle the social pressures to use drugs, the participants role play resisting the pressure. These role plays are analyzed and evaluated to determine what strategies may work best. (Daley, p. 63) This role play and debriefing follow the pattern of experiential learning as described in the Johns-Hopkins study.

In a much broader assessment of what is happening in the field, Kolb wrote:



> Programs of sponsored experiential learning are on the increase in higher education. Internships, field placements, work/study assignments, structured exercises and role plays, gaming simulations, and other forms of experienced-based education are playing a larger role in the curricula of undergraduate and professional programs . . . . Experience-based education has become widely accepted as a method of instruction in colleges and universities across the nation. (Kolb, p. 3)

However, as noted earlier, it is also true that many instructors continue to use traditional methods. (Svinicki and Dixon, p. 141)

SECTION SUMMARY

In this section of the literature review on instructional activities for changing behaviors, diverse sources have been cited. However, there has been considerable consistency in the conclusions.

The seven year research project at Johns-Hopkins University indicated that while there are two basic modes for learning, information processing and experiential processing, experiential learning is more likely to lead to action. With little dispute of that finding, most of the other literature reviewed supports that conclusion.

According to Kolb, learning through experience may take two forms, one in which the experience leads directly to action without thought and the other by which experience is reflected upon and conclusions are drawn. These conclusions then lead to action.

This latter process, of course, is the process that the Johns-Hopkins research identified. As noted, in this process thought is required to move from experience to action. This

is consistent with the many theorists and researchers who advocate thinking and a variety of discussion techniques. However, cognitive researchers are likely to advocate thinking about ideas and information as the means to action rather than thinking about experiences.

Overwhelmingly, the literature advocates experiential learning and higher order mental processes as means for influencing behavior. The literature included broad studies, mega-studies, and individual research projects.

CHAPTER SUMMARY

The review of literature regarding outcomes reveals that while educational institutions have not yet totally agreed that practical, behavioral outcomes are the primary goal of adult education and training, many adult educators and trainers do concur. Their orientation seems consistent with that of adult learners themselves, a majority of whom attest to their interest in behavioral or performance outcomes in a variety of ways. Furthermore, changes in action or performance as a result of training and educational experiences are evident according to numerous studies.

The literature in the second section of this chapter has shown that change is affected by numerous factors:

1) internal characteristics of the learner
2) expectations of the learner
3) life transitions and other teachable moments
4) numerous environmental factors
5) movement through a standard change process
6) characteristics of the change itself
7) characteristics of the instructor (change agent, counselor, educator, or trainer)

Among the learner factors, one's need is often the primary condition which affects learning and application. Need creates a force which may drive a participant toward change. Life transitions often stimulate the need.

There are numerous environmental factors which may foster or hinder change. Strategizing how to utilize the helping forces or reduce the hindering forces improves the likelihood of change. Similarly, helping a learner through the usual steps of the change process also improves the likelihood of change. In that process, persuasion is critical, and persuasion is most affected by the characteristics of the desired behavior, including relative advantages, compatibility, trialability, observability, and low complexity. Some characteristics of the change facilitator are also important in persuasion.

In the last section of the literature review on instructional activities for changing behaviors, numerous sources have been cited. In spite of the diversity, the conclusions have been quite consistent.

The seven year research project at Johns-Hopkins University explored two basic modes

for learning, information processing and experiential processing, and discovered that experiential learning is more likely to lead to action. Most of the other literature reviewed supports that conclusion.

Kolb, however, theorized that learning through experience may take two forms. In one process, the experience leads directly to action without thought. (This may the basis for intuitive action.) In the other process, experience is reflected upon and conclusions are drawn. These conclusions then lead to action. This latter process is consistent with the process that the Johns-Hopkins research identified as part of the experiential process.

As noted, this process requires thought to move from experience to a new action. Many theorists and researchers who advocate thinking and a variety of discussion techniques would concur. However, some advocate thinking about ideas and information rather than thinking about experiences.

Thus overwhelmingly, the literature about long-term research, mega-studies, and individual research projects advocates experiential learning as the influencer of behavioral change. However, there is also advocacy for higher order mental processes as the means for fostering behavioral change.

While a considerable amount of literature has been reviewed, one gets the impression that this only "scratches the surface." As Kolb said, there has been a lot of specialized research and therefore "we now know a vast amount about human behavior, so much that any attempt to integrate and do justice to all this diverse knowledge seems impossible." (Kolb, p.32)

This last section of the literature review on instructional activities which affect behavioral change established the basis for the questionnaire used in this study. That basis is described further in chapter 3 under "Theoretical Development of the Questionnaire."

Chapter 3 describes the mechanics of this study, including the design (with a description of the population and their programs of study) and the procedures (selection of subjects, pilot studies, theoretical development of the questionnaire, questionnaire use, interviewing, and data collection, processing, and analysis). The chapter also addresses the delimitations, limitations, and validity of the study.

Chapter 3

DESIGN OF THE RESEARCH PROJECT

INTRODUCTION

The primary purposes of this research project were to explore the relationship between perceived behavioral changes and the instructional activities which participants believe fostered those changes and to explore how or why participants think those activities affected change.

This chapter includes three broad sections: the introduction, the procedures, and the potential difficulties of this research project. Those three sections are sub-divided as follows:

1. OVERVIEW
    a. design of the study
    b. population
    c. instructional programs

2. PROCEDURES
    a. selection of subjects
    b. pilot studies
    c. theoretical development of the questionnaire
    d. questionnaire use

   e. interviewing
   f. data collection, processing, and analysis

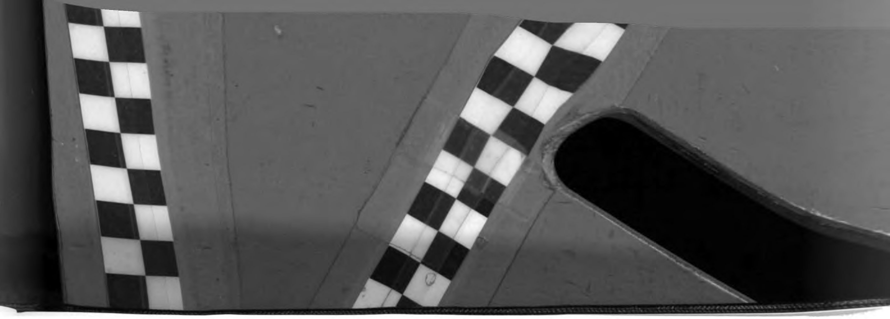
3. DELIMITATIONS, LIMITATIONS, AND VALIDITY
   a. delimitations
   b. limitations
   c. validity

OVERVIEW

DESIGN OF THE STUDY

In order to pursue the purposes of this research, a follow-up study was done with a sampling of non-traditional graduates from eight adult programs of study. The subjects in this study were asked to complete a questionnaire. It asked questions about their interest in changes, their perceived changes, and the instructional activities which they believe influenced the behavioral changes.

A sampling of participants who were willing to participate further were interviewed by phone. In the interview, they were asked questions about their perception of how or why the activities they identified affected change.



POPULATION

The participants in this study were adults who graduated between 1984 and 1989 from eight different instructional programs for adults in Michigan. At the time they completed their programs, the participants varied in age from 24-65. Age was the variable used to determine whether they were "non-traditional students" or "adult learners."

All but two participants had not resided at the institutions. There were part-time and full-time participants. (According to the schools, even most full-time students were employed.)

The population included people of diverse gender, ethnicity, and educational backgrounds. Some were high school graduates doing their first college-level work and others were graduate students; some had graduate degrees. All but a few of the participants were voluntary learners.

Any foreign students in the population were not included in the sample. The subjects were chosen randomly from the population.

INSTRUCTIONAL PROGRAMS

The programs in which the subjects engaged have similarities and differences. All programs consist of a series of courses. Some have other components, such as internships or research papers or special projects. Each program consists of 32-64 semester hours of credit or its equivalent. (Some participants may be required to complete less coursework within their respective institutions due to previous completion

of courses.) The programs are as follows:

1. "Associate Degree in Management" at a community college - This is a normal community college management curriculum offered in daytime and evening classes. It is quite common for adult participants to complete the program over 5-7 years. Classes may contain both traditional and non-traditional students, but mostly non-traditional.

2. "Bachelor's Degree in Human Resource Development" at a four year college - This is a degree completion program geared toward people with two or more years of previous college credit. Credit is also given for life experiences. Participants attend classes as a group and complete their programs by attending classes once a week for twelve months. A special project is done outside of class over the length of the program.

3. "Bachelor's Degree in Human Resource Administration" at another four year college - This program is very similar to number 2 above. However, participants here must choose a major and completing the major requires extra coursework.

4. "Certificate as a Specialist in Ministry" at a Christian training institute - This vocational school program trains participants for service in new and existing churches as "specialists." The content of classes is similar to college classes, but the organizational structure is different. Participants usually attend classes on Saturdays every three to four weeks over two to four years, but there are also periodic weekend and weeklong retreats. Participants do a five month internship.

5. "Master's Degree in Adult and Continuing Education" at a state university - This program again consists primarily of typical college graduate courses. Many classes meet once a week in the evening. Participants may also attend summer classes which meet daily.

6. "Associate Degree in Nursing" at a community college - This program is similar to other nursing programs. It includes classroom, laboratory, and "practical" experiences. Courses are scheduled during the daytime. Both traditional and non-traditional students are involved in these classes, but a higher percentage are non-traditional students.

7. "Master's of Science in Administration" at a state university - This program consists of traditional business administration courses conducted on a one-night-a-week basis. Participants most often take one course per term.

8. "Certificate Program in Bible" at a Bible school - Weekday classes in a college setting are the norm in this program. Thus traditional students and non-traditional participate together.

These eight programs were chosen because of their similarities and their differences. They are similar because they are structured, long-term programs (rather than workshops), and seven of the eight engage all or primarily non-traditional participants. In addition, all programs were assumed to have some behavioral goals. Yet the programs represent diverse foci. They may also be different in goals and philosophy. The variation in their use of instructional activities has become more clear through this research.

PROCEDURES

SELECTION OF SUBJECTS

Each institution was asked for a complete list of graduates in the selected programs for 1984 through 1989. After removing any foreign students, the researcher randomly selected sixty-five people from the population from each institution to participate in this study. There were some exceptions in this process: One institution identified all graduates between 1987 (the first graduating class) and 1989 but filled in with names from another center to get a total of 60 names. Two other institutions had 63 and 43 graduates between 1984 and 1989 with known addresses. The graduates for 1989 and 1990 were together on one list so none of those names were used.

Subjects were asked to participate via a cover letter to the questionnaire. Cover letters were produced on institutional letterhead and signed by institutional officials. The subjects' completion of the questionnaire indicated their willingness to participate. On the questionnaire participants also indicated their willingness to be interviewed. From among those who expressed willingness to be interviewed, twenty were randomly selected.

PILOT STUDIES

In order to determine what questions to ask and how best to formulate them, three small pilot studies were done. The first pilot questionnaire, which asked very general questions, was sent to ten graduates from one institution. This questionnaire asked

people simply to identify any changes which were a direct result of their training. (It did not specify what kind of changes.) It then asked the respondents what they thought precipitated or initiated those changes.

Follow-up phone interviews were conducted with two people to explore answers more fully. The questions focused particularly on the relationship between the changes and whatever was identified as having influenced them.

The second pilot questionnaire, which was much more specific, was sent to five graduates from one institution. It asked people to identify things they "do differently" as a result of their training. Thus it focused on their behavioral changes. It then identified six types of instructional activities and asked them to indicate which one "most affected" their adoption of a new or modified behavior.

Follow-up phone interviews were conducted with two respondents in this second pilot in order to finalize appropriate questions for both the questionnaire and the interview in this research project.

The third version of the questionnaire was field tested with eleven people similar to the population to check for any portions of difficulty. Small changes were made before using the questionnaire in the research project. (A copy of the questionnaire is in Appendix B.)

In order to avoid asking the subjects questions for which the answer was already known, some questions in part 4 were eliminated for specific institutions. For example, if the program by its nature allowed only part-time participation, it was not necessary to ask if the participant had attended part-time or full-time.

THEORETICAL BASIS FOR THE QUESTIONNAIRE

The primary emphasis of this research was the perceived relationship between behavioral changes and the instructional activities which initiated and/or fostered those changes.

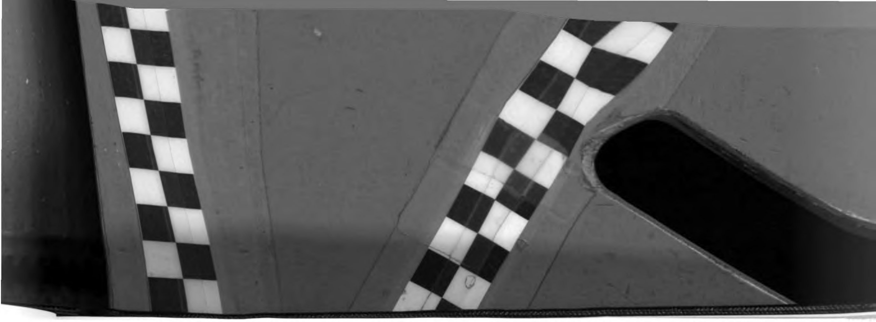
In the literature review of chapter 2, part 2, many non-instructional factors are identified as affecting change. These factors must be recognized as enhancers and inhibitors of change.

However, the literature reviewed in chapter 2, part 3, also describes considerable research and theory which correlates behavioral change with certain types of instructional activities. It was from that literature that three major categories of activity were identified along with six sub-categories.

The three categories include: recipient mode, engagement mode, and sensory-participative mode activities.

> In the **recipient mode**, the learner is a passive learner receiving input or information aurally or visually. Thus the learner is a receiver of facts or ideas or even illustrations, examples, and stories. The learner may also see demonstrations or other displays.

> In the **engagement mode**, the learner is responding to experiences, information, or ideas by mentally engaging in application, analysis, synthesis, and/or evaluation. In this mental engagement, the learner is individually thinking or reflecting or engaging in discussion.



In the **sensory-participative mode**, the learner is "apprehending" his/her environment through all or most of his/her senses. He/she is a receiver of stimuli through physical participation rather than simply a receiver of information. This is essentially an experiential mode.

Each of these three modes of activity can be linked to particular types of in-classroom and outside-the-classroom instructional activities, as follows:

recipient mode

a. classroom presentations by the instructor or others, including lecture, visual aids, films or videotapes, and demonstrations

b. reading assignments

engagement mode

a. classroom discussions and/or reflective thinking

b. reports or writing assignments, particularly ones which require thinking or reflecting

sensory-participative mode

a. classroom participative activities such as role play, simulation, practice session, or real-life experience

b. assignments which require physically doing something or getting actively involved in something, such as organizing a group or conducting an interview or completing a project

Recipient mode and sensory-participative mode activities parallel the two modes of learning explored at Johns-Hopkins University: information processing and experiential processing. These also parallel the two vertical poles of David Kolb's model, namely, comprehension and apprehension. Information processing is essentially recipient mode activity, which includes classroom presentations and reading assignments. Experiential processing is sensory-participative mode activity, which includes classroom participative activities and assignments which require physically doing something or getting actively involved in something.

However, this researcher did not incorporate only information processing into recipient mode activities. He used a broader description based on Edgar Dale's description of three categories of instructional activities: experiential, iconic, and symbolic. This researcher combined the iconic category (a representation of the real thing) and symbolic category into one by including visual aids, films or videotapes, and demonstrations under the description of presentations within the recipient mode.

The category of engagement mode activities, which includes classroom discussions and/or reflective thinking and reports or writing assignments, has its basis in three primary sources. The first is the work of cognitive researchers, who stressed the importance and value of thinking as a means of processing information for use and/or forming concepts.

Second, in Kolb's model, the right pole on the horizontal axis is called intension, which

is reflective observation of either experiences or of abstract concepts. He sees intension as a potentially discrete form of learning.

Third, the research on experiential processing at Johns-Hopkins University is also relevant here. It was discovered that several steps which involve thought are more likely to lead from an experience to new application.

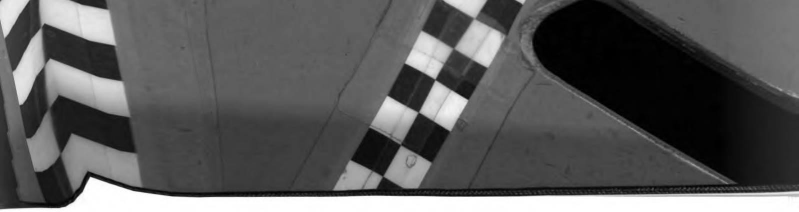
These three major categories with six sub-categories or types of instructional activities are described more fully in the definition of terms in chapter 1 under "mental activity." The literature review in chapter 2 describes the research and theoretical base more fully.

In the questionnaire the six types of instructional activity were used extensively. After identifying specific behavioral changes, participants were asked to identify the one type of instructional activity that had the greatest influence on each of their behavioral changes. They were also given the choices of "other" or "can't identify."

In another part of the questionnaire, the types of instructional activities were divided into three types of in-classroom instructional activities and three types of outside-the-classroom instructional activities. Participants were asked what percentage of their classroom time had been spent in each of the in-classroom activities and what percentage of their non-classroom learning time had been spent in each of the three outside-the-classroom instructional activities.

QUESTIONNAIRE USE

All subjects randomly selected were sent a cover letter and a questionnaire, which was



already prepared for return with a stamp and address. The subjects were asked to complete the questionnaire within seven days and to return it. (A copy of the questionnaire and a sample cover letter are in Appendix B.)

A follow-up letter was sent 7-10 days after the initial questionnaire was sent. It thanked subjects and urged anyone who had not responded to do so by a specific date. (Appendix B contains a copy of the follow-up letter.)

The questionnaire was intended to provide quantitative data. From it, various descriptive statistics and correlations were derived in keeping with the research questions.

INTERVIEWING

Twenty participants who returned their questionnaires and indicated a willingness to continue participating were contacted by phone by the researcher for follow-up interviews. To choose interviewees from among those willing to be interviewed, those who had experienced either "quite a bit" or "a lot" of behavioral change were put into a potential interviewee pool. Interviewees were selected purposefully from the pool to provide at least five interviews for each of the six types of instructional activities. During the interview, the researcher took notes and amplified them immediately afterward.

The interview was designed to gather qualitative information as well as additional quantitative data. The questions were exploratory and asked for perceptions, recollections, and personal analysis. The primary emphasis was on why or how certain instructional activities affected behaviors. (The questions for the follow-up interview can be seen in chapter 4.)

DATA COLLECTION, PROCESSING, AND ANALYSIS

In the following section, each of the primary and secondary research questions is presented along with the means by which the data was collected and the statistical techniques used to analyze the data. (The primary questions are identified with numbers and the secondary questions with numbers and letters.)

1. To what extent do participants **desire** to change behaviors or performance when they pursue learning and to what extent do participants **anticipate** changing behaviors, attitudes or values, and knowledge and understanding?

DATA COLLECTION AND ANALYSIS: In part 1 of the questionnaire, the first series of questions (numbers 1-4) asked to what extent the participant desired to change behaviors and anticipated changing behaviors or actions, attitudes or values, and knowledge and understanding. For each of those questions, the frequency and percentage of individuals responding in each of the five response categories ("not at all" to "a lot") were tabulated for all subjects combined.

2. To what extent do participants **perceive changes** in their behavior, actions, or performance as a result of their instructional experiences and to what extent do participants perceive changes in their attitudes or values and knowledge and understanding?

2a. Is there a significant relationship between a participant's desire for change in behaviors or actions and the amount of perceived change?

2b. Is there a significant relationship between a participant's anticipated change in behaviors, attitudes or values, and knowledge and understanding and the perceived change in each corresponding area?

2c. Is there a significant relationship between the perceived change in behavior (a dependent variable) and the desire for change and anticipated change (multiple independent variables)?

DATA COLLECTION AND ANALYSIS: The second set of questions in part 1 of the questionnaire (numbers 5-7) asked to what extent the participant did change behaviors or actions, attitudes or values, and knowledge or understanding. For each of those questions, the frequency and percentage of individuals responding in each of the five response categories ("not at all" to "a lot") were tabulated for all subjects combined to answer the primary question.

To answer the secondary questions, several correlation coefficients were computed using the Spearman rank correlation (Spearman's rho) because the data is rank ordered. Using the responses to the questions from part 1, the amount of desired change in behavior was correlated with perceived change in behavior, the amount of anticipated change in behavior was correlated with perceived change in behavior, the amount of anticipated change in attitudes or values was correlated with its corresponding perceived change, and the amount of anticipated change in knowledge and understanding was correlated with its corresponding perceived change.

Similarly, the Spearman's rho was calculated to determine what relationship

existed between perceived behavioral change (a dependent variable) and desired change and anticipated change (two independent variables).

For whatever correlations were computed in this data analysis, it was determined whether those correlations are statistically significant at the .05 level, using a one-tailed test. However, while it is important to determine if the correlations are statistically significant, it is no doubt far more important that the correlations are of practical significance, i.e., that they are indeed useful. (Borg and Gall, pp. 512-514)

3. What instructional activities do participants perceive have influenced or affected their behavioral changes?

3x. Is the number of behavioral changes attributed to each type of instructional activity significantly different?

Note: Research question 3x was added after data had been gathered.

3a. Is the relative number of times that a specific type of instructional activity is identified as having affected behaviors by participants within a program significantly different for the different programs of study?

3b. How "new" are the behaviors which participants indicate have changed? (To what extent do they represent changes from previous behaviors?)

3c. When comparing the different instructional activities (to which subjects attribute changes in behavior), is there a significant difference in the extent

of perceived behavioral change attributed to them?

DATA COLLECTION AND ANALYSIS: The second part of the questionnaire asked participants to identify the things they do differently as a result of their instructional experiences. Then it asked them to identify from a list of six types of instructional activities the type of activity which affected each of their changes in behavior the most.

Of greatest importance in this section are the perceived correlations (made by the participants) between the types of learning activities and their changes in behavior. The data in this section was reported for the subjects as a group, using each behavior change identified separately. The frequency and percentage of times that each type of instructional activity was reported to have affected behavioral change was determined. Then to answer the first secondary question a chi square was calculated to see if the number of behavioral changes attributed to each type of activity was significantly different.

Some categories of activities were combined to establish additional interpretations. Classroom presentations and outside reading assignments were combined. Likewise, classroom discussion or reflective thinking and outside reports or writing assignments were combined, and so were classroom participative activities and assignments which require physically doing something or getting involved in something. (See earlier in this chapter for the rationale for those combinations under three modes of mental activity.) A chi square was again calculated.

To answer research question 3a, chi squares were used. Because the total number of responses varied considerably between programs, the raw data was first

standardized or made relative by determining the percentage of changes attributed to a given type of activity out of all the changes identified by participants in each program. By calculating that ratio for each type of activity for each program, the raw data was standardized, making it as if the number of behavioral changes had been identical for each program of study.

To answer research questions 3b and 3c, another question in part 2 of the questionnaire asked participants to indicate how new their behaviors are compared to what they were doing previously. The frequency and percentage of responses in each category (from "a lot" to "a little") were determined.

A chi square test was used to determine if the pattern of responses regarding the extent of change affected by each type of instructional activity is significantly different.

4. According to the participants, to what extent do the instructors in their programs of study use each of the six types of instructional activities identified on the questionnaire?

4a. Is the extent of use of the six types of instructional activities significantly different in the different programs?

4b. Is the extent of perceived behavioral change among participants related to the perceived extent of use of the six types of instructional activities?

DATA COLLECTION AND ANALYSIS: In part three of the questionnaire, participants were asked to identify the perceived percentage of classroom time which was spent in each of three types of instructional activities and the

percentage of their non-classroom learning time that was spent in three other types of instructional activities. The mean percentage of time indicated for each type of activity by participants from each institution was calculated. To answer the first secondary question, an analysis of variance was used to assess whether the means are significantly different. (Borg and Gall, p. 427)

In addition, to answer research question 4b, a correlation coefficient (Spearman's rho) was calculated between the extent of perceived behavioral change reported in part 1 of the questionnaire and the perceived percentage of time each type of instructional activity was used.

5. What explanations do interviewed participants give as to why some types of instructional activities affect change more than others or how they affect change?

5a. Do interviewed participants perceive that the specific types of instructional activities (which affected their behaviors) had more effect on their capabilities or on their motivation?

5b. Is there a significant difference between the types of instructional activities (perceived to affect behavioral change) in terms of whether each affected capabilities or motivation?

5c. According to participants who identified participative activities or assignments which required physically doing something as effective, what percentage of the time were those learning activities followed by discussions, private reflective activities, or writing assignments?

5d. According to participants who identified presentations or reading assignments as effective in affecting behaviors, to what extent will they have had previous experience in this area of behavior?

DATA COLLECTION AND ANALYSIS: The follow-up interview was the source of information for research question 5, which explored the connection that participants made between perceived behavioral changes and specific types of instructional activities. In the interview, each change in behavior or action which the participants identified was treated as a separate or discrete piece of data.

The primary research question is qualitative. The answers were derived from participants' responses to an open-ended question which asked for their explanation of why or how that type of activity affected their behaviors.

The participants were also asked if they think that the type of instructional activity which they identified as affecting a behavior had more effect on their capabilities or their motivation. Their responses for each type of instructional activity were tabulated by frequency and percentage. A chi-square test could not be used in most cases because of the sample size. However, in the case of assignments requiring active involvement, it was usable to determine if there is a significant difference between the number of times such assignments were perceived to affect motivation and capabilities.

Some questions in the interview were used only in relationship to a specific type of learning activity that was identified. One such question, for those who reported that the most effective type of instructional activity was participative activities or assignments which required active involvement, asked what

percentage of time those learning activities were followed by discussions, private reflective activities, or writing assignments. It was the researcher's intent to report their responses with maximum and minimum, mean, and standard deviation. However, that was not possible because frequently descriptions were given instead of percentages. A second question, for those who identified presentations or reading assignments as effective, asked the extent of previous experience in the area of change. The responses were identified by frequency and percentage.

The results from these last questions are most important in trying to establish hypotheses about the reasons for the effectiveness of each type of learning activity.

DELIMITATIONS, LIMITATIONS, AND VALIDITY

DELIMITATIONS

There are several delimitations in this research project due to the decisions of the researcher and the procedures used. The most prominent of those is the fact that subjects were chosen from only eight programs of study. While the research population consisted of graduates from those programs (and not all programs everywhere), these graduates may not be representative of the adult participants in other programs.

Second, the nature of the programs may not be representative of other adult education and training. While programs were chosen because of some diversity, other programs

which use very different instructional activities no doubt exist. In addition, short-term courses or workshops may produce different effects than these long-term programs.

Finally, the researcher's choice of literature or research to review is another delimitation. An emphasis was placed on prominent researchers and authors and on models and concepts which seemed most appropriate for this study. Certainly information relevant to this study was left unexplored and unreported.

LIMITATIONS

There are a number of limitations in this research project due to the natural effects. The primary limitation in this investigation is the self-selection of the participants who responded to the questionnaire. Those responding may be different from those who did not respond.

A second limitation is the use of the questionnaire and interview. The questionnaire and interview questions may not communicate to the subject precisely what the researcher intended. In addition, slight differences in expressing questions in the interview may convey slightly different messages to the subjects.

Third, many factors affect the quality of the subjects' responses, including perceptions, truthfulness, and memory. (Recent graduates may remember their thoughts and experiences better.) The end result may be that the information gathered is not totally accurate. It may not contain all the relevant information or establish a completely realistic picture. While there is some disagreement about the validity of self-report, it is widely used and accepted, e.g., in opinion polls. Furthermore, self-report is the only

means for obtaining some information.

Finally, in the end, the number of responses from graduates of a couple programs was quite limited. Wherever those numbers affected program averages, the results may have limited validity.

VALIDITY

With this research project, there are a number of threats to validity, both internal and external. Threats to internal validity suggest that the results can be attributed equally well to factors other than the instructional activities. The following explains how, if possible, these have been controlled.

VARIATIONS IN QUESTIONNAIRE INTERPRETATION: Participants may not have understood directions on the questionnaire or the researcher's intended meaning on the descriptions of six types of instructional activities. To attempt to convey thoughts which would be similarly interpreted, the questionnaire went through several revisions. After each, pilot participants commented on interpretation difficulties and refinements were made.

VARIATIONS IN DATA COLLECTION PROCEDURE: Variations in date collection procedures may affect the accuracy of results. To control the variations, identical questionnaires (except for part 4) were sent to all participants with identical cover letters (except for the fact that each person's program of studies was identified and the letters were signed by institutional officials). The interviews were conducted by the researcher. A script and specific questions were used to minimize variations.

TENDENCY OF PEOPLE TO CHOOSE MORE NEUTRAL ANSWERS: Participants in this research may have chosen answers to questions which are more neutral, less extreme. The end result is less significant effects. There is no method for controlling this other than encouraging subjects to answer thoughtfully and carefully, which was done in the cover letter.

DIFFERING CHARACTERISTICS, MOTIVATION, AND ENVIRONMENTS: It is likely that the participants in this research do have different characteristics, motivation, and environments and that those affected the outcomes of their training programs. The results of this project have thus been tainted by that effect. However, with the number of subjects, it is believed that the variety of characteristics, motivation, and environments among the subjects is similar to the variety in the population-at-large. Therefore, the results should be generalizable to similar subjects in similar programs.

Threats to external validity suggest that there may be something about the evaluation design that might make it inappropriate to assume that similar program effect would be obtained in other situations. The following explains some of those potential threats and how they were controlled.

SIMILARITY OF STUDENTS: The results from this study may not be generalizable to other population groups. The participants in the programs studied may be different from other adults. On the other hand, the population is quite diverse in age, sex, and backgrounds and may in fact be representative of the population-at-large.

PLEASING THE RESEARCHER: It is possible that subjects anticipated what the researcher wanted to see or hear and responded accordingly, helping to substantiate the results. They may have done this both in regard to identifying changed behaviors and

in identifying the instructional activities which influenced those changes. The first means used to control for that effect was avoiding any hint of anticipated results in the cover letter or in the interview. The second means was encouraging the subjects to answer thoughtfully and carefully in the cover letter and the interview.

CHAPTER SUMMARY

This chapter introduced this research project by describing the design, the population, and the instructional programs from which the participants graduated. It also described the procedures for selecting subjects, conducting pilot studies to create and test the questionnaire, developing the questionnaire theoretically, using the questionnaire, interviewing, and collecting, processing, and analyzing the data. In the last part of the chapter, delimitations, limitations, and validity were treated.

Chapter 4 describes participant information and research findings, including data from the questionnaires and interviews and statistical analysis of the data. It concludes with a summary of the findings.

Chapter 4

PRESENTATION AND ANALYSIS OF THE DATA

INTRODUCTION

This chapter contains the information gathered through this research along with related statistical analysis. It begins with a brief report about the participants. That is followed by three major sections: a report of the responses to the questionnaire along with statistical analysis, a summary of participant responses in the interviews, and a summary of the findings.

The first major section, which contains quantitative data, responds to research questions 1-4. The second section, which includes mostly qualitative information, responds to research question 5.

PARTICIPANT INFORMATION

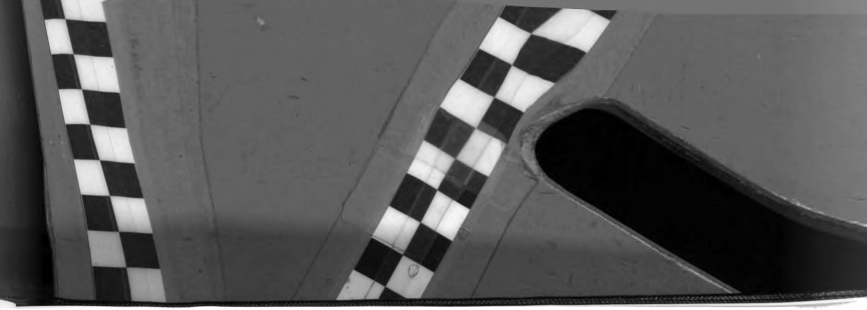
As indicated in chapter 3, questionnaires were sent to 490 graduates from eight programs of study. One hundred sixty-seven questionnaires were returned; not all were completed fully. (See Appendix D, exhibit 1, for more information about the number of questionnaires sent and completed.)

This study was designed to investigate non-traditional students. Some of these programs enroll only non-traditional students and others enroll mostly non-traditional students. An item in part 4 of the questionnaire was used to determine if the respondent was a non-traditional student. The questionnaires of four respondents who indicated that they were 23 or younger when they completed their programs of study were not used in this study. The remaining 163 respondents indicated that they were between the ages of 24 and 65 when they completed their programs.

Of the 163 respondents (participants), only three considered themselves non-voluntary learners. Two of the 163 lived in a dorm for a least a term sometime during their studies. Sixty-one participants were categorized by their institutions or categorized themselves as full-time students during the greatest part of their programs. Fifty-two of these 61 came from four institutions, which had a total of 58 respondents. (Although data was not collected, institutional officials indicate that most "full-time" participants in these programs are also employed either part-time or full-time.)

QUESTIONNAIRE DATA AND ANALYSIS

In the following section, each of the primary and secondary research questions is presented. (The primary questions are identified with numbers and the secondary questions with numbers and letters.) Each question is followed by a description of the data and/or the statistical techniques used to analyze the data along with the results.



RESEARCH QUESTION 1

To what extent do participants desire to change behaviors or performance when they pursue learning and to what extent do participants anticipate changing behaviors, attitudes and values, and knowledge and understanding?

QUESTIONNAIRE DATA

In part 1 of the questionnaire, questions 1-4 asked participants in this research project to answer specific questions about their desire to change behaviors and their anticipation of changing behaviors or actions, attitudes or values, and knowledge and understanding. The questions from the questionnaire are illustrated below along with the frequency and percentage of individuals responding in each of the five response categories.

Table 4.1 Responses to Questions 1 - 4

<table>
<tr><td colspan="6">1. When you enrolled in the program identified above (in the introduction), to what extent did you **desire** to change your behaviors or actions?</td></tr>
<tr><td>response</td><td>not at all</td><td>a little</td><td>somewhat</td><td>quite a bit</td><td>a lot</td></tr>
<tr><td>N (162)</td><td>31</td><td>23</td><td>48</td><td>42</td><td>18</td></tr>
<tr><td>%</td><td>19.1</td><td>14.2</td><td>29.6</td><td>25.9</td><td>11.1</td></tr>
<tr><td colspan="6">2. To what extent did you **anticipate** changes in your behaviors or actions when you enrolled in that program?</td></tr>
<tr><td>response</td><td>not at all</td><td>a little</td><td>somewhat</td><td>quite a bit</td><td>a lot</td></tr>
<tr><td>N (162)</td><td>21</td><td>41</td><td>60</td><td>28</td><td>12</td></tr>
<tr><td>%</td><td>13.0</td><td>25.3</td><td>37.0</td><td>17.3</td><td>7.4</td></tr>
<tr><td colspan="6">3. To what extent did you **anticipate** changes in your attitudes or values?</td></tr>
<tr><td>response</td><td>not at all</td><td>a little</td><td>somewhat</td><td>quite a bit</td><td>a lot</td></tr>
<tr><td>N (162)</td><td>29</td><td>54</td><td>53</td><td>19</td><td>7</td></tr>
<tr><td>%</td><td>17.9</td><td>33.3</td><td>32.7</td><td>11.7</td><td>4.3</td></tr>
<tr><td colspan="6">4. To what extent did you **anticipate** changes in your knowledge or understanding?</td></tr>
<tr><td>response</td><td>not at all</td><td>a little</td><td>somewhat</td><td>quite a bit</td><td>a lot</td></tr>
<tr><td>N (162)</td><td>1</td><td>6</td><td>24</td><td>75</td><td>56</td></tr>
<tr><td>%</td><td>.6</td><td>3.7</td><td>14.8</td><td>46.3</td><td>34.6</td></tr>
</table>

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RESEARCH QUESTION 2

To what extent do participants perceive changes in their behavior, actions, or performance as a result of their instructional experiences and to what extent do participants perceive changes in their attitudes or values and knowledge and understanding?

QUESTIONNAIRE DATA

Questions 5-7 asked participants to indicate how much they perceived changing behaviors or actions, attitudes or values, and knowledge and understanding. The questions from the questionnaire are illustrated below along with the frequency and percentage of individuals responding in each of the five response categories.

Table 4.2 Responses to Questions 5 -7

5. Looking back at your educational program identified above, to what extent **did you change** your actions or behaviors as a result of the program?					
response	not at all	a little	somewhat	quite a bit	a lot
N (162)	5	22	39	61	35
%	3.1	13.6	24.1	37.7	21.6
6. To what extent **did you change** your attitudes or values?					
response	not at all	a little	somewhat	quite a bit	a lot
N (162)	16	31	40	46	29
%	9.9	19.1	24.7	28.4	17.9

Table 4.2 (cont'd.).

7. To what extent **did you change** your knowledge or understanding?					
response	not at all	a little	somewhat	quite a bit	a lot
N (162)	0	7	22	56	77
%	0	4.3	13.6	34.6	47.5

SECONDARY RESEARCH QUESTION 2a

Is there a significant relationship between a participant's desire for change in behaviors or actions and the amount of perceived change?

STATISTICAL ANALYSIS OF QUESTIONNAIRE DATA

To answer this secondary question, a correlation coefficient was computed using Spearman's rank-order correlation coefficient (Spearman's rho) because the data is rank ordered (ordinal). Using the responses to questions 1 and 5, the amount of desired change in behavior was correlated with perceived change in behavior. (Appendix C, Table 6.1, contains the cross-tabulation data.)

The Spearman's rho correlation coefficient for desired change in behavior with perceived changes in behavior was .31982, with a significance of $p<.05$ (00003).

NULL HYPOTHESIS

There is no significant relationship between a participant's desire for change in behaviors or actions and the amount of perceived change.

The null hypothesis has therefore been rejected.

SECONDARY RESEARCH QUESTION 2b

Is there a significant relationship between a participant's anticipated change in behaviors, attitudes or values, and knowledge and understanding and the perceived change in each corresponding area?

STATISTICAL ANALYSIS

To answer this question, correlation coefficients were computed using Spearman's rho. The amount of anticipated change in behavior (question 2) was correlated with perceived change in behavior (question 5), the amount of anticipated change in attitudes and values (question 3) was correlated with its corresponding perceived change (question 6), and the amount of anticipated change in knowledge and understanding (question 4) was correlated with its corresponding perceived change (question 7). (Appendix C, Tables 6.2-6.4, contains the cross-tabulation data.)

The Spearman's rho for anticipated change in behavior with perceived change in behavior was .37570, with a significance of $p < .05$ (.00000).

The Spearman's rho for anticipated change in attitudes and values with perceived change in attitudes and values was .44401, with a significance of $p < .05$ (.00000).

The Spearman's rho for anticipated change in knowledge and understanding with perceived change in knowledge and understanding was .46003, with a significance of $p < .05$ (.00000).

NULL HYPOTHESIS

There is no significant relationship between a participant's anticipated change in behaviors, attitudes or values, and knowledge and understanding and the extent of perceived change in each corresponding area.

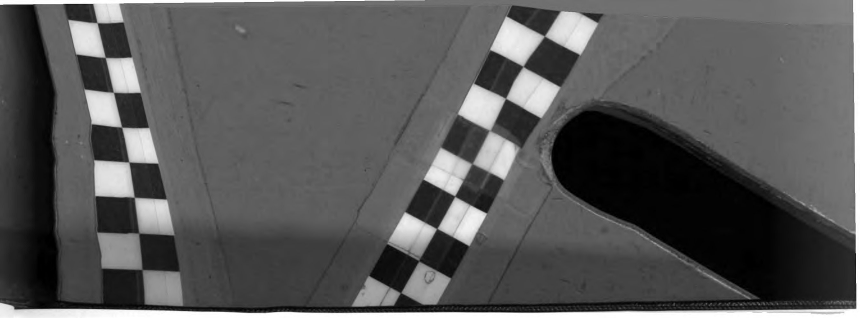
The null hypothesis has therefore been rejected.

RESEARCH QUESTION 2c

Is there a significant relationship between the perceived change in behavior (a dependent variable) and the desire for change and anticipated change (multiple independent variables)?

STATISTICAL ANALYSIS

To answer, a correlation coefficient was computed using Spearman's rho. The perceived change in behavior (question 5) was correlated with the desire for change in behavior (question 1) and the anticipated change in behavior (question 2).



The Spearman's rho for perceived change in behavior with desired change in behavior and anticipated change in behavior was .35319, with a significance of $p<.05$ (.00000).

NULL HYPOTHESIS

There is no significant relationship between the perceived change in behavior (a dependent variable) and the desire for change and anticipated change (multiple independent variables).

The null hypothesis has been rejected.

RESEARCH QUESTION 3

What instructional activities do participants perceive have influenced or affected their behavioral changes?

QUESTIONNAIRE DATA

The second part of the questionnaire asked participants to identify the things they do differently as a result of their instructional experience. Then it asked them to identify from the following list of six types of instructional activities the type of activity which affected each of their changes in behavior the most:

A. classroom presentations by the instructor or others, including lecture, visual aids, films or videotapes, and demonstrations

B. classroom discussions and/or reflective thinking

C. classroom participative activities such as role play, simulation, practice session, or real-life experience

D. reading assignments

E. reports or writing assignments, particularly ones which required thinking or reflecting

F. assignments which required you to physically do something or get actively involved in something, such as organizing a group or conducting an interview or completing a project

G. other

H. can't identify

Thus participants attributed their changes in behavior to a type of instructional activity.

Five hundred thirty-five individual behavioral changes were reported by participants with an associated instructional activity. (See Appendix D, exhibit 2, for further explanation of the behaviors as described by participants.) The number of changes reported by the participants ranged from 0 to 7. The results are summarized in the following table:

Table 4.3 **Behavioral Changes Attributed to Each Type of Instructional Activity**

type of instructional activity	frequency	percentage
classroom presentations of all kinds *	80	14.95
discussions and/or reflective thinking	80	14.95
classroom participative activities	114	21.31
reading assignments	26	4.86
reports or writing assignments	58	10.84
assignments requiring active involvement	134	25.05
other	25	4.67
can't identify	18	3.36

* Please note the prior full description of these categories or see the questionnaire in Appendix B, exhibit 1. Also see appendix D, exhibit 3, for a more complete description of this data.

Some categories of activities were combined to establish additional interpretations. When the categories with similar mental activity are combined, as described in chapter 3, the results were as follows:

Table 4.4 **Behavioral Changes Attributed to Combined Types of Instructional Activities**

type of instructional activity	frequency	percentage
classroom presentations of all kinds along with reading assignments	106	19.81
discussions and/or reflective thinking along with reports or writing assignments	138	25.79
classroom participative activities along with assignments requiring active involvement	248	46.36
other	25	4.67
can't identify	18	3.36

RESEARCH QUESTION 3x (added during the research process)

Is the number of behavioral changes attributed to each type of instructional activity significantly different?

STATISTICAL ANALYSIS

To answer this question, a chi-square test was used. When using each type of instructional activity separately, as it appears in Table 4.3, the resulting chi square was 179.6 with a significance of $p<.001$. The difference between the number of changes attributed to each type of instructional activity is significantly different. (A significance of $p=.05$ would require a chi square of 14.067.)

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When combining the types of instructional activities, as in Table 4.4, the resulting chi square was 331.7 with a significance of $p < .001$. This chi square was even more significant. (A significance of $p = .05$ would require a chi square of 9.48.)

NULL HYPOTHESIS

The number of behavioral changes attributed to each type of instructional activity is not significantly different.

This null hypothesis has therefore been rejected.

RESEARCH QUESTION 3a

Is the relative number of times a specific type of instructional activity is identified as having affected behaviors by participants within a program significantly different for the different programs of study?

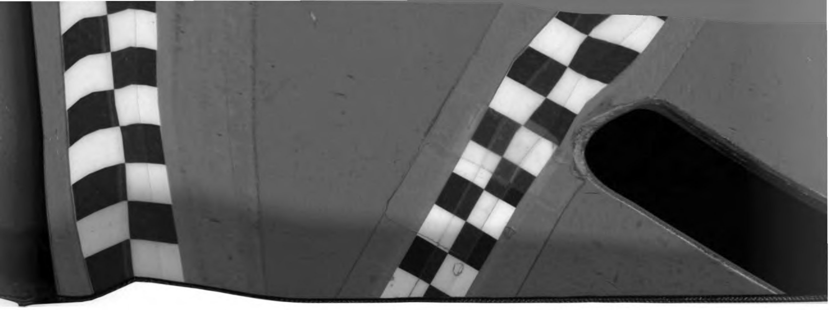
QUESTIONNAIRE DATA

The number of times that a particular type of instructional activity was identified as affecting behavioral change by participants in each program of studies is shown in Table 4.5. Under each number from the raw data is a standardized number. The standardized scores are necessary to make a valid comparison between programs because the total number of responses varied considerably between programs. The standardized score represents the percentage of changes attributed to a particular type of instructional activity by participants in a program out of all the changes identified by participants in

each program. By calculating that percentage for each type of activity for each program, the raw data was standardized, making it as if the number of behavioral changes had been identical for each program of study. This in turn makes comparisons between programs possible.

Table 4.5 Types of Instructional Activity Perceived to Affect Behavioral Change by Programs

	programs of study									
type of instructional activity	1	2	3	4	5	6	7	8	row total	
classroom presentations of all kinds	7 19.44	2 5.88	8 17.78	31 14.09	8 10.81	3 21.43	6 10.00	15 28.85	80 14.95	N % of column
discussions and/or reflective thinking	8 22.22	7 20.59	9 20.00	21 9.55	17 22.97	0 0.00	11 18.33	7 13.46	80 14.95	N % of column
classroom participative activities	10 27.78	13 38.24	5 11.11	54 24.55	11 14.87	1 7.14	14 23.33	6 11.54	114 21.31	N % of column
reading assignments	5 13.89	0 0.00	2 4.44	9 4.09	4 5.41	1 7.14	3 5.00	2 3.85	26 4.86	N % of column
reports or writing assignments	1 2.78	4 11.77	5 11.11	17 7.73	13 17.57	1 7.14	12 20.00	5 9.62	58 10.84	N % of column
assignments requiring active involvement	3 8.33	5 14.71	16 35.56	74 33.64	9 12.16	7 50.00	12 20.00	8 15.39	134 25.05	N % of column
other	2 5.56	2 5.88	0 0.00	9 4.09	6 8.11	0 0.00	2 3.33	4 7.69	25 4.67	N % of column
can't identify	0 0.00	1 2.94	0 0.00	5 2.27	6 8.11	1 7.14	0 0.00	5 9.62	18 3.36	N % of column
total	36	34	45	220	74	14	60	52	535	N



STATISTICAL ANALYSIS

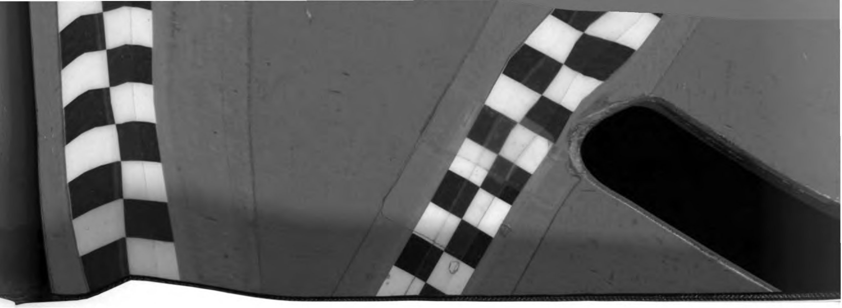
Chi square tests were used to determine if the response patterns were different for the eight different programs. The chi squares were calculated for each type of activity using the relative or standardized data. Thus the standardized number of changes attributed to each type of instructional activity by participants within each program were compared to see if the difference between programs is significant.

The chi squares for all six types of instructional activities are all significant at the .01 level. The chi squares are as follows:

Table 4.6 Chi Squares for Differences between the Number of Behavioral Changes Attributed to Each Type of Instructional Activity by Participants within Each Program

type of activity	chi square
presentations of all kinds	23.601
discussions and/or reflective thinking	27.302
classroom participative activities	38.692
reading assignments	19.975
reports or writing assignments	20.051
assignments requiring active involvement	61.712
other	15.703
can't identify	29.237

A significance of p=.05 would require a chi square of 14.067. A significance of p=.01 would require a chi square of 18.475. The most significant difference between programs



is in the relative number of changes attributed to assignments requiring active involvement.

NULL HYPOTHESIS

The relative number of times that a specific type of instructional activity is identified as affecting behaviors by participants within a program is not significantly different for the different programs of study.

The null hypothesis has therefore been rejected for all six types of instructional activities.

RESEARCH QUESTION 3b

How "new" are the behaviors which participants indicate have changed? (To what extent do they represent changes from previous behaviors?)

QUESTIONNAIRE DATA

Another question in part 2 of the questionnaire asked participants to indicate how new each of their behaviors is compared to what they were doing previously. Five hundred fifty-four behavior changes were identified with "newness" ratings. The frequency and percentage of responses in each category were as follows:

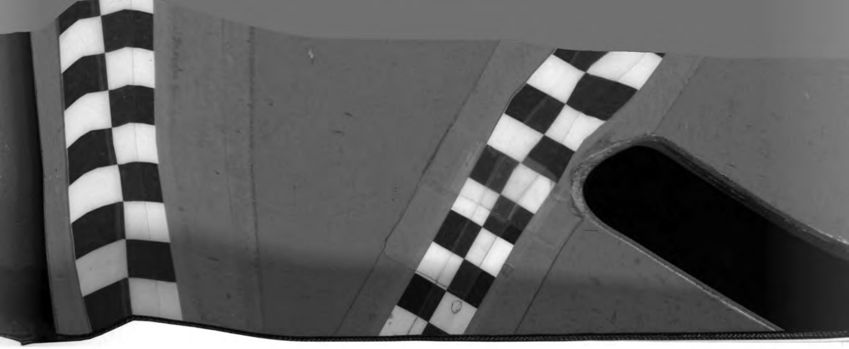


Table 4.7 **Newness Ratings on Reported Behavioral Changes**

newness rating	frequency	percentage
very new	118	21.30
quite new	191	34.48
somewhat new	170	30.69
slightly new	75	13.54

RESEARCH QUESTION 3c

When comparing the different instructional activities (to which subjects attribute changes in behavior), is there a significant difference in the extent of perceived behavioral change attributed to them?

QUESTIONNAIRE DATA AND STATISTICAL ANALYSIS

There were 526 behavioral changes listed by participants for which both a type of instructional activity and a "newness" rating were given. (The cross-tabulation data is in Appendix C, Table 6.5.) A chi square test was used to determine if the pattern of responses (regarding the extent of change) affected by each type of instructional activity is significantly different.

The resulting chi square was 34.5 with a significance of $p<.05$ level. (A significance of $p=.05$ would require a chi square of 32.671.) It is evident from Table 6.5 that the newest behaviors were stimulated by reports or writing assignments, assignments

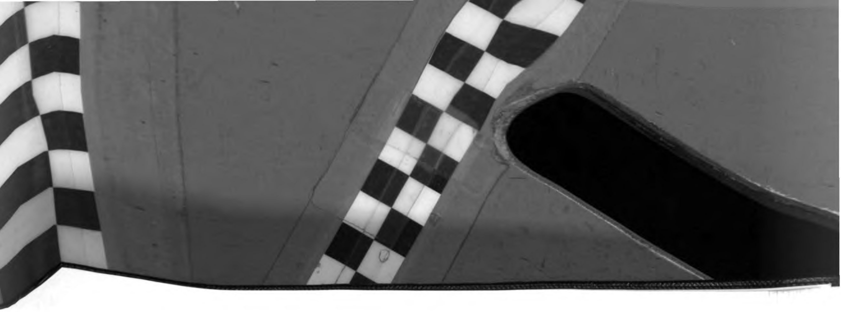
requiring active involvement, and "other." Presentations of all kinds influenced the most "quite new" behaviors. At the other end of the newness spectrum, discussions and/or reflective thinking, classroom participative activities, and reading assignments produced more "somewhat new" and "slightly new" behaviors, with reading assignments producing the most.

To further explore whether the pattern of responses (regarding the extent of change) affected by each type of instructional activity is significantly different, the types of instructional activities were combined, as described under research question 3 above (classroom presentations of all kinds along with reading assignments, discussion and/or reflective thinking along with reports or writing assignments, classroom participative activities along with assignments requiring active involvement, other, and can't identify). (The cross-tabulation data is in Appendix C, Table 6.6.) The chi square level rose to 44.8 with a significance of $p<.05$. This result is even more significant. (A significance of $p=.05$ would require a chi-square value of 21.026.) However, a comparison of the three primary categories of mental activity shows almost no difference in the pattern of response.

NULL HYPOTHESIS

When comparing the different instructional activities (to which subjects attribute changes of behavior), there is no significant difference in the extent of perceived behavioral change attributed to them.

When the individual types of instructional activities are used, the null hypothesis has been rejected, and when the types of instructional activities are grouped according to the type of mental activity, the null hypothesis has been rejected.



RESEARCH QUESTION 4

According to the participants, to what extent do the instructors in their programs of study use each of the six types of instructional activities identified on the questionnaire?

QUESTIONNAIRE DATA

In part three of the questionnaire, participants were asked to determine the percentage of classroom time which had been spent in each of three types of instructional activities and the percentage of their non-classroom learning time that had been spent in three other types of instructional activities.

The extent of use of each of the instructional activities for all programs, as determined by the means of the participant responses from each program, is as follows:

Table 4.8 **Percentage of Time Each Type of Instructional Activity Was Used within Each Program**

	programs								
type of instructional activity	1	2	3	4	5	6	7	8	mean
classroom presentations of all kinds	62.00	33.33	38.42	44.61	43.09	66.00	48.64	76.94	48.56
discussions and/or reflective thinking	22.50	38.67	35.00	28.49	34.73	12.00	28.64	15.06	28.69
classroom participative activities	15.50	28.00	26.58	26.84	23.09	22.00	22.73	8.00	22.86
reading assignments	66.00	29.67	33.68	36.59	38.55	44.00	40.00	37.61	38.52
reports or writing assignments	21.90	41.33	47.00	35.47	36.73	28.00	40.23	48.61	38.61
assignments requiring active involvement	12.10	29.00	18.42	26.49	23.71	16.00	19.37	11.61	21.55
other	00.00	00.00	00.85	01.12	00.67	12.00	00.45	2.28	1.22

Occasionally the sum of the means for classroom activities and/or outside of class assignments does not equal 100% due to rounding or to individual participant's responses which did not total 100%.

Tables showing the mean percentage of time each type of activity was used, as indicated by the participants from each institution, along with the range and the standard deviation, can be found in Appendix C, Tables 6.7 - 6.13.

RESEARCH QUESTION 4a

Is the extent of use of the six types of instructional activities significantly different in the different programs?

STATISTICAL ANALYSIS

To answer this secondary question, an analysis of variance was used to assess whether the means for each program are significantly different. (Borg and Gall, p. 427) (The means represent the percentage of time each type of activity was used in each program, as perceived by the participants.) The analysis of variance results in F ratios (mean squares between groups divided by the mean squares within groups). Larger F ratios mean larger variation between groups. All of the F ratios are significant.

Table 4.9 Analysis of Variance for Use of Each Instructional Activity by Program

type of instructional activity	F ratio	F probability (significance)
presentations of all kinds	11.5793	.0000
discussions and/or reflective thinking	7.9215	.0000
participatory activities	5.4374	.0008
reading assignments	6.1120	.0000
reports or writing assignments	6.0234	.0000
active involvement requiring assignments	4.3285	.0002
other	2.9215	.0067

It is evident from Tables 6.7 - 6.13 in Appendix C which programs are most different from the mean of all groups.

NULL HYPOTHESIS

The extent of use of the six types of instructional activities is not significantly different in the different programs.

The null hypothesis has been rejected for each of the six instructional activities.

RESEARCH QUESTION 4b

Is the extent of perceived behavioral change among participants related to the perceived extent of use of the six types of instructional activities?

STATISTICAL ANALYSIS

To answer this question, a correlation coefficient (Spearman's rho) was calculated between the extent of perceived behavioral change reported in question 5, part 1, of the questionnaire and the perceived percentage of time each type of instructional activity was used. Each individual's perception of the percentage of time an instructional activity was used, rather than the group mean, was used in this calculation. (The extent of perceived change was used as ordinal data and the percentage of time used as ratio data.) (Balian, p. 139)

The results are as follows:

Table 4.10 Spearman's Rho for Amount of Perceived Behavioral Change with the Percentage of Use of Each Type of Instructional Activity

type of instructional activity	Spearman's rho	significance
classroom presentations of all kinds	.08743	.27314
discussion and/or reflective thinking	-.11138	.16220
classroom participative activities	.00487	.95139
reading assignments	-.14626	.06583
reports or writing assignments	-.10526	.18668
assignments requiring active involvement	.19634	.01312
other	.12506	.11280

The negative correlation coefficients indicate that perceived increases in the use of a type of activity resulted in decreases in the extent of change. Note that the negative correlation with reading assignments is close to being significant. The only significant correlation is in the use of assignments requiring active involvement. This means that the overall extent of behavioral change increases as the extent of use of assignments requiring active involvement increases.

NULL HYPOTHESIS

The extent of perceived behavioral change among participants is not significantly related to the perceived extent of use of the six types of instructional activities.

The null hypothesis has been accepted for five of the six types of instructional activities, but it has been rejected for assignments requiring active involvement.

INTERVIEW DATA AND ANALYSIS

In the following section, the final set of research questions is presented along with a description of the data gathered through interviews. Where appropriate, statistical results are also presented.

One hundred eleven out of 163 respondents indicated a willingness to be interviewed by phone. Seventy-two of those indicated that they perceived either "quite a bit" or "a lot" of personal change in behaviors. Twenty of those, selected primarily on the basis of availability and type of instructional activity identified, were interviewed.

RESEARCH QUESTION 5

What explanation do interviewed participants give as to why some types of instructional activities affect change more than others or how they affect change?

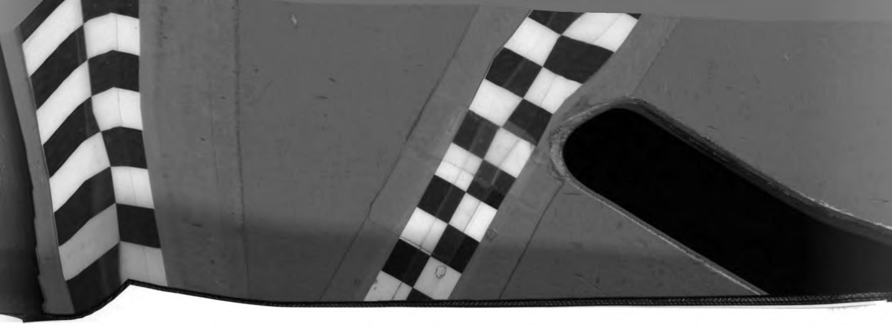
INTERVIEW INFORMATION AND QUESTIONS

Follow-up interviews were the source of information for research question 5, which explores the connection that participants have made between behavioral changes and specific types of learning activities. In the interview, each change in behavior or action which the participants identified was treated as a separate or discrete piece of data.

The primary research question is qualitative. The answers were derived from participants' responses to an open-ended question which asked for their explanation of why or how that type of activity affected their behaviors. Other related questions were asked.

The following is the basic text for the interviews:

> You recently completed a questionnaire for me. Thank you. You also expressed a willingness to participate in an interview. I appreciate that. Is now a good time for you to be interviewed or would you prefer that I call at another time? The interview will take 15-20 minutes.
>
> As indicated in the cover letter to the questionnaire, the purpose of this research is to determine what instructional activities are most associated with behavior changes in participants and to try to determine why that is true. The questionnaire helped with the answer to the first part of that. This interview will help with the second.
>
> Do you have any questions before we begin?
>
> You identified several particular behavioral changes and the instructional activities which most stimulated and fostered those changes. I would like to address each of those changes with the same series of questions.
>
> 1. You identified this change in behavior. . . (from the response on the questionnaire) . . . and with that you identified . . . (from the response) . . . as the type of instructional activity which most stimulated or affected that change. Would you give me an brief example of that kind of activity (particularly as it relates to this change in behavior)?



2. Why do you think that kind of instructional learning activity affected you? What explanation would you give for its effect? (What's the link?)

3. As you look back, would you say that the kind of learning activity you identified had more effect on your capabilities or your motivation?

   capabilities　　motivation

4. (If the activity identified was participative [category c], proceed with the following question.)

   a. What percentage of the time were the participative activities followed with group discussion or reflective thinking activity?

   (If the activity required doing something or getting involved [category f], ask this question.)

   b. What percentage of the time were you required to do some kind of reflective thinking and/or writing regarding that activity?

   (If the activity identified was presentation or reading assignment [category a or d], proceed with the following question.)

   c. To what extent did you already have experience in this area of behavior which changed?

      a great extent　　quite large extent

      limited extent　　not at all

INTERVIEWEE RESPONSES

The interview responses hereafter are written in the first person as if the interviewee is speaking. They are mostly written without quotes, indicating that this is a paraphrase of the interviewee. When quotation marks are used, the statement is a direct quote. Parentheses contain participant clarification. Brackets enclose researcher comments or analysis.

In the following section, each behavior identified in the questionnaire about which a participant was interviewed is quoted. Then the example the participant gave to illustrate the type of instructional activity is shown under "Activity." Finally, the explanation for why or how the action affected the behavior is given under "Rationale." The behaviors are grouped under the type of instructional activity which affected them, in the order in which they appeared on the questionnaire.

The first set of behaviors were perceived to be influenced by classroom presentations, including lectures, presentations by students, films, videotapes, and demonstrations.

BEHAVIOR: "I develop (educational) activities for all ages."

ACTIVITY: In class, participants as well as guests shared the things they were involved in. That expanded the possibilities for me. (I don't find presentations by instructors alone to be stimulating.)

RATIONALE: The people in the field (of adult education) brought excitement about their work. I learned what was out there. I was exposed to the possibilities. [The vicarious experience of others became her own.]

●

BEHAVIOR: "I engage more people in decision making."

ACTIVITY: This was affected by the lectures of instructors.

RATIONALE: I looked at education as a short-cut; it made use of the experience of others. When instructors spoke of their personal experiences, that was most influential. [The vicarious experience was used as his own.]

●

BEHAVIOR:	"I pray more."
ACTIVITY:	The classroom environment affected me more than anything. Even though there was no class on prayer, the fact that every class was committed to the Lord influenced me. It was the daily demonstration.
RATIONALE:	By seeing the model or demonstration, I came to the realization that I needed to commit every activity to the Lord. [The content of the demonstration affected him.]

•

BEHAVIOR:	"I plan activities with greater care."
ACTIVITY:	In a time management class I was required to keep time charts, and in another management class I had to do a planning chart. [Since those sound like assignments which require involvement, the researcher pressed for an example of a presentation that influenced this new behavior. The participant then spoke of the classroom presentation demonstrating that planning was important.]
RATIONALE:	I saw the benefits of planning for the whole year. [It was unclear whether the benefits were evident from the presentation or through the experience.]

•

BEHAVIOR:	"I visit the elderly in both foster care and nursing homes."
ACTIVITY:	In my specialty class in mercy ministries, we heard from the instructors that there was a great need for people to visit, listen, and care. More than anything, people in "homes" need someone who will listen.
RATIONALE:	Having heard of the need, I concluded that my abilities fit that need. Visiting people was also something that I could do at my own time and pace even as I got older. I felt comfortable dealing with the elderly. [A new idea attracted him because it seemed compatible with his capabilities and interests.]

•

The next set of behaviors was perceived to be stimulated by classroom discussion and/or reflective thinking.

BEHAVIOR: "I pray more." [Note that several others identified this behavior change but attributed it to a classroom participative activity - small group prayer.]

ACTIVITY: I was influenced by the sharing of others as they witnessed and shared their experiences with prayer.

RATIONALE: The testimony of others about how they prayed influenced my capabilities (because I could do what they were doing), and hearing the effects of prayer in their lives created a desire in me to have what they had." [The content of the discussion was meaningful.]

•

BEHAVIOR: "I try to network more."

ACTIVITY: I recognized the importance of networks after discussion of issues with the instructor.

RATIONALE: What textbooks say is often not realistic. Exposure to other ideas made me realize the importance of other ideas. [The process of sharing was influential.]

•

BEHAVIOR: "I value co-workers and students more."

ACTIVITY: We class participants shared our own learning experiences and also discussed the traits of adult learners.

RATIONALE: Those experiences gave me insights into the participants as adults. It made me realize that students are often adults in transition. Adults are more fluid than I thought. [The content of the discussion became useful.]

•

BEHAVIOR: "I engage more people in decision making." (I lead a production meeting in which we discuss workloads, who will be responsible, and deadlines.)

ACTIVITY: In management classes and adult education theory classes an interactive process was used. The group decided within class the direction of the class. We also had other discussions.

RATIONALE: After I opened myself up and became an active participant, I realized that it was more effective to make group decisions. I related that to my job and realized that a directive approach was not as good. [The process had a powerful effect.]

●

BEHAVIOR: "I participate more in conversations."

ACTIVITY: We were required to speak up in class, mostly in small group discussions. We were graded on participation - approximately 35% of the grade.

RATIONALE: There was positive reinforcement through the grade for speaking up. In addition, people listened to me more than I thought they would. That boosted my self-confidence. [The process provided positive reinforcement for involvement from the instructor and others.]

●

BEHAVIOR: "I listen to my clients better."

ACTIVITY: Most of that was from class situations where we walked through scenarios. There was lots of exposure to diverse viewpoints because of the variety of participants.

RATIONALE: It enhanced my awareness. I became a "little less parochial." I learned to appreciate diverse viewpoints. Everyone has insights, even though I may not agree with them. [Both the process and the content of the discussions influenced her.]

●

The next set of identified behavioral changes was thought to be affected most by classroom participative activities.

BEHAVIOR: "I listen more carefully."

ACTIVITY: In an interpersonal relations class, we did listening exercises, role plays, sharing with listening, and active listening practice.

RATIONALE: I found I wasn't hearing what others were hearing, which made me more sensitive to my deficiencies. It made me realize there was more to hear. Secondly, the exercises gave me practice. [The activities stimulated new insights about herself and provided practice.]

●

BEHAVIOR: "I involve students when teaching."

RATIONALE: With classroom participatory activities, I was involved. It let me be a part of the process much more than lecture. So I saw its effect on me. Secondly, instructors modeled the process of having students involved. [Whole person involvement affected her, as did the instructor's modeling.]

●

BEHAVIOR: "Teach Christ in small groups"

ACTIVITY: I learned through interaction and breaking into small groups.

RATIONALE: I found out I could function regardless of who was in the group - an antagonist, a person out of it, etc. [The activity created awareness of capabilities and reinforced them.]

●

BEHAVIOR: "I plan my work and work my plan."

ACTIVITY: We discussed case studies in small groups in one class and used role plays and simulations in another.

RATIONALE: These activities allowed me to think more deeply. They helped me to organize because I actually engaged in problem solving. [The activity created more mental engagement and practice.]

•

BEHAVIOR: "I lead/speak to groups of adults more effectively."

ACTIVITY: A lot of activities in class fit. We had one exercise in class where I had to use different teaching strategies to teach the same point.

RATIONALE: It goes back to three things: 1) content provides awareness, e.g., that a lot of adults seek education because of changes in career, 2) observation of fellow students verifies that, 3) involvement with adults with whom I work further verifies it. [Direct, immediate physical use of ideas stimulated and guided later use.]

•

BEHAVIOR: "I am more likely to trust the decisions of subordinates."

ACTIVITY: I can think of both simulations on problem solving and role plays exploring different cultures.

RATIONALE: Through those simulations and role plays I realized that there are other people with important insights. [Experiencing the process was a positive experience which reinforced its use.]

•

The next group of behavioral changes was perceived to be influenced by reading assignments.

BEHAVIOR: "I attempt to keep up to date by reading and attending seminars."

ACTIVITY: I was constantly inundated with information and reading and it was up-to-date information.

RATIONALE: The reading and research made me feel more on top of things. The experience had positive effects. I see a lot more options now through reading. [Reading provided internal positive reinforcement for the process of reading.]

•

BEHAVIOR: "I work with adult programs instead of children."

ACTIVITY: We were given options. We could choose any area and then find current information.

RATIONALE: As an elementary teacher, I had not been exposed to adult education. The reading opened a new world. I was seeing new possibilities. [The content provided new information.]

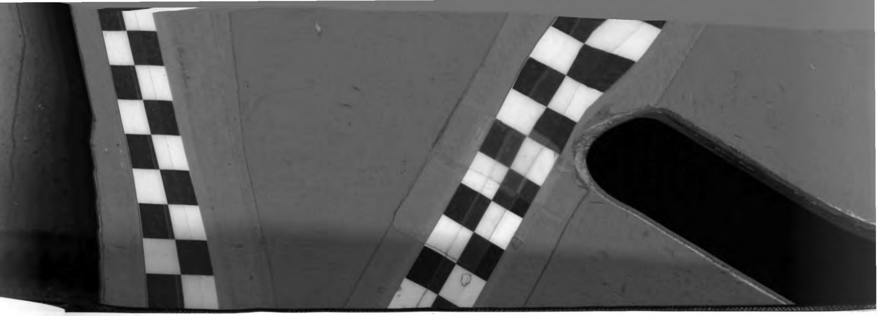
•

BEHAVIOR: "I consider financial implication (and use them more objectively) in decision making."

ACTIVITY: I got a lot more out of journals and magazines as opposed to texts.

RATIONALE: Reading mostly broadened my perspective. It planted in my mind that there is a financial impact for everything. [The content was particularly relevant to her life.]

•



BEHAVIOR: "I read more on adult issues."

ACTIVITY: In class we were given a list of books (on adult education) and asked to do some reading. However, we had freedom as to what we read. The freedom of choice made me appreciate the reading more and it gave me wider variety.

RATIONALE: It wet my appetite and gave me exposure to what was out there. I was pretty much unaware previously. When I read, I realized it was good; there were positive effects and feelings. There was positive reinforcement for reading. [New exposure to content stimulated internal positive reinforcement for reading.]

●

BEHAVIOR: "I teach with greater understanding of adult students."

ACTIVITY: I'm referring to assigned readings, which we had in most classes, both texts and lots of articles.

RATIONALE: The reading gave me a heightened awareness of the adult learner and how he/she is different. Then I saw that in practice among classmates and later in my application at work. [The content was verified by experience and thereby became useful.]

●

The next set of behavioral changes were perceived to be stimulated by reports or writing assignments, particularly ones which required thinking or reflecting.

BEHAVIOR: "I teach with power and knowledge."

ACTIVITY: In Biblical studies class, I had to develop outlines and reports on events. (This sometimes involved use of outside resources.) In another class on group work, I had to actually lead a Bible study but then write an evaluation of the process.

RATIONALE: By writing outlines after hearing presentations or reading, there was a double entry in the learning process. Secondly, that really built my confidence because I knew I knew it. Thirdly, evaluating actual Bible studies made me realize that I was empowered by the Holy Spirit. [Mental engagement leading up to the writing and insights from personal reflection both affected behavior.]

•

BEHAVIOR: "I teach my family from God's word."

ACTIVITY: Every class required reports, e.g., on the book of Romans. They required research and thinking.

RATIONALE: I learned better when I had to dig into it myself. "It started coming home to me that it was my responsibility to raise my children in the fear and admonition of the Lord." As I learned, I realized teaching my family was required. [The content of the material being worked on was influential.]

•

BEHAVIOR: "I teach adults differently." (I give them more opportunity for input, participation, and responsibility.)

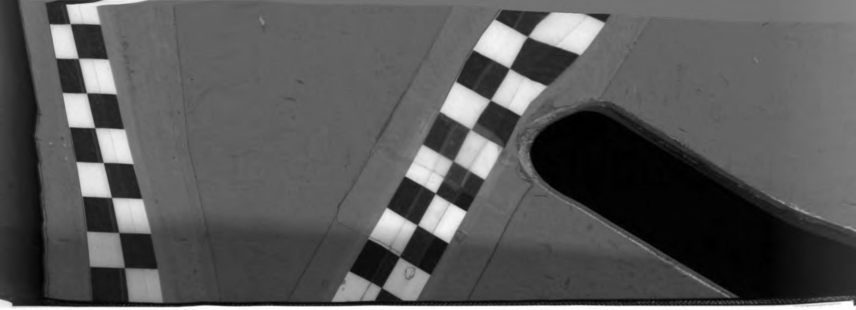
ACTIVITY: We were studying psychologists that studied adults. One assignment was compiling information from the literature and then applying the psychologists' thoughts to adult students we knew.

RATIONALE: It caused me to reflect on myself as a person and so I began to see other adults differently. [Forced reflection on ideas and on experiences created a foundation for application.]

•

BEHAVIOR: "I write up problem analysis in better form."

ACTIVITY: We did case studies - primarily situational. We had to analyze the situation and write it up, striving for completeness and conciseness.



RATIONALE: There are two reasons: seeing examples within the text or supplemental materials plus doing the analysis and writing and getting them back with instructor evaluation. [Actually doing analysis and writing sharpened those skills.]

•

The last set of behavioral changes was perceived to be stimulated by assignments requiring physically doing something or getting actively involved, such as organizing a group or conducting an interview or completing a project.

BEHAVIOR: "I plot time to match values."

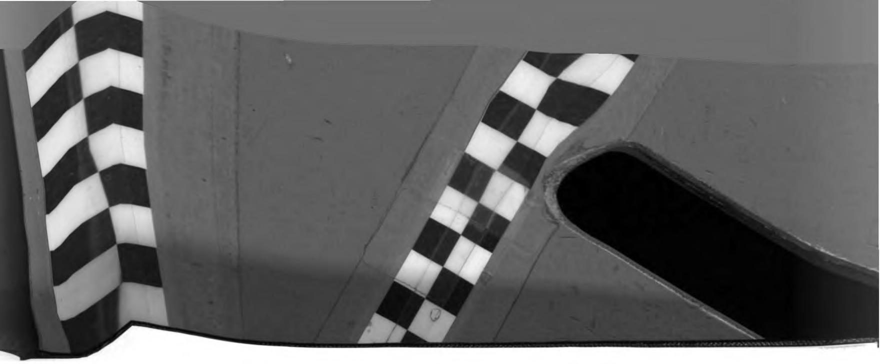
ACTIVITY: In a Christian perspective time management class I had to keep logs of time use and then compare my time use with priorities I had determined.

RATIONALE: That activity cemented the action in. We (class participants) were acting out what we were learning - making it our own. I hated the thought of doing the logs, but as I did the assignment, the results were making me feel good. I had a sense of accomplishment from what I was getting done as a result of the time management strategies. [Direct experience with the real process and positive effects locked in the process.]

•

BEHAVIOR: "I think about/plan carefully any communication for which I am responsible." (I focus more now on the receiver, not just on what I want to send.)

ACTIVITY: I had to develop advertising materials as an assignment. I also had to make use of a Gantt chart to plan out a project.



RATIONALE: The activities made those strategies relevant to life. They were not just assignments because they were used within interest areas. They were opportunities to use the skills in life situations. [Direct experience in life situations provided a link to use in life.]

•

BEHAVIOR: "I take a leadership role in local, state, and regional groups of adult educators."

ACTIVITY: As an assignment in one class, we did interviews of people involved with other programs of higher education. In other cases we did similar things in small groups.

RATIONALE: The activities were a confidence booster; I saw that I was competent. It was evident that I emerged as a leader within groups. [When asked what was done in class to prepare students for this kind of activity, the participant responded that there was no practice, but resources were made available, e.g., names of people to contact. The experience provided its own positive reinforcement by building esteem.]

•

BEHAVIOR: "Decision making in nursing is facilitated."

ACTIVITY: The major component in nursing clinicals was an assessment of a patient, development of a written care plan, and then carrying it out. The care plan was reviewed by a clinical instructor or staff person.

RATIONALE: There was no opportunity for decision making in classes. In the clinicals, I was doing decision making and got feedback on my decisions. This process was highly anxiety producing because lives were on the line. (Pre-requisite classes which were mostly presentational were not effective in affecting performance.) [Clinicals were direct experiences doing the eventual behavior with feedback on performance.]

•

BEHAVIOR: "I prioritize my time now and find myself constantly organizing and thinking ahead."

ACTIVITY: In sixth term clinicals I was regularly responsible for three patients (under the supervision of a staff person). I had to develop care plans and carry them out.

RATIONALE: The most difficult thing to do is to prioritize your use of time when there are so many things to do. There was no classroom training on this. When you're in the hospital environment, you're experiencing - you're learning how to do it. [Direct experience, learning on her own, was a guide to future action.]

•

BEHAVIOR: "Ask questions rather than make pronouncements" (when teaching)

ACTIVITY: What affected me most was being required to lead a group to develop this ability. [When asked how he was prepared in class to go out and practice this behavior, he responded that it was modeled in class by the instructor and there were practice activities, such as leading small group discussions.]

RATIONALE: There are two reasons. First, the more you do it the better you become. Second, using this style resulted in favorable comments from participants. [Practice and reinforcement were influential.]

•

BEHAVIOR: "I plan meetings more specifically."

ACTIVITY: As an assignment, I had to plan a meeting and develop an agenda which included the amount of time allotted to each item.

RATIONALE: My motivation to improve was there. If I had read this idea in a book I would probably have ignored it. Having to do it as an assignment forced me to get started. The effect of doing it was good at the meeting I led and so I saw that it works. [Coerced action got him started and the positive reinforcement produced sustained action.]

•

BEHAVIOR: "My teaching is more visual" (and participative).

ACTIVITY: My assignment was to get some people who were marginally involved in the church together and lead them in a Bible study.

RATIONALE: I remember the feelings and thoughts of the experience (and that enables me to make use of them). They're still very vivid because of the experience. The things taught in other classes through presentations I don't remember. [The active involvement created affective and cognitive images which still influence action.]

•

BEHAVIOR: "I apply my knowledge of the adult learner much more when I teach."

ACTIVITY: We were sent out in pairs to observe classes and to analyze. I also had the opportunity to visit specific agencies to pursue information in an interview. I reported back in class.

RATIONALE: My previous exposure to instruction was all teacher centered. With these activities I was exposed to variety. [The activity expanded the realm of possibilities.]

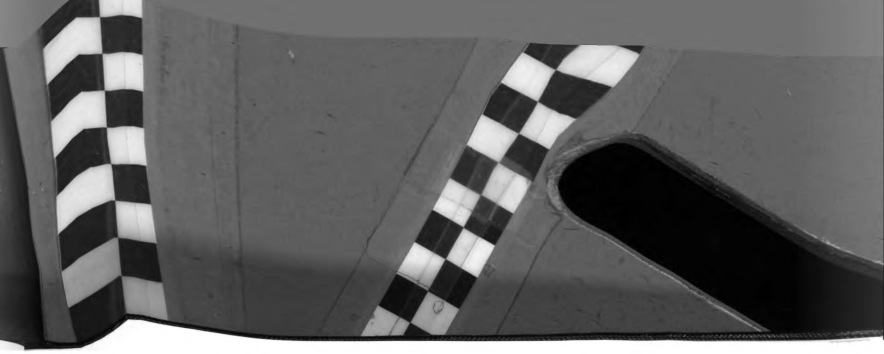
•

BEHAVIOR: "I challenge people with the Gospel."

ACTIVITY: In one class I had to make a nursing home visit and then write out a verbatim of what was said. In another class, I had to recruit people for an evangelistic Bible study and then lead the study.

RATIONALE: The experience built my ability, but also reduced my fear of rejection. What I experienced, instead of rejection, produced a high feeling which motivated me to keep doing it. [Both practice and positive reinforcement from the activity affected him.]

•



BEHAVIOR: "I'm able to converse with confidence and in control of the topic."

ACTIVITY: In a communication class, we had to prepare outside of class for in-class presentations which were videotaped.

RATIONALE: It helped me grow and expand. I gained self-confidence and became more motivated as I gained confidence. [Practice and internal positive reinforcement affected performance.]

•

BEHAVIOR: "Able to discuss Christ person-to-person"

ACTIVITY: I had to recruit participants for a Bible class and then lead it.

RATIONALE: Others' encouragement and then doing it showed me that I could. It gave me self-confidence. [Positive reinforcement was powerful.]

•

BEHAVIOR: "I visit hospitalized people."

ACTIVITY: My internship in mercy ministries affected me most.

RATIONALE: I saw a need. I had needs that had not been met. Also through my whole training experience I became more open to the Lord to work in me. I thought I had turned myself over to the Lord, but I hadn't as much as I thought. [Personal experiences motivated him and forced involvement got him started.]

•

BEHAVIOR: "I have better teaching methods."

ACTIVITY: Leading group Bible studies as an assignment affected me.

RATIONALE: I became more familiar with the topics and techniques through

practice. [Practice led to both new and better methods.]

•

BEHAVIOR: "I consistently use adult education teaching/interacting techniques."

ACTIVITY: I had the opportunity to develop an intergenerational program of bringing seniors into an elementary building (meeting the needs of both groups).

RATIONALE: To me, adult education/teaching techniques are people techniques. The more I did (with adults), the more I realized that my techniques were good. They were effective. The activity reaffirmed for me that what I had was good and usable with adults. [The activity provided positive reinforcement.]

•

BEHAVIOR: "I use a computer more as a data base." (All of my company's production projects are tracked on a data base.)

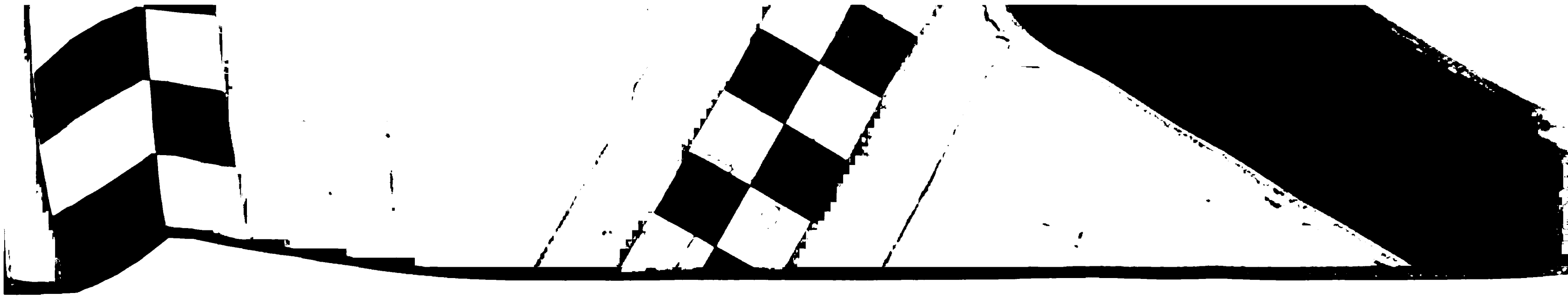
ACTIVITY: In a couple courses that I took, I was given an overview and then assigned to write a database program (to fit a given situation).

RATIONALE: It was readily obvious that tracking projects on a data base was easier than using paper and pencil. [The experience provided practice, new insight, and positive reinforcement.]

•

BEHAVIOR: "I interact more with people."

ACTIVITY: One class assignment required that we give away tracts. I didn't force a conversation, but when I gave out tracts, I was available for explanation if someone wanted to talk.



RATIONALE: "As much as anything, it was the beginning of the realization that God didn't create lone wolves." It was the beginning of my understanding that witnessing is my mission; I am an ambassador for the Lord. (It didn't affect capabilities as much as motivation.) [New insight from reflection created new direction.]

•

RESEARCH QUESTION 5a

Do interviewed participants perceive that the specific types of instructional activities (which affected their behaviors) had more effect on their capabilities or on their motivation?

INTERVIEW DATA

The interviewees were asked if they thought that the type of instructional activity which they identified as affecting a behavior had more effect on their capabilities or their motivation. While "both" was not an option given, numerous participants said "both." When pushed to choose, some did; others still chose "both." Their responses for each type of instructional activity were tabulated by frequency and percentage as follows:

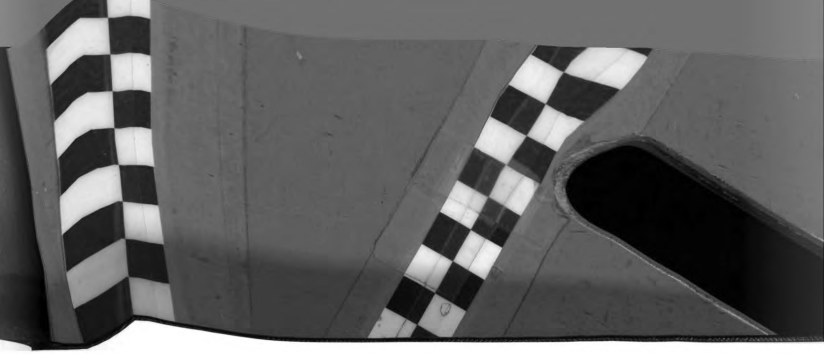


Table 4.11 Instructional Activity Effect on Capabilities and Motivation

	capabilities	motivation	both	
classroom presentations of all kinds		3 60%	2 40%	N % of row
discussions and/or reflective thinking	1 17%	3 50%	2 33%	N % of row
classroom participative activities	3 43%	3 43%	1 14%	N % of row
reading assignments	1 20%	2 40%	1 20%	N % of row
reports or writing assignments	1 33%	2 67%		N % of row
assignments requiring active involvement	12 67%	4 22%	2 11%	N % of row

RESEARCH QUESTION 5b

Is there a significant difference between the types of instructional activities (perceived to affect behavioral change) in terms of whether each affected capabilities or motivation?

DATA ANALYSIS

Because of the limited sample sizes, as shown in Table 4.11, a chi-square test could not

be used to determine if the pattern of responses for the different instructional activities is different with respect to the subjects' choices between motivation and capabilities. However, observation of the table reveals that presentations of all kinds tended to have more influence on motivation while assignments requiring active involvement had more influence on capabilities. A chi square test used just on assignments requiring active involvement results in a significant chi square ($p<.01$).

NULL HYPOTHESIS

There is no significant difference between types of instructional activity (perceived to affect behavioral change) in terms of whether each affected capabilities or motivation.

The null hypothesis was not testable statistically.

RESEARCH QUESTION 5c

According to participants who identified participative activities or assignments which required physically doing something as effective, what percentage of the time were those learning activities followed by discussions, private reflective activities, or writing assignments?

INTERVIEW DATA

Some questions in the interview were used only in relationship to a specific type of instructional activity that was identified. One such question, for those who reported that the most effective type of instructional activity was participative activities or an

assignment which required physically doing something, asked what percentage of the time those learning activities were followed by discussions, private reflective activities, or writing assignments.

While interviewees were asked "what percentage of time . . . ," over half did not identify a number. They responded with a more general phrase, such as "most of the time." Three interviewees could not recall well enough to respond.

Four respondents indicated low use of follow-up discussions, private reflective activities, or writing assignments. Their responses, with the number of respondents indicated in parentheses, were as follows: none (1), not much (2), 20% (1). The remaining 18 respondents indicated very high use of such follow-up activities: 75% (2), 75-80% (1), 85-90% (1), 90% (1), more than 95% (1), 100% (4), most of the time (2), almost always (1), always (2), high (1), all (1), something after each experience (1).

Interpreting a "none" response as zero percent, the responses ranged from 0 to 100 percent. However, the mean and standard deviation are not computable.

RESEARCH QUESTION 5d

According to participants who identified presentations or reading assignments as effective in affecting behaviors, to what extent will they have had previous experience in this area of behavior?

INTERVIEW DATA

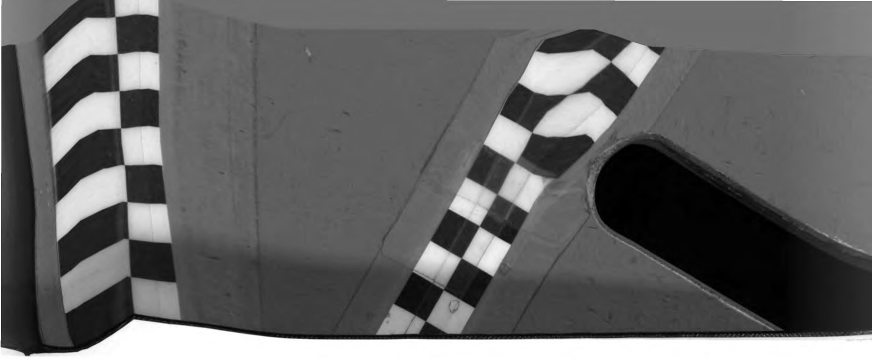
A second question in the interview, for those who identified presentations or reading assignments as effective, asked the extent of previous experience in the area of change. The responses were identified by frequency and percentage.

After many of the interviews had already been conducted, the researcher began asking interviewees who had identified other types of instructional activities the extent of previous experience in the area of change. The responses in this limited sample are also shown in the following table:

Table 4.12 Extent of Previous Experience in Area of Behavioral Change

	great extent	quite large extent	limited extent	not at all
presentations of all kinds	0	1	4	0
reading assignments	2	1	2	0
discussions, reports, or assignments requiring active involvement	0	2	3	2

These results, while based on a very limited sample, seem quite consistent with the large sample in Table 6.5, which shows the "newness" ratings of behavior changes correlated with the types of instructional activities perceived to affect them.



SUMMARY OF RESULTS

RESEARCH QUESTION 1

The data in Table 4.1, which shows participant responses to questions 1-4 in the questionnaire, reveals a fairly normal distribution of answers across the spectrum of possibilities for participants' desire to change behaviors or actions and for participants' anticipation of changes in behaviors or actions. The distribution for participants' anticipation of changes in attitudes or values was skewed toward lower expectations and their anticipation of changes in knowledge or understanding was extremely skewed toward high expectations.

RESEARCH QUESTION 2

A comparison of Table 4.1 with Table 4.2 reveals that participants perceive that they experienced greater change than they had desired in behaviors and actions. They also perceive that they experienced greater change than they had anticipated in each of the three areas (behavior or actions, attitudes or values, and knowledge and understanding). The distributions for perceived changes are skewed toward a lot of perceived change in all three areas of change, especially in perceived change in knowledge and understanding.

RESEARCH QUESTIONS 2a, 2b, AND 2c

The Spearman's rho correlation coefficient of .31982 (p=.00003) established a very significant relationship between each participant's desire for change in behaviors or actions and the amount of perceived change in behaviors or actions. However, that correlation coefficient, though high, was not as high as the correlation coefficients between the anticipated change in behaviors, attitudes or values, and knowledge and understanding and the perceived changes in each corresponding area, which were .37570, .44401, and .46003 respectively. Each had a significance of p=.00000. In addition, the Spearman's rho correlation coefficient between the perceived change in behavior and the desire for change and anticipated change in behavior was .35319 (p=.00000).

These research findings certainly support the contention that there is a relationship between the desire to change behaviors and perceived change after instruction. Furthermore, there is a relationship between anticipation of change and the perceived change after instruction. While some theorists cited in chapter 2 describe a cause and effect relationship, this research was not designed to establish a causal relationship. Never-the-less, a significant positive relationship exists.

RESEARCH QUESTION 3 AND 3x

It is evident from Table 4.3 that the perceived single most influential type of instructional activity is assignments which require physically doing something or getting actively involved. Over 25% of the behavioral changes were attributed to that one type of activity. Furthermore, a chi square test indicates that the differences between the number

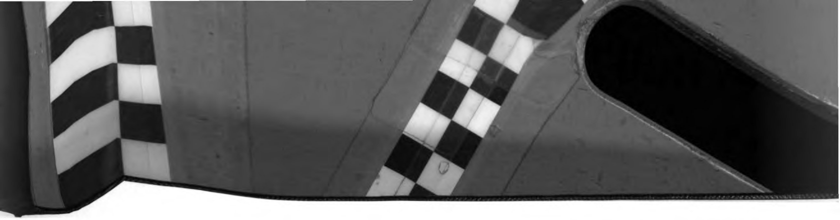
of changes attributed to each type of instructional activity are significantly different ($p<.001$).

The next most influential type of instructional activity, with over 21% of the changes attributed to it, was classroom participative activities. Thus almost half of the behavioral changes identified were attributed to the two types of instructional activity which are most experiential, or those which the researcher calls the "sensory-participative mode." (See "Definition of Terms" in chapter 1.)

It must be noted here that the interviews revealed an important difference between assignments which require physically doing some or getting actively involved and simple experience (as in life experience). Part of the effect of the activity is achieved through three things: 1) It's guided. 2) Feedback is often given to help the participant modify behaviors as necessary. 3) A high use of discussions, reflective thinking, and reports or writing assignments assist the participant to move the experiential process through generalizations to action in new situations, as described in the Johns-Hopkins University research. (See chapter 2.)

The findings of this research thus strongly support the conclusions of the Johns-Hopkins research on experiential processing and information processing, namely, that experiential learning leads more directly to action.

Two other forms of instructional activities, classroom discussions and/or reflective thinking and classroom presentations of all kinds, were each perceived to have influenced just under 15% of the changes identified. (The description of presentations included demonstrations, films or videotapes, visual aids, and lecture.)

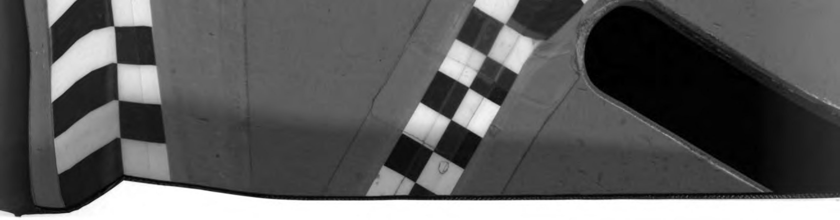


The power of discussion or reflective thinking in improving the use of information, as touted by cognitive psychologists, is evident in this data. (See chapter 2.) Discussions and/or reflective thinking were perceived to produce the same number of changes as a combination of instructional activities, including information processing. (It is also interesting to note that these results were achieved while on the average discussions and/or reflective thinking consumed 29% of the class time while presentations of all kinds consumed 49%. See Table 4.8.)

Almost 11% of the behavioral changes were attributed to reports or writing assignments. Therefore the combination of discussions and/or reflective thinking with reports or writing assignments (as describe in chapter 3) were perceived to account for about 26% of the behavioral changes. The researcher calls these two types of activities "engagement mode" because they require mental engagement through application, analysis, synthesis, and/or evaluation. (However, the interviews revealed that not all reports or writing assignments fit the researcher's idea of "engagement mode" activities. Reports or writing assignments can simply require the collection of information and may not involve application, analysis, synthesis, and/or evaluation.)

Fewer than 5% of the behavioral changes were attributed to reading assignments. Thus reading assignments had the least effect on behavioral changes.

The array of types of instructional activities from the one perceived to be most powerful to that perceived to be least powerful seems to parallel Edgar Dale's "cone of experience." (See chapter 2 and Appendix A.) However, it must be noted that the researcher's category of "presentations" includes both Dale's symbolic and iconic categories.



RESEARCH QUESTION 3a

There is considerable variation in the extent of use of the six types of instructional activity within the different programs, as shown in Table 4.8. The possibility therefore exists that an individual may not identify a particular type of instructional activity as affecting his/her behavior because he/she had little exposure to that type of activity.

That possibility leads to this question: Is the relative number of times a specific type of instructional activity is identified as having affecting behaviors by participants within a program significantly different for the different programs of study. Table 4.5 shows the cross-tabulation data. Chi square tests indicate that there is a significant difference ($p < .01$) in the relative number of times each of the six types of instructional activities were identified as having affected behaviors in the different programs.

A simultaneous look at Table 4.5 and Table 4.8, which contains the percentage of time each type of instructional activity was used within each program, may verify the speculation which led to this research question. For example, Table 4.8 reveals that programs 1 and 8 used assignments which required active involvement less than other programs. Table 4.5 reveals that participants in those programs attributed a lesser percentage of their behavioral changes to these assignments than the average. On the other end of the spectrum, programs 1, 6, and 8 used presentations more than the other programs and also had more behavioral changes attributed to presentations than the other programs. Not all results are that consistent.

RESEARCH QUESTIONS 3b AND 3c

The "newness" of the behaviors participants identified as having changed are shown in Table 4.7. The distribution is quite normal, ranging from "slightly new" to "very new." However, it is somewhat skewed to the "very new" end of the continuum.

Table 6.5 in Appendix C shows the cross-tabulation data for type of instructional activity with "newness" of the behavior attributed to it. A chi square test was used to determine if the pattern of responses (regarding the extent of change) affected by each type of instructional activity is significantly different. The resulting chi square of 34.5 ($p < .05$) means that some types of instructional activity were perceived to lead to newer behaviors than others. The table indicates that reports or writing assignments, assignments requiring active involvement, and "other" instructional activities produced the greatest percentages of "very new" behaviors. Classroom presentations of all kinds, discussions and/or reflective thinking, and classroom participative activities produced the greatest percentages of "quite new" behaviors. Reading assignments produced the greatest percentages of "somewhat new" and "slightly new" behaviors.

Those differences are significant. However, when the types of instructional activities are combined into the three major categories of mental activity, there is very little difference in the pattern of newness responses.

RESEARCH QUESTION 4 AND 4a

Table 4.8 shows a wide variation in the extent of use of each of the six types of

instructional activities within the different programs. The percentage of classroom time spent in presentations ranged from 33% to 77%, discussions and/or reflective thinking from 12% to 39%, and classroom participative activities from 8% to 28%.

The three programs which used the highest percentage of classroom time for presentations are programs within a traditional college setting. While the participants were non-traditional, the instructional activities were more traditional. On the other hand, two of the newest programs, which are designed specifically for adult learners (numbers 2 and 3), had the lowest use of presentations of all kinds, less than 39% of the time. Those two programs, along with program 4, made the most use of participative activities.

The use of time in outside-the-classroom assignments also varied considerably between programs. In one program participants perceived that they spent 66% of their outside-the-classroom time in reading assignments, while in another they spent less than 30% of their time in reading. The percentage of time spent in doing reports or writing assignments varied from less than 22% to almost 49%. The percentage of time spent in assignments requiring active involvement ranged from less than 12% to 29%.

The programs with the highest use of presentations (1, 6, and 8) also consistently had the lowest use of classroom participative activities and assignments requiring physical involvement.

The difference between the extent of use of the six types of instructional activities is significant, as indicated by the F ratios shown in Table 4.9. Tables 6.7 - 6.13 in Appendix C reveal those uses of instructional activities most divergent from the means.

RESEARCH QUESTION 5

During their interviews, participants were asked how or why they thought a particular type of instructional activity initiated and fostered a behavioral change. Their responses were summarized and eventually analyzed to look for common elements.

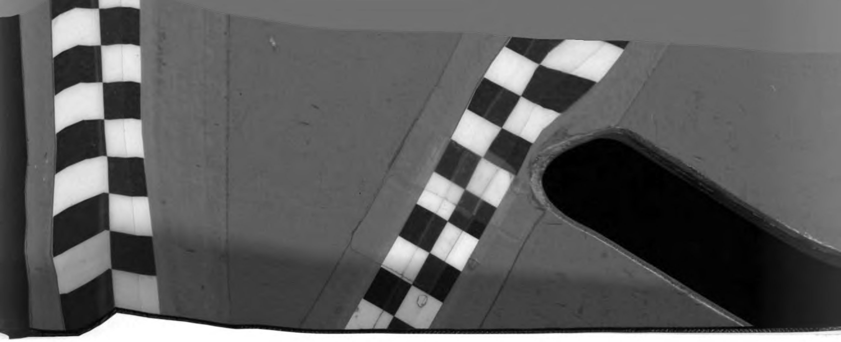
Listed below are 6 main categories of instructional activities along with a summary of the participants' rationale for the effect of each type of activity.

a. classroom presentations by the instructor or others, including lecture, visual aids, films or videotapes, and demonstrations

Among those interviewed, several rationales were expressed for the effectiveness of "presentations" on particular behavior. A couple of people referred to the sharing of experiences by others, which vicariously gave them as participants the experience. They were able to make use of related experiences as if they were their own. A couple of others referred to demonstrations of processes (a planning process and the process of committing every class to the Lord in prayer). Having seen the demonstrations, they were able to use the processes in life. Another heard about a need in a presentation which he associated with his capabilities and interests.

b. classroom discussions and/or reflective thinking

In participants' explanations of rationale for the effect of classroom discussion and/or reflective thinking, there were two strong trends. Some were influenced by the content of what was shared or discussed, the ideas. In other cases, the process of discussing influenced the change. For example, group decision making in class



influenced one man to use the process at work. For another participant, involvement in a group where ideas were listened to created positive reinforcement for sharing of ideas.

c. classroom participative activities such as role play, simulation, practice session, or real-life experience

Several rationales were given for the effect of various kinds of participative activities. For several participants, the activity was more engaging; it got them more involved in the process. In two cases, that engagement was actually doing the behavior, practicing. For some, the activity provided insight. Two of those got new insights about themselves, new awareness about deficiencies or strengths. Furthermore, for the latter there was a reinforcement of those strengths. Finally, another referred to learning through the modeling of the participative process by the instructor.

d. reading assignments

The rationales for the effect of reading assignments again fit into two main categories. First, several were influenced by the content. The ideas were picked up and used. Second, for others for whom the new behavior was reading more, the reading process was influential. Because they were getting new ideas, they felt good about themselves; the reading created an internal positive feeling which reinforced the act of reading.

e. reports or writing assignments, particularly ones which required thinking or reflecting

The examples of reports or writing assignments fell into two broad categories: writing about information and writing about experiences. In writing about information, one participant referred to reinforcing the classroom learning by having to work through it again, another to learning by digging into something himself, and a third to being asked to mentally apply what had been read. For those who reflected on and wrote about experiences, they gained new insight about empowerment (capabilities) and responsibility. For another person for whom writing analyses in better form is the new behavior, the process of analyzing and writing with the feedback of the instructor sharpened her skills.

f. assignments which required physically doing something or getting actively involved in something, such as organizing a group or conducting an interview or completing a project

There were two primary rationales given for the effect of assignments which required active involvement. The first was direct experience with the real thing, e.g., managing time in a work setting or developing advertising materials. In that situation the experience provided a base for new generalizations and action, and it provided practice. The second rationale was the positive experience of the activity which reinforced doing it. Sometimes the reinforcement was internal and sometimes external.

Other rationales were mentioned less frequently, but they are still insightful. A

couple of people said the assignment coerced them to do something which they may not have done otherwise. It got them started. Another said the feelings and thoughts within the experience were still vivid and therefore still a guide for action. Finally, in a couple of cases, people referred to new insights gained. They weren't insights which modified action in the experiential learning sense, but rather insights that the participants should do something which they were already able to do.

RESEARCH QUESTION 5a AND 5b

The sample is small because only 20 people were interviewed. Yet the pattern, as shown in Table 4.11, indicates that presentations of all kinds affected motivation more often than they affected capabilities. Likewise, discussions and/or reflective thinking, reading assignments, and reports or writing assignments affected motivation more often. Classroom participative activities had an equal effect on both, and assignments requiring active involvement affected capabilities far more often than they affected motivation.

RESEARCH QUESTION 5c

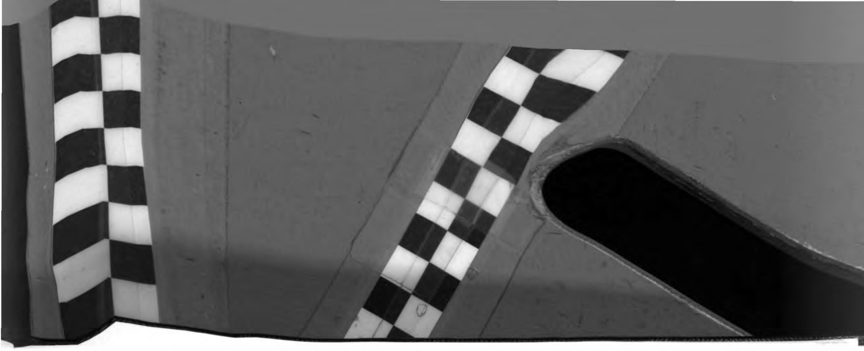
It was impossible to determine from participants' responses what percentage of the time classroom participative activities or assignments requiring active involvement were followed by discussions, private reflection, or writing assignments. However, 82% of the interviewees indicated a use of such follow-up activities 75% of the time or more. These "engagement mode" activities after "sensory-participative mode" activities are in keeping with the Johns-Hopkins research which found that debriefing activities helped participants build generalizations and apply the learning in new situations.

RESEARCH QUESTION 5d

The interviewee sample was small, but a definite pattern seemed to be established, as shown in Table 4.12. Reading assignments were associated with behavioral change where participants had the greatest amount of previous experience. On the other end of the spectrum, discussions, reports, and assignments requiring active involvement were associated with behavioral changes where participants had the least amount of previous experience. Presentations of all kinds were between the two. These results are generally supported by the information found in Table 6.5, which is based on a large sample.

CHAPTER SUMMARY

Chapter 4 included a brief report on the participants in the research project followed by three major sections on the questionnaire data and analysis, interview data and analysis, and a summary of findings. Chapter 5 includes the conclusions based on this study, ideas for application of this research, reflections, and suggestions for further research.



Chapter 5

CONCLUSIONS, IDEAS FOR APPLICATION, REFLECTIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

INTRODUCTION

This research project explored the relationship between perceived behavioral changes and the types of instructional activities which participants believe fostered those changes. It also explored how or why participants think those activities affected change.

This chapter will contain five main sections: conclusions based on the research data and its analysis, ideas for the application of this research, reflections, suggestions for further research, and a final thought.

CONCLUSIONS BASED ON RESEARCH DATA AND ANALYSIS

CONCLUSIONS ABOUT DESIRE FOR CHANGE, ANTICIPATION OF CHANGE, AND PERCEPTION OF CHANGE

With 162 participants responding, a strong case can be made that participants anticipate far greater changes in knowledge and understanding as they pursue learning than changes in behaviors or actions and attitudes or values. However, probably more important,

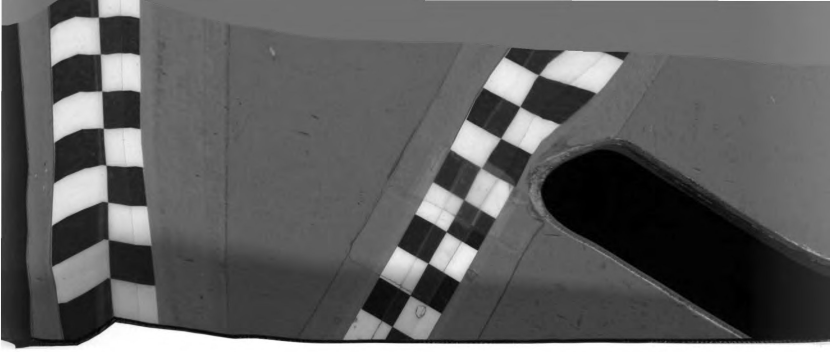
participants perceive that they changed more than they had desired in behaviors and more than they had anticipated in behaviors or actions, attitudes or values, and knowledge or understanding. That is generally good news for educational and training institutions because the benefits to the participants are greater than those anticipated, which no doubt enhances the satisfaction of most participants.

CONCLUSIONS ABOUT TYPES OF INSTRUCTIONAL ACTIVITY AND THEIR PERCEIVED IMPACT ON BEHAVIORAL CHANGE

The perceived single most influential type of instructional activity is **assignments which require physically doing something or getting actively involved.** Over 25% of the behavioral changes were attributed to that one type of activity. (As will be described more fully in the next section, it was also powerful in that it was the only type of instructional activity which had a significant correlation to the perceived extent of behavioral change. Thus the greater the extent to which such assignments were used, the greater the behavioral change.)

The next most influential instructional activity, with over 21% of the changes attributed to it, was **classroom participative activities.** Thus almost half of the behavioral changes identified were attributed to the two types of instructional activities which are most experiential, or those which the researcher calls the "sensory-participative mode."

The results here would no doubt have been even more dramatic had all the programs studied used sensory-participative activities more extensively. In those programs where such activities were used least, fewer behavioral changes were attributed to those activities. In the two programs where those activities were used most, more behavioral changes were attributed to them than to any other activities.



In order to maximize behavioral change or changes in actions, instructors should therefore be using these two forms of sensory-participative mode activities more. This conclusion does not preclude the use of other types of instructional activity. However, presentations of all kinds, reading, and reports or writing assignments are no doubt over-used, particularly in some programs. For their extent of use, they produce limited effect. That is especially true for reading.

Assignments requiring active involvement appear to be successful for two primary reasons. First, they provide direct experience with real life. Second, either internal or external positive reinforcement often accompanies the activity. In addition, such assignments may stimulate new insights (conclusions) or provide the impetus for action which would otherwise never take place. No other type of instructional activity can provide both of those primary benefits, except perhaps classroom participative activities.

Classroom participative activities are effective for a variety of similar reasons, including the total involvement, insights gained, practice, and reinforcement. Each kind of classroom participative activity may have its own particular effect on behavioral change.

The ability of sensory-participative mode activities to influence behavioral change can be enhanced by follow-up **reflective thinking, discussion, reflective writing**, or feedback. Such engagement mode activities enable the participant to take the activity beyond experience through conclusions to new actions. Failure to process either experiences or content (from presentations or reading) reduces their impact.

While **discussion and reflective thinking** are valuable as follow-up activities, they also have merit as stand-alone activities. In fact, "discussion and/or reflective thinking" was

the third most powerful type of instructional activity. **Discussion** can influence change through both process and content components. With the process component of discussion, the participant is influenced by the fact that others listened to him/her, or that he/she learned to speak up, or that he/she realized that sharing produces a better result in decision making. With the content component of discussion, the person is influenced by the things or ideas shared.

As suggested by the interviews, more people seem to be affected by the process of discussion than by the content. That thought is consistent with the research findings which indicate that experiences are more influential than information. (As processes, discussions are more like sensory-participative activities rather than engagement mode activities.)

Reading is a weak influencer of behavioral change. Reading may foster new insights. However, it is just as likely to foster reading. That may be especially true if participants are allowed some freedom of choice in reading within the assigned general topic.

The two ways in which reading affects change point to content and process components for reading as well. With the content component of reading, the learner is influenced by something he/she reads. In the process component of reading, the learner is influenced by the act of reading, like the person who felt especially "up on things" by reading. The good feeling reading produced encouraged her to do more reading.

Reports or writing assignments of all kinds can also have an effect on future behaviors. They seem to be more effective than reading assignments but less effective than the other types of instructional activities. Again there are several possible means for influencing behaviors. For example, the act of using a computer to do writing assignments

influenced one interviewee's continued use of computers. That was a process component of writing assignments. The content element of reports and writing assignments is represented by three basic categories: those which require collecting information and compiling it, those which require reflection on ideas or information, and those which require reflection on experiences. Such reflection may include analysis, synthesis, evaluation, and application, which are identified by Bloom as higher order mental processes. (Bloom, 1956-1964) On the other hand, there is no doubt that there is some use of higher order mental processes even in collecting and compiling information.

However, writing about reflections or conclusions drawn from experiences or the application of experiences or information appears to have greater effect than collecting and compiling information. (Perhaps writing assignments consisting of collecting and compiling information really should have been categorized by the researcher as recipient mode mental activity rather than as engagement mode activity.)

Finally, **presentations of all kinds** can affect behaviors, though less effectively than sensory-participative activities and discussion and/or reflective thinking. Demonstrations are a more powerful form of presentations. However, instructors may demonstrate more by the activities they use, how they use them, and their personal qualities than they do through planned demonstrations.

The most powerful aspect of verbal presentations seems to be the revelation of experiences, which vicariously allow participants to have and potentially make use of those experiences as their own. Thus instructors need to have real life experiences to share. They need to be involved in the world of their participants as practitioners.

CONCLUSIONS ABOUT THE EXTENT OF USE OF THE SIX TYPES OF INSTRUCTIONAL ACTIVITIES

The diversity in the extent of use of the six types of instructional activities is startling. The extent of use in each program no doubt says a lot about the philosophy of the instructors or of the institutions.

Programs of study which are connected with a normal college schedule are more likely to utilize more traditional types of instructional activities, even though they may have a high percentage of non-traditional students in them. Programs of study planned for non-traditional students are most likely to use classroom discussions and/or reflective thinking, classroom participative activities, and assignments which require active involvement.

The extent of use for each type of instructional activity has a relationship with the amount of behavioral change that participants identified. As Table 4.10 shows, there is a significant positive correlation of .19634 (p=.01312) between the extent of use of assignments requiring active involvement and the perceived extent of behavioral change. On the other hand there is a negative correlation of .14626 (p=.06583) between the extent of use of reading assignments and the extent of behavioral change. These statistics again lead to the conclusion that assignments requiring active involvement should be used more and reading assignments should be used less.

On the other hand, no doubt program effectiveness is not dependent on the use of only one type of activity. To the extent that it is dependent on instructional activities, it is dependent on the greater or lesser extent of use of all the types of instructional activities, on the way all the types of instructional activities are blended, and on the actual activities

used within the types.

APPLICATION OF THE RESEARCH IN INSTRUCTIONAL SETTINGS

In preparing for instruction, each instructor or facilitator must determine the ultimate goals for the instructional experience (whether they are set by the participants, their organization, the instructor, or his/her organization). In most educational or training situations, the ultimate goal is behavioral change, affected performance. There may be other goals, such as the components of the desired behavior, i.e., knowledge and understanding, attitudes and values, physical skills, and motivation. However, it is this researcher's contention that the ultimate goal of most adults is affected behaviors or performance. (This viewpoint is supported in chapter 2.)

An instructor should be sensitive to participants' needs and interests, but should also encourage participant growth beyond that which they anticipated or desired. There is room for growth, and the classroom activities and assignments instructors design and use can affect behaviors or actions, attitudes or values, and knowledge or understanding beyond what participants expect.

If the instructional goal is changed behaviors or actions or performance, then it is imperative that the blend of types of instructional activities be consistent with that goal. Some classroom activities are more effective than others, and some assignments are better than others. Each of the six types of instructional activities has its place in the instructional process. Each of the three modes of mental activity has its place. However, some activities are more effective than others for affecting behaviors.

The literature review and the findings of this research support the development of the following "Instructional Activities Model." Within it, the instructional activities are ordered from top to bottom in terms of their effectiveness for influencing behavioral changes, with the least effective at the top. The model draws extensively from Edgar Dale's Cone of Experience. (See Appendix A.) The categories are defined in chapter 1 under "mental activity."

Figure 5.1 Instructional Activities Model

RECIPIENT MODE

- hearing a verbal presentation
- reading the written word
- question and answer session about content
- hearing verbal illustration, relevant anecdote, or experiences

AIDED RECIPIENT MODE

- observing a visual aid (chart, map, graph)
- viewing a film, video, or presentation of slides with tape
- observing a mock-up or exhibit
- observing a demonstration (videotaped or live)

ENGAGEMENT MODE

- individual reflection or writing about information or ideas
- individual reflection on experience, especially about what happened, why, conclusions, and application
- writing reflections about experience, observations, conclusions, and application
- discussion of thoughts and application
- problem solving discussion

SENSORY-PARTICIPATIVE MODE

- role play or situation play (for building generalizations or for practice)
- simulation (for building generalizations or for practice)
- real life experience

The optimal instructional activity for affecting behaviors is guided real-life experience which is followed by reflection, discussion, and/or reflective writing along with feedback. "Guided" implies that participants are prepared (behaviorally) and are directed or helped through the process. They are given whatever they need to be mostly successful.

Most such guided real-life experiences take the form of assignments or outside-the-classroom projects. The function of the classroom activities is therefore to prepare the participants for success in the guided real-life experience. With that in mind, within most classrooms, participative activities should consume a greater portion of the time because they can prepare participants behaviorally. The object is not just to have fun, but to maximize the effectiveness of the process. Obviously, participative activities need to be chosen or planned with a purpose.

Furthermore, those planned participative activities should be followed by structured engagement mode activities. Participants need to think about, write about, and/or discuss the experiences and why things happened, generalizations or conclusions that can be built from the experience, and how those generalizations apply in outside-the-classroom situations.

The mistake that instructors often make is supplying information with the hope that some day it will be applied. Without further processing, such application is fairly unlikely. Information (through presentations, reading, and writing assignments associated with gathering information) should be used to inform the action. However, that action should be planned action, guided within the instructional experience so that there can be immediate application and feedback. Saturating participants with information wastes time

because most often it is not applied. It is better to take a few ideas, process them, and apply them than to store up a wealth of information until the final test and then forget most of it. (Research, as well as our own experiences, tells us that is what is most likely to happen.)

One may get the impression from the preceding that information should be given before the participatory activity. Instructors also need to consider the possibility of using participative activities before presenting information rather than the other way around. In this way, the participative activity stimulates interest in the content. The activity motivates.

When presentations are used within an instructional setting, participants should be mentally engaged as much as possible. This can be done through sharing of experiences, through rhetorical questions, though audio-visual illustrations of experiences, and through demonstrations.

Demonstrations can be used for physical skill training but also for modeling more complex behaviors. Beyond specific demonstrations, the instructor is a continual and powerful model. The instructor can and does influence participants by demonstrating effective leadership, organization, empathy and understanding, cooperation, and facilitation of group activities. Conscious use of that modeling role will enhance classroom effectiveness.

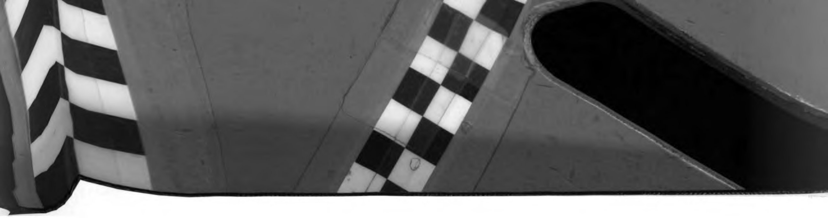
Writing assignments are most effective for behavioral change when they require reflective thinking about experiences or about content rather than simply collecting and compiling information. However, participants need to be taught what to think about. When dealing

with content, reflective writing about application is appropriate. In the case of reflective writing about experiences, participants need to learn to think about what happened, why it happened, the generalizations that can be built, and how those can be applied. While internally most people learn from their experiences (as in experiential learning), helping participants to consciously work through the process will enhance the likelihood of behavioral change. (For this researcher, it was not until mid-life that he consciously began this process.)

Those same topics or issues are the essential components of good discussions, which have been previously identified as a critical part of the follow-up process to participative activities, as well as to presentations, reading assignments, and writing assignments. They are also important after assignments requiring active involvement as the means to develop additional conclusions and plans for action and to give feedback. In each of these situations, the emphasis is on the content of the discussion.

However, it is also appropriate to think of discussions as participative activities in which the process is more critical than the content. When the process of discussion is meant to be more influential than the content of the discussion, it is appropriate to vary the nature of the discussion and thereby expose participants to various uses. For example, discussion can be used to analyze and solve problems, plan group activities, debate, and brainstorm.

Finally, workshops often make use of one of the most powerful types of instructional activities, namely, participative activities. However, workshops often lack an assignment component and therefore miss the opportunity to solidify the behavioral change process begun in the classroom. Guided follow-up assignments which require physical



involvement would enhance application tremendously.

Meanwhile, regular college classes often have an assignment component. Instructors are therefore in a position to use a greater percentage of assignment time in assignments requiring active involvement. If they did, they would be making use of their most powerful tool for influencing behavioral change.

REFLECTIONS

The following section of this chapter contains the thoughts of the researcher in two categories: the research process and the content. The thoughts and ideas expressed contain conjecture which has been stimulated by this research. The portion containing reflections on the content will lead into the suggestions for further research.

REFLECTIONS ON THE RESEARCH PROCESS

In many ways, the research process went remarkably well. Each step was done sequentially, at a pace the systems would allow. The anticipated time period was extended due to numerous delays. For example, getting the names of graduates from one program took several weeks instead of days because graduates in the program studied had to be separated from all other graduates by hand.

The response rate to the questionnaires was generally good, just under 40%. However, it was extremely low in two cases. Those two were programs in bigger schools and the

cover letters were written by deans. It is this researcher's conjecture that both of those factors had their effect. Bigger programs may create less affinity to the program, school, and personnel. Most graduates in all likelihood had never met the dean who wrote the letter. The program which had the highest response rate (almost 78%) was small and intimate. The (former) director, who was also an instructor, wrote the cover letter. In another case where the response rate was almost 50%, an instructor who was very involved in the program signed the cover letter.

Probably 35-50% of the respondents to the questionnaire ignored the "deadlines" in the cover letter and follow-up letter which were meant to encourage subjects not to put the questionnaire aside for too long. Responses were still received weeks after expected. While deadlines are still recommended, it is no doubt wise to plan for considerable delay within one's timeliness.

Computers are amazing, and so are the people who program them and know how to use them. Once the data was entered, it took only seconds to process all the data in this research project. (Figuring out the printout took considerably longer.)

A supportive and knowledgeable dissertation advisor is a blessing.

REFLECTIONS ON THE CONTENT

This section incorporates additional researcher insights on the topic of instructional activities as they relate to behavioral change. References are made to various authors cited in chapter 2, where considerably more detail can be found.

There are obvious differences between learning through experience and learning through symbols (or through information processing). Yet, those differences may not be well-understood. Furthermore, the implications of using each of the methods may be even less understood.

This researcher has heard some say: "The task of trainers is to give people the information and insight upon which to perform differently. One can't perform differently without new insight."

It is true that people can change actions based on insight and information (as several interviewees noted in this study). However, it is also possible for people to change their own performance or be changed because they have been given additional experiences (as other interviewees attest). In fact, it is more effective to change one's performance through experiential training (as this research strongly suggests). How often haven't we listened to impressive new ideas, but then done nothing with them? This is quite typical; it happens frequently. (Resnik and Klopfer, 1989, Stadsklev, 1974)

It is also possible that experiences may not change behaviors, but apparently they are more powerful in affecting change for the amount of time spent. What is the basis for this seemingly powerful effect?

Is it possible that the reason behavioral change is more likely through experiential processes because one absorbs the experience through all his/her senses? Edgar Dale suggests that. (Dale, 1969) Several interviewees seemed to corroborate that viewpoint. In sensory-participative activities, the mind isn't necessarily engaged as in thinking, but the brain is certainly engaged as it carries the body through the activity and as it stores sensory input.

But beyond that, when one learns through experience, he/she is grasping that experience, in a sense, with his/her whole being. He/She is grasping the experience with his/her mind, body (through all the senses), heart (center of attitudes and values), and spirit (center of motivation). It may be this combination of factors in the whole-being experience which affects behavior because new behavior has many components. It doesn't seem as if one can describe behavior apart from motivation and motivation apart from the spirit. Nor can we separate behavior from attitudes and values which guide the actions. No matter how well one can do something, if the motivation to do it or a value or attitude to direct an action isn't present, the action is unlikely.

Or does the impact of experiential learning go beyond total involvement of mind, body, heart, and spirit? Is involvement more likely to change people because the activity enables them to experience compatibility, low complexity, relative advantages, trialability, and observability (the desirable characteristics of innovations), which thus builds persuasion into the method? (Rogers and Shoemaker, 1971)

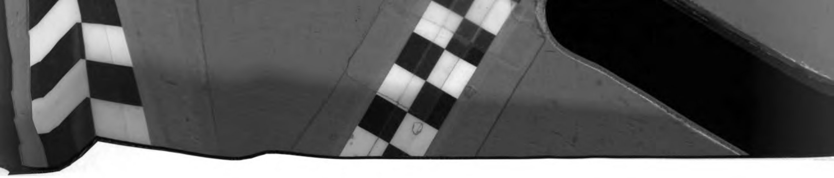
Or does experiencing simply give the mind a track on which to run? Experiencing is said to be a direct guide to acting again in a same or similar situation. The individual can often perform and will often vary the performance slightly through internal feedback mechanisms, but may not be able to explain what he/she has done. (Stadsklev, 1974, and Keeton, 1976) Kolb would explain this as intuitive behavior, action which is a direct result of the internal learning from previous actions. (Kolb, 1984) An example of this is the person who has learned through life experiences that it doesn't usually work too well to tell someone that his/her viewpoint is wrong. This person may intuitively avoid telling someone he/she is wrong, but may not verbally state that as a principle by which he/she interacts or functions.

Perhaps people learn from experiences because they very naturally reflect on their experiences, which helps them to understand the particular situation, to build generalizations, and to act in new situations. Perhaps this is done subconsciously; perhaps it's done at a low level of consciousness. The subconscious process would no doubt lead to intuitive action. The conscious process can lead to action based on rational thought. Research has shown that conscious reflection on experiences can enhance the process of using experiences to modify actions. Furthermore, such conscious reflection makes it less likely that an experience will simply be an experience that is repeated without modification. (Stadsklev, 1974, and Keeton, 1976)

Finally, there's another possibility for the effect of experiential learning. Is it particularly powerful because of the built-in reinforcement? A number of interviewees cited that as the rationale for its effect. Positive reinforcement certainly affects motivation and enhances the likelihood of repeated action.

Each of those ideas may in some way explain the effectiveness of experiential activities in influencing behavioral change. Each was in some way cited or alluded to by those interviewed in this research. There are obviously multiple reasons for the effectiveness of sensory-participative mode activities.

What is less obvious or less evident is the use of sensory-participative activities in many instructional programs. In our society, we have indeed valued the experiential form of learning in many areas of endeavor. We have learned how vital it is to performance. We train tradespeople through a systematic process of apprenticeships. We train airplane pilots through simulators and actual practice under the helpful supervision of an expert. We train doctors through internships and residencies where they watch professionals, work under others' observations, and discuss and problem solve with experienced people.



In each case the training process is highly experiential. (Keeton, 1976) We've learned to help former drug and alcohol abusers prevent relapses to former destructive actions by getting them involved in problem solving (analyzing past experiences and in applying conclusions to new situations) and giving feedback. (Daley, 1989)

Yet in some other fields of endeavor, people sometimes assume that learners can learn to perform simply by being given information (or information and understanding). For example, learners are being told how to carry out various functions on a computer; others are being told how to complete a sale. Lectures on writing and problem solving are common. Time management and stress management classes are often filled with words of wisdom that will never be applied. People are told to pray, to give their problems to the Lord, to study the scriptures, and to give themselves to the Lord. But how can anyone do any of these without being led through the experience if they don't have the experience with which to understand the words?

The person who is taught or trained through information processing has the difficulty of putting the words which he/she has only heard and or seen in writing into action, as Carl Rogers personally and the Johns-Hopkins researchers discovered. (M. Miller, 1960, and Keeton, 1976) In most cases, the mind is the only part of the being that is involved in that process. The person, using the mind, can often recite (or re-cite) the information or principle but often cannot translate that directly into action. For example, the salesperson who is told to get the potential buyer to say "yes" to a series of questions so that the buyer will be more ready to say "yes" when asked to buy will no doubt be able to repeat that instruction, but he/she probably will not be able to implement it based only on that instruction.

There are really two major problems with the information processing mode of learning.

The first is the difficulty we have with grasping meaning from the words that are spoken or written. For example, what is a "hypostat coil?" If one doesn't know, he/she has difficulty grasping any instruction about it. What does it mean to tighten something until it is "moderately tight?" What does it mean to "get the person to feel comfortable?"

We can, in most cases, only grasp the implication or meaning of words and phrases if we have had experience with them. The word "happy" means something to most people. However, the internalized meaning of "happy" is dependent on one's own experience to which he/she has applied the word "happy." In growing up, adults often say things such as: "Aren't you happy that grandma and grandpa took you to the zoo?" It is through those experiences that we relate "happy" with a certain internal feeling. But, as can be seen, the meaning is very personalized.

However, there are other words which have not yet been attached to internalized meaning. Can one really know the full meaning of the words "drug-induced euphoria" if he/she hasn't experienced one? Most people can probably grasp the meaning of "lift your leg" (through experience), but can they "engage in kreoso?" They probably can't because they have no experience upon which to base their comprehension of the word "kreoso."

Likewise, one's ability to function in response to any of the following commands is limited first by his/her understanding of the words, and that is limited by his actual experience with the words (or the actions that they represent):

peel the apple
sit yoga style
set up the display
solder the copper pipe fitting
throw the ball
read the article
boil the water
disengage the disk drive

reprogram the computer
plan a marketing strategy
design a torque converter
fly the airplane
repair the transmission
build a sand castle

At the very least, to get beyond simply words, a learner needs to see a demonstration of an action or actually be guided through the process in order to grasp the meaning. Yet "grasp the meaning" does not equate with the ability to do.

This is really the second problem with the information processing mode of learning or the recipient mode. The concept in one's brain is not readily turned into action or performance. Understanding the terminology does not equate with the capability to do. (Stadsklev, 1974, Keeton, 1976, and Resnik and Klopfer, 1989)

There are many things presenters can do to make verbal presentations more effective. Probably the most effective speakers or presenters are those who can get their audiences to visualize life situations and to think about the application of their information to those life situations. As a couple of interviewees indicated, the most powerful aspect of a presentation is the revelation of experience. When an instructor shares an experience, he/she helps the learner translate symbols into reality or helps the learner visualize the action. The learner can no doubt form practical generalizations more readily from an instructor's experiences than from abstract symbols.

Ideally, as Carl Rogers said, information contains the accumulated wisdom of society. (M. Miller, 1960) It therefore needs processing as experience, and not simply as information.

Even with that, however, verbal presentations are less likely to influence behavioral change. It is vital for instructors to recognize that action has many components. Action is not only dependent on knowing something. Most actions have a cognitive component (knowledge and understanding), an affective component (attitudes and values), a psychomotor component (physical skill), and a motivational component. As Daley summarized: "[A new behavior] involves developing new attitudes, motivations, knowledge and skills." (Daley, p. 10)

For example, driving a car successfully has components in all four categories. The following is not an exhaustive list, it simply shows the four component parts of performance (behaviors or actions).

cognitive:

- where to stick in the key
- which pedals are used for what
- the meaning of the traffic signs

affective:

- respect for the lives of others
- respect for traffic laws
- cooperativeness

psychomotor:

- ability to physically turn a steering wheel
- ability to press pedals
- ability to turn one's body to look in different directions

motivational:

- a desire to drive successfully

Information processing does not usually affect all four of those necessary ingredients in

action. Even where physical skill is not required, as in planning or preparing a speech or selling a product or sensing another's feelings, the component parts which go into that action cannot be taught simply through information processing. The individual must experience the action, either through direct mental or physical action or through mental rehearsal of an action.

It may appear that there are exceptions. Some presentations may be motivational. While the speaker may not directly affect the participants' actions and capabilities, the speaker may inspire actions of which the participants are already capable. As Cunningham discovered, if similar actions were learned previously, one can apply new understanding to guide oneself into new forms of activity. (Cunningham, 1989)

Consistent with that, while the sample for this part of the research was small, the results suggest that presentations are more likely to affect motivation than capabilities, i.e., presentations can motivate a person to do something he/she is already capable of doing. (On the other hand, experiential activities are more likely to affect capabilities or to enable a person to perform in areas where there has been little previous experience.)

Another apparent exception is the speaker who is able to motivate the participants to try something new (with which they have not previously had experience). When the participants do try that something, more than likely it is the experience which results in new learning. In this case it is the speaker who instigates the action, yet it is in experimenting (experiencing) that the person learns.

That interaction between types of instructional activities is desirable. Activities should be blended and intertwined in the instructional experience.

For research purposes, one might hope that activities would be more separated, but the distinction is not always so clearcut. Certain instructional activities, such as simulations, role plays, demonstrations with practices, or problem solving activities, may seem to be totally experiential, but they are often followed by summary presentations or discussion. On the other hand, presentations may incorporate elements which this researcher has listed as experiential. For example, problem solving may be incorporated into a presentation, as in rhetorical questions.

Again, this blending is desirable. Every type of instructional activity has some usefulness. Yet as instructors consider their options, they should incorporate significant amounts of sensory-participative (experiential) activities. After all, it is not at all unexpected that people who reflect on the circumstances or events which have instigated behavioral changes in their lives would identify an experience rather than a presentation as that stimulator. Experiences are a very natural form of learning.

SUGGESTIONS FOR FURTHER RESEARCH

This research project and the earlier reflections lead to numerous thoughts for additional research.

1. As this project was being developed, considerable thought was given to comparing programs or the participants in the programs on most of the questions in the study. This would be a mammoth project, but it would no doubt produce interesting insights.

2. There is a wealth of information to be gained through further interviews similar

to those done within this project. More interviews would expand the data base and solidify the conclusions. Deeper interviews may help explain even better the relationship between behavioral change and the instructional activity.

3. There are many possibilities for more detailed studies using interviews. For example, participants who identify classroom participative activities as effective can be asked to focus on a specific class and the specific participative activities within it as they talk about effect.

4. This research uncovered potential differences in activities within the major types, e.g., within assignments requiring active involvement. Exploration of those differences and their effect on behaviors would further clarify what activities are most effective.

5. While there are disadvantages of trying to be too finite in describing activities, separating the classroom instructional activities into four types (by breaking presentations into two parts) would help pinpoint the strengths of various kinds of presentations.

6. Very few interviewees clearly stated their learning process in a pattern similar to that described by David Kolb or the Johns-Hopkins research. Can participants be trained to use that process more effectively?

7. This research looked at self-reported behavioral changes. Tracking the origin of observed behavioral change would be interesting and informational.

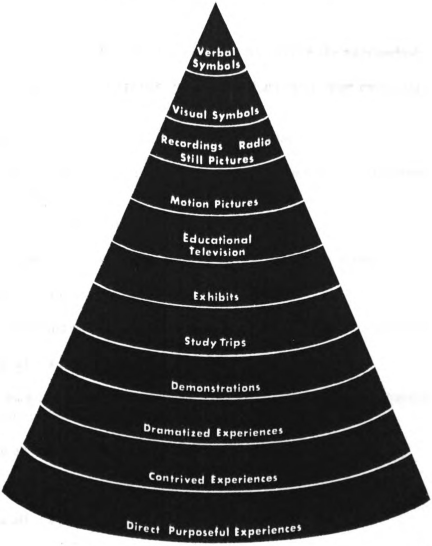
FINAL THOUGHTS

It has been the purpose of this research project to explore the complex connection between personal behavioral change and the instructional activities which fostered that change. While the new insights have perhaps not been dramatic, this researcher believes that they have added to the current understanding of behavioral change. It is hoped that in some way this project will give impetus to improved instruction both in educational and training settings.

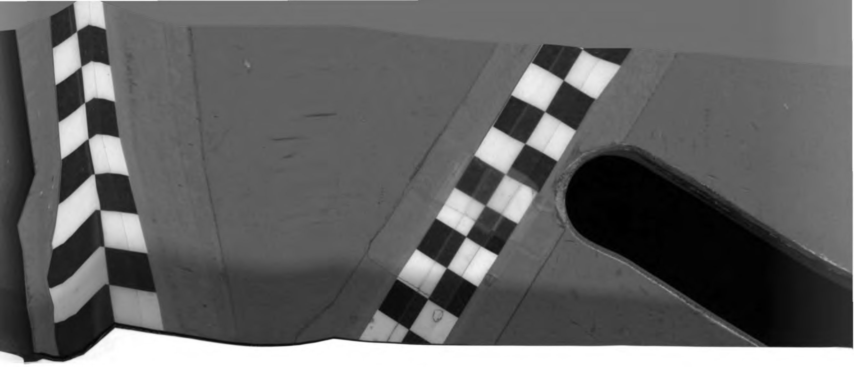
Given the complex mix of variables which affect behavioral change, it is no doubt wise to say with Arthur Chickering: "There is no single ideal model for teaching and learning, no magic mix applicable to diverse students, purposes, and institutions. But there are many chances to miss even a reasonably sound approach. A better understanding of some general principles, practical guidelines, and basic problems may be timely for a wide range of persons . . . ." (Chickering, p. 13)

APPENDIX A

Edgar Dale's Cone of Experience



(Dale, 1969)



APPENDIX B

Exhibit 1

QUESTIONNAIRE

Part 1

As indicated in the cover letter, you were identified as having completed an instructional program at (college/university) . It is that instructional program that I would like you to think about as you complete this questionnaire.

Please respond to each of the following questions by circling the appropriate response.

1. When you enrolled in the program you identified above, to what extent did you **desire** to change your behaviors or actions?

   not at all   a little   somewhat   quite a bit   a lot

2. To what extent did you **anticipate** changes in your behaviors or actions when you enrolled in that program?

   not at all   a little   somewhat   quite a bit   a lot

3. To what extent did you **anticipate** changes in your attitudes or values?

   not at all   a little   somewhat   quite a bit   a lot

4. To what extent did you **anticipate** changes in your knowledge or understanding?

   not at all   a little   somewhat   quite a bit   a lot

5. Looking back at your educational program identified above, to what extent **did you change** your actions or behaviors as a result of the program?

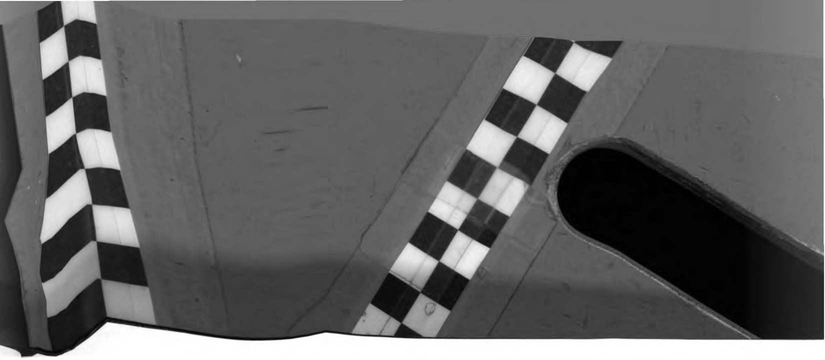
   not at all   a little   somewhat   quite a bit   a lot

6. To what extent **did you change** your attitudes or values?

   not at all   a little   somewhat   quite a bit   a lot

7. To what extent **did you change** your knowledge or understanding?

   not at all   a little   somewhat   quite a bit   a lot



page 2

Part 2

Please think about the contrast between your life before your involvement in your instructional program and your present life. Try to identify things you **do** differently **as a result** of your instructional experience, especially those that are most significant.

> ***Examples:***
>
> *I use a computer more as a data base.*
> *I lead groups more often.*
> *I visit hospitalized people.*
> *I engage more people in decision making.*
> *I pray more.*
> *I teach more creatively.*
> *I talk to people more and generally associate with others more.*
> *I plan activities with greater care.*
> *I develop eye-catching PR for events.*

List below several specific actions or behaviors that are new or modified from what you did before you were engaged in your instructional program. (Write them in a form similar to the examples above. Ignore the little boxes for now.)

☐ ☐ 1.

☐ ☐ 2.

☐ ☐ 3.

☐ ☐ 4.

☐ ☐ 5.

☐ ☐ 6.

☐ ☐ 7.

If you have written more than five changes, **please identify the five** that you consider to be the most significant by putting an "*" in front of them.

page 3

Please think about what initiated and fostered the change process for you in **each** of the behavior changes you identified. What was it that most stimulated or affected your adoption of a new or modified behavior?

Listed below in a-f are **six main categories of activity** typically associated with an instructional program.

a. classroom presentations by the instructor or others, including lecture, visual aids, films or videotapes, and demonstrations

b. classroom discussions and/or reflective thinking

c. classroom participative activities such as role play, simulation, practice session, or real-life experience

d. reading assignments

e. reports or writing assignments, particularly ones which required thinking or reflecting

f. assignments which required you to physically do something or get actively involved in something, such as organizing a group or conducting an interview or completing a project

g. other (Please indicate what it was.)

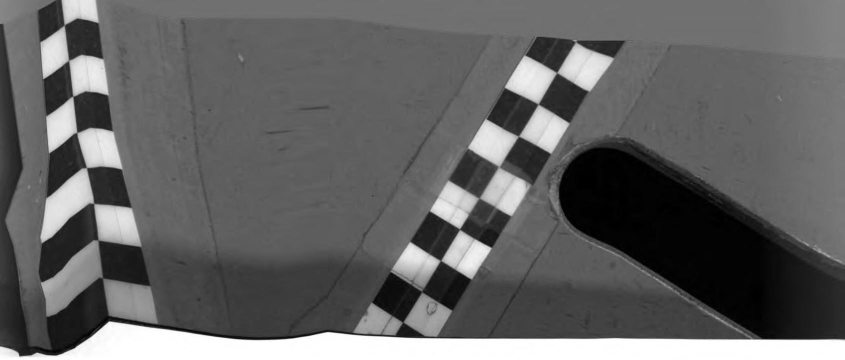
h. can't identify

Please identify the one category of activity which had the greatest influence on each of the behavioral changes you identified on the previous page. In some cases, two types of activity may be very close in their effect, but you need to **choose the one that had the greatest effect** on your changes of behavior.

To record your choice, **put the letter associated with the type of activity listed above in the left-hand box in front of** the five changes you identified on page 2. Then return to this page and the next set of instructions.

Please think about the newness of the behaviors you identified compared to what you were doing before your instructional experience. How new is each? Using the following code, **put the number corresponding to your choice in the right-hand box in front of** each of the changes of behavior you identified on page 2.

1 very new   2 quite new   3 somewhat new   4 slightly new



Part 3

Please respond to the following questions by entering a number in each blank.

1. The first three types of activities identified below are classroom related. As you think back to all classroom activities in your instructional program, what **percentage of time in all courses combined** fit into each category? (The three should total 100%.)

    ___ classroom presentations by the instructor or others, including lecture, visual aids, films or videotapes, and demonstrations

    ___ classroom discussions and/or reflective thinking

    ___ classroom participative activities such as role play, simulation, practice session, or real-life experience

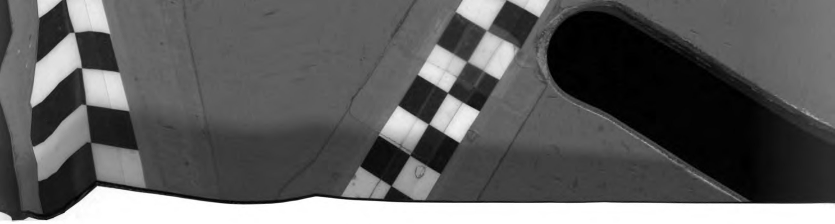
2. The next three types of activities identified below are non-classroom learning activities. What percentage of your **non-classroom learning time** was spent in each? (Again the three should total 100% unless there were other major categories.)

    ___ reading assignments

    ___ reports or writing assignments, particularly ones which required thinking or reflecting

    ___ assignments which required you to physically do something or get actively involved in something, such as organizing a group or conducting an interview or completing a project

    ___ other (Please indicate what it was.)



Part 4

Please circle the appropriate response to each of the following questions.

1. Did you seek the instructional program in which you were engaged voluntarily or were you an involuntary learner, compelled by some organization or individual?

   voluntarily   non-voluntarily

2. What was your age when you completed the program of studies?

   23 or younger   24-65   66 or older

3. While you were in this program, did you at any time stay in an on-campus dormitory for a full term?

   yes   no

4. During the greatest part of your program, would you consider yourself a part-time or full-time student?

   part-time   full-time

If you are willing to help further with this research project through a phone interview, please indicate your willingness below.

__ **I am willing to be interviewed by phone.**

__ **I do not want to participate further in this research.**

If you have indicated that you are willing to participate further, please list below your phone number and the best times to reach you.

Your name ________________________________

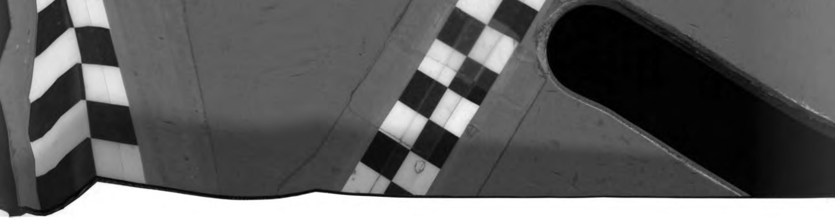
Telephone number where you can be reached ______/______-________

Circle the best days to reach you. S M T W Th F S

What are the best times of the day to reach you for a 20 minute conversation?

____

Thank you very much for responding to this questionnaire. Your responses will provide valuable insights. Please return the questionnaire within 7 days by refolding it with the return address and stamp exposed. Seal it with the little sticker which is enclosed.



Appendix B

Exhibit 2

Cover Letter for Questionnaire

December 3, 1990

Dear Tony,

You are a graduate of our ________________________________ program here at ________________________ College.

As an institution of learning, we are interested in providing the optimal benefit for students. We are always eager to achieve the goals and objectives of our programs of study and to improve the instructional process.

We have therefore embarked on a research project together with Jim Eggert. We'd appreciate it if you would take the time to carefully complete the enclosed questionnaire and send it to Jim as instructed in the questionnaire.

Completing the questionnaire will take about 15-20 minutes of careful thought. The information being gathered from this questionnaire will give us valuable information.

Participation in this research is voluntary. However, I'd like to encourage you to proceed by looking at the questionnaire and completing it within the next 48 hours. You indicate your voluntary agreement to participate by completing and returning the questionnaire.

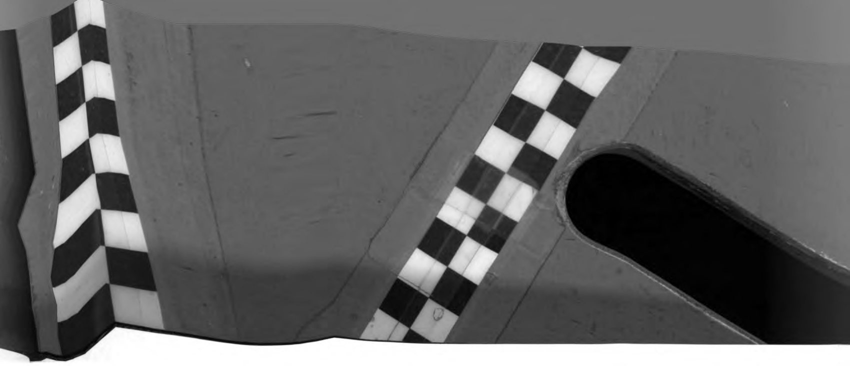
Let me assure you that your responses will be confidential. We will only be describing group data in research reports; no one will be identified in any way.

If you have any questions regarding this project, you may call Jim Eggert collect at _________ or write to Jim at ______________________________.

Again, let me urge you to thoughtfully complete the questionnaire soon . . . and no later than 7 days from now. Thanks for your anticipated reply.

Sincerely,

______________, Director of Research and Development



APPENDIX B

Exhibit 3

Follow-up Letter to Subjects

December 8, 1990

Dear Sandra,

You recently received a letter from Dr. ________________ about a research project in which ________________________ University and I are engaged.

If you have already completed the questionnaire and returned it, thank you. Your prompt response is a tribute to your efficiency and helpfulness.

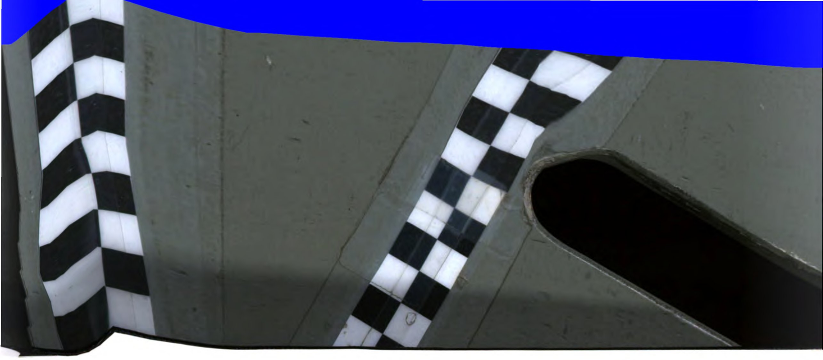
If you have not yet had the opportunity to complete the questionnaire and return it, I urge you to do so by December 18. We can certainly get a more complete picture with more responses.

This research project seeks to determine how graduates' lives have been affected and what instructional activities have been most influential. We expect that participant responses will help upgrade instructional programs.

Again, let me express my appreciation for your support.

Sincerely,

Jim Eggert



APPENDIX C

Table 6.1 Amount of Desired Change in Behavior Correlated with Perceived Behavioral Change

	desired behavioral change					
perceived behavioral change	not at all	a little	some-what	quite a bit	a lot	row total
not at all	4	1				5
a little	7	8	4	3		22
somewhat	5	8	16	9	1	39
quite a bit	8	2	20	22	9	61
a lot	7	4	8	8	8	35
column total	31	23	48	42	18	162

Spearman's rho correlation coefficient = .31982 $p < .05$ (.00003)

Table 6.2 Amount of Anticipated Change in Behavior Correlated with Perceived Behavioral Change

	extent of anticipated behavior change					
extent of perceived behavioral change	not at all	a little	some-what	quite a bit	a lot	row total
not at all	4	1				5
a little	3	14	4	1		22
somewhat	6	10	19	3	1	39
quite a bit	5	8	26	17	5	61
a lot	3	8	11	7	6	35
column total	21	41	60	28	12	162

Spearman's rho correlation coefficient = .37570 $p < .05$ (.00000)

Table 6.3 **Amount of Anticipated Change in Attitudes and Values Correlated with Perceived Change in Attitudes and Values**

	extent of perceived change in attitudes and values					
extent of desired changes in attitudes and values	not at all	a little	some-what	quite a bit	a lot	row total
not at all	13	4	4	7	1	29
a little	3	20	13	9	9	54
somewhat		6	17	19	11	53
quite a bit		1	5	9	4	19
a lot			1	2	4	7
column total	16	31	40	46	29	162

Spearman's rho correlation coefficient = .44401 $p < .05$ (.00000)

Table 6.4 **Amount of Anticipated Change in Knowledge and Understanding Correlated with Perceived Change in Knowledge and Understanding**

	extent of perceived change in knowledge and understanding				
extent of anticipated change in knowledge and understanding	a little	some-what	quite a bit	a lot	row total
not at all			1		1
a little	2		2	2	6
somewhat	4	8	7	5	24
quite a bit	1	11	36	27	75
a lot		3	10	43	56
column total	7	22	56	77	162

Spearman's rho correlation coefficient = .46003 $p < .05$ (.00000)

Table 6.5 Type of Instructional Activity Correlated with "Newness" Rating of Behavioral Change

type of instructional activity	very new	quite new	some-what new	slightly new	
classroom presentations of all kinds	17 21.52	37 46.84	18 22.78	7 8.86	N % of row
discussions and/or reflective thinking	9 11.25	30 37.50	29 36.25	12 15.00	N % of row
classroom participative activities	15 13.16	41 35.96	42 36.84	16 14.04	N % of row
reading assignments	4 15.38	6 23.08	12 46.15	4 15.38	N % of row
reports or writing assignments	20 34.48	17 29.31	15 25.86	6 10.34	N % of row
assignments requiring active involvement	35 27.56	38 29.92	38 29.92	16 12.60	N % of row
other	9 36.00	6 24.00	5 20.00	5 20.00	N % of row
can't identify	4 23.53	6 35.29	4 23.53	3 17.65	N % of row

chi square = 34.5 $p<.05$

Table 6.6 **Combined Instructional Activities Correlated with "Newness" Ratings of Behavioral Change**

type of instructional activity	very new	quite new	some-what new	slightly new	
classroom presentations of all kinds with reading assignments	21 20.00	43 40.95	30 28.57	11 10.48	N % of row
discussions and/or reflective thinking with reports or writing assignments	29 21.01	47 34.06	44 31.88	18 13.04	N % of row
classroom participative activities with assignments requiring active involvement	50 20.75	79 32.78	80 33.20	32 13.28	N % of row
other	9 36.00	6 24.00	5 20.00	5 20.00	N % of row
can't identify	4 23.53	6 35.29	4 23.53	3 17.65	N % of row

chi square = 44.8 $p < .05$

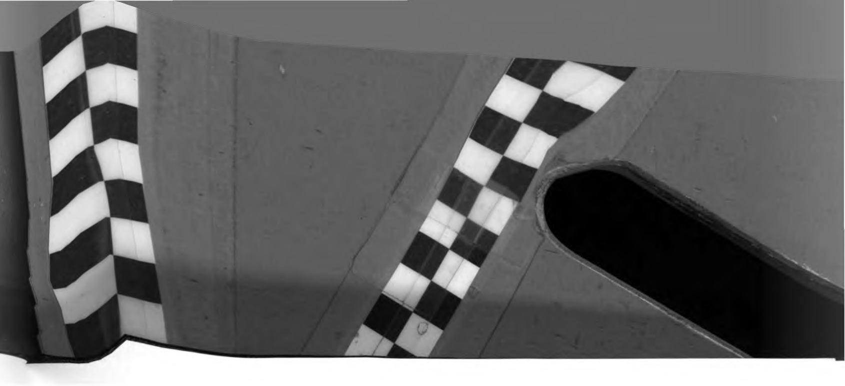


Table 6.7 **Percentage of Classroom Time Presentations Were Used**

Classroom presentation by the instructor or others, including lecture, visual aids, films or videotapes, and demonstrations

program	number of responses	mean	range	standard deviation
1	10	62.0000	20-90	24.6306
2	15	33.3333	10-80	20.4997
3	19	38.4211	20-70	13.9496
4	49	44.6122	10-80	16.4188
5	22	43.0909	20-85	16.7813
6	5	66.0000	50-85	13.8744
7	22	48.6364	10-85	21.5573
8	18	76.9444	50-95	10.9999
combined	160	48.5562	10-95	21.1267

Table 6.8 **Percentage of Classroom Time Discussions Were Used**

Classroom discussion and/or reflective thinking

program	number of responses	mean	range	standard deviation
1	10	22.5000	5-50	13.7941
2	15	38.6667	15-60	12.3153
3	19	35.0000	20-60	11.1803
4	49	28.4898	10-50	9.6720
5	22	34.7273	10-70	13.7570
6	5	12.0000	5-25	7.5829
7	22	28.6364	5-70	16.6320
8	18	15.0556	1-40	10.3496
combined	160	28.6937	1-70	13.8696

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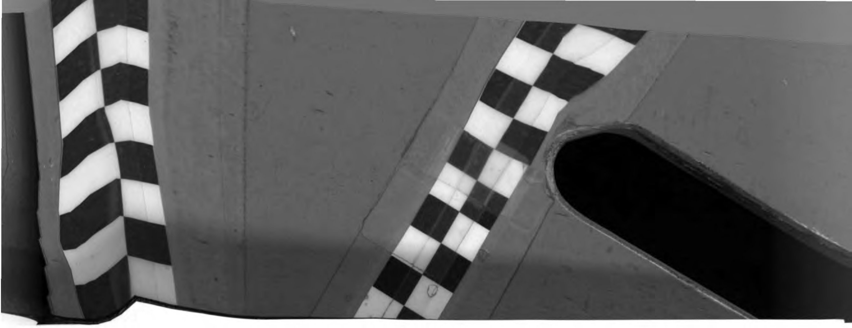

Table 6.9 **Percentage of Classroom Time Participative Activities Were Used**

classroom participative activities such as role play, simulation, practice session, or real-life experience				
program	number of responses	mean	range	standard deviation
1	10	15.5000	5-50	16.2361
2	15	28.0000	5-45	12.3635
3	19	26.5789	5-50	9.7258
4	49	26.8367	10-75	14.2190
5	22	23.0909	5-60	13.7734
6	5	22.0000	5-30	10.3682
7	22	22.7273	5-50	12.1231
8	18	8.0000	0-20	4.6273
combined	160	22.8562	0-75	13.6763

Table 6.10 **Percentage of Outside-Classroom Time Consumed with Reading Assignments**

reading assignments				
program	number of responses	mean	range	standard deviation
1	10	66.0000	50-90	13.7032
2	15	29.6667	10-50	12.1964
3	19	33.6842	20-60	11.1607
4	49	36.5918	10-75	14.0162
5	22	38.5455	10-75	18.4874
6	5	44.0000	20-70	18.1659
7	22	40.0000	10-70	17.0434
8	18	37.6111	10-65	15.2552
combined	160	38.5187	10-90	16.5510

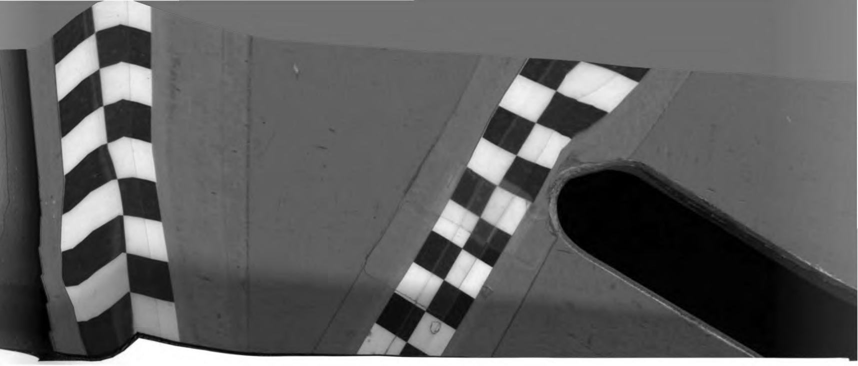

Table 6.11 **Percentage of Outside-Classroom Time Consumed with Reports or Writing Assignments**

reports or writing assignments, particularly ones which required thinking or reflecting				
program	number of responses	mean	range	standard deviation
1	10	21.9000	7-30	6.3849
2	15	41.3333	25-60	10.6010
3	19	47.0000	30-60	9.9944
4	49	35.4694	15-60	11.0097
5	22	36.7273	10-60	14.2901
6	5	28.0000	10-50	14.4049
7	22	40.2273	20-80	15.7720
8	18	48.6111	25-85	19.0051
combined	160	38.6125	7-85	14.4636

Table 6.12 **Percentage of Outside-Classroom Time Consumed with Active Involvement Assignments**

assignments which required you to physically do something or get actively involved in something, such as organizing a group or conducting an interview or completing a project				
program	number of responses	mean	range	standard deviation
1	10	12.1000	3-30	9.8821
2	15	29.0000	0-60	17.1339
3	19	18.4211	2-50	12.0200
4	49	26.4898	10-50	9.7684
5	22	23.7143	5-70	18.6471
6	5	16.0000	5-30	10.8397
7	22	19.3727	5-50	14.5959
8	18	11.6111	2-40	10.5225
combined	160	21.5472	0-70	14.0427

Table 6.13 **Percentage of Outside-Classroom Time Consumed with Other Kinds of Assignments**

other				
program	number of responses	mean	range	standard deviation
1	10	0.0000	0-0	0.0000
2	15	0.0000	0-0	0.0000
3	19	0.8500	0-12	2.8521
4	49	1.1224	0-25	4.5945
5	22	0.6667	0-15	3.0598
6	5	12.0000	0-60	26.8328
7	22	0.4545	0-10	2.1320
8	18	2.2778	0-25	6.2196
combined	160	1.2209	0-60	5.9203

APPENDIX D

Exhibit 1

NUMBER OF QUESTIONNAIRES SENT AND COMPLETED

Four hundred ninety questionnaires were sent. The number per institution fluctuated slightly due to the number of graduates between 1984 and 1989.

Sixty-eight questionnaires were returned by the post office as undeliverable. In most cases, the person had moved and left no forwarding address or the forwarding order had expired. Other questionnaires which were returned by the post office with a forwarding address were sent to the new address. Four hundred twenty-two questionnaires are thus presumed to have reached graduates.

One hundred sixty-seven of the 422 questionnaires were completed and returned to the researcher. That is a response rate of 39.57%.

The number of questionnaires sent, returned as undeliverable, received by the researcher, and the percentage of those presumed to have reached graduates which were received by the researcher is as follows:

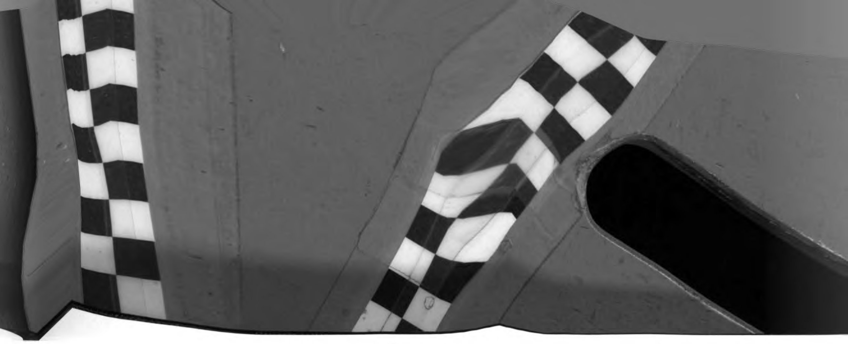

Table 6.14 Number of Questionnaires Sent and Returned

program	number sent	returned by post office as not deliverable	returned completed by participants	percent completed of those delivered
1	65	10	12	21.81
2	65	11	15	27.78
3	65	5	20	33.33
4	63	0	49	77.78
5	65	16	24	48.98
6	65	14	7	13.73
7	60	5	22	40.00
8	42	7	18	51.43
Totals	490	68	167	39.57

As noted in chapter 4, four of the questionnaires were returned by individuals who were 23 or younger when they graduated. These four were not used because the respondents were not non-traditional students.

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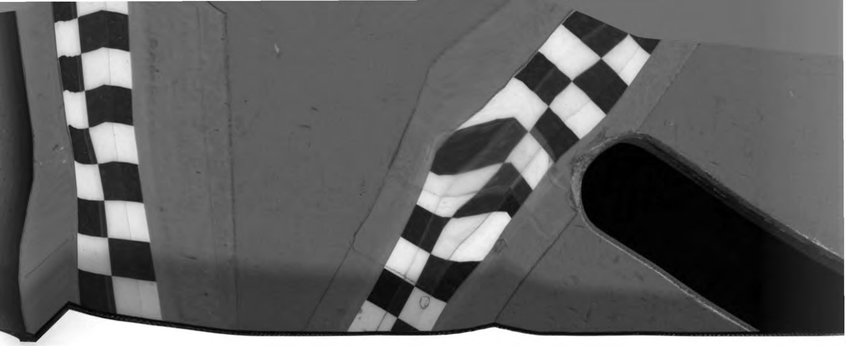


APPENDIX D

Exhibit 2

BEHAVIORS AS DESCRIBED BY PARTICIPANTS

In part 2 of the questionnaire, participants were instructed: "List below several specific actions or behaviors that are new or modified from what you did before your were engaged in your instructional program." In the questionnaire, nine examples were given with prominent action verbs, e.g., lead, visit, talk, plan, develop. Most of the participant responses were written as actions or behaviors. However, some were not.

A careful analysis was made of each listed "action" or "behavior." Since the emphasis of this project was behaviors, any references to knowledge, understanding, attitude, or feeling were eliminated. For example, "I am more confident" was rejected. Confidence may certainly affect behaviors, but is not a behavior in itself.

There was a fine line drawn. All examples which were close to the line on either side (rejection or acceptance) were written out and compared. As they were marked for rejection or acceptance, there was constant check for consistency.

Some items referred to awareness, knowledge, or understanding and not behaviors. The following items listed by participants as "actions" or "behaviors" were rejected for that reason:

- I am more aware of values . . .
- I have learned more about myself, improving my weaknesses and emphasizing my strengths.
- I'm more knowledgeable about conducting research.
- I understand business inner-workings much better.
- I learned to understand the behaviors of other people more.
- gained greater perception
- I understand group dynamics more acutely.

Others which referred to feelings or attitudes were rejected:

- I feel very comfortable.
- I have more self-confidence.
- I have more empathy.
- I have a desire to make a difference in my home church.
- I have greater confidence in teaching.
- I have a greater understanding and appreciation for God's word.
- I tend to appreciate the knowledge others have now.
- more interest internationally
- much less intimidated by people in authority
- more at ease in sharing my faith
- more comfortable speaking to groups
- I enjoy working in the church now.
- I am more at ease dealing with people I don't know.
- confidence in teaching methods
- I am interested in other's reports and research.
- I am not as intimidated by "negative" or critical discussion of points.

Others which referred to a position or state of being were rejected. They do not indicate the participant is doing any particular action.

- I am an excellent writer.
- I am now unemployed.
- I am employed.
- I am a much better advisor.

The following are some borderline statements accepted as behaviors because each seems to imply an action or behavior:

- I am able to deal with subordinates at work.
- I was able to start my own company.
- I have more team involvement.
- I am less legalistic.
- I am better at organization.
- I have a deeper prayer life.
- I'm more outgoing and relaxed among my peers.
- I'm more assertive with others.
- I am more selective in what I volunteer for.

Some that referred to a feeling or attitude were accepted because they applied that feeling to an action:

- I approach my job with greater confidence.
- I'm not afraid to say what I think.

Some used words that bordered on feelings but seemed to use them in an action sense. These were accepted:

- I am more patient when expecting changes in people or process.
- I am more sensitive to others' needs.
- more responsive to the needs of adults

Others were very clearly behaviors, written in a form similar to the examples:

- I utilize my time more efficiently.
- I talk to people more.
- Engage more people in decision making process
- I handle conflict better.
- I am serving more in the church.
- I assess situations more thoroughly.
- I read God's word more.
- plan meetings - large and small
- I more confidently tackle situations that previously I would have avoided.
- I've improved my facilitation skills.

APPENDIX D

Exhibit 3

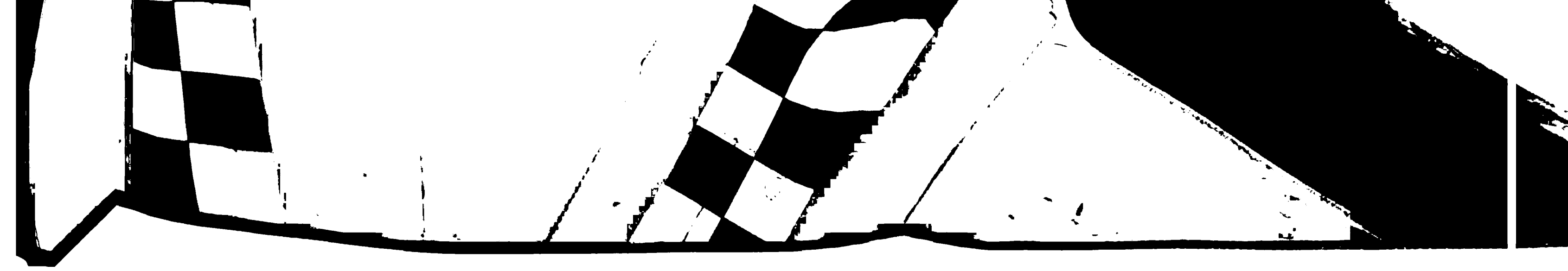
"OTHER" INSTRUCTIONAL ACTIVITIES

In part 2 of the questionnaire, participants were asked to report which of six primary types of instructional activities had the greatest influence on each of the behavioral changes they identified. In addition to the six types, they were allowed to indicate "other" or "can't identify."

In the original tabulation of responses, based precisely on what participants reported, the number of responses in each category and the percentage of responses in each category was as follows:

Table 6.15 Original Responses of Behavioral Changes Attributed to Each Type of Instructional Activity

type of instructional activity	frequency	percentage
classroom presentations of all kinds *	80	14.95
discussions and/or reflective thinking	80	14.95
classroom participative activities	111	20.75
reading assignments	26	4.86
reports or writing assignments	57	10.65
assignments requiring active involvement	128	23.93
other	35	6.54
can't identify	18	3.36



Participants were asked to indicate what "other" was. Some did that; others did not. The following are some explanations of "other" written by participants:

- care and concern profs showed me
- personal spiritual growth
- being an adult learner
- class devotions and prayer times
- self-designed sabbatical
- volume of homework
- in-depth study of the word of God
- Holy Spirit

The explanations of the participants were reviewed carefully. Wherever the participant's response clearly fit the researcher's description of one of the primary six types of activity, the response was counted as one of the six for final analysis. Out of the original 35 responses in the "other" category, only ten clearly fit one of the primary six categories. The resulting number of responses in each category and the percentage are reported in chapter 4, under research question 3, Table 4.3.

Three "other" responses were changed to and analyzed as "classroom participative activities:"

- class devotions and prayer times
- group prayer (in class) and especially prayer partners
- time in prayer in class

One "other" response was changed to and analyzed as "reports or writing assignments:"

- written reports

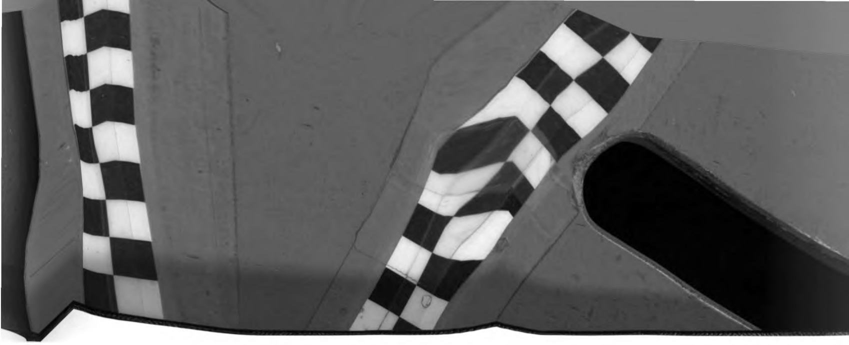
Six "other" responses were changed to and analyzed as "assignments which required . . . active involvement:"

- clinicals (used four times by nursing students)
- so many written assignments that had to be typed
- in-depth study of the word of God

As indicated earlier, some participants did not explain anything after marking the "other" category. Among those who did explain, there were numerous responses that were similar to each other, but did not fit one of the six types of activity:

- care and concern profs showed me
- religious studies
- getting into God's word on a regular basis
- volume of homework
- being an adult learner
- my age
- by achieving administrative degree and being in class with administrators
- self-designed sabbatical
- I recently received the Lord Jesus Christ as my personal savior.

Those seem to be broad life experiences - too broad to fit the category of "assignments which required you to physically do something or get actively involved in something . . ." Never-the-less, they are experiences.



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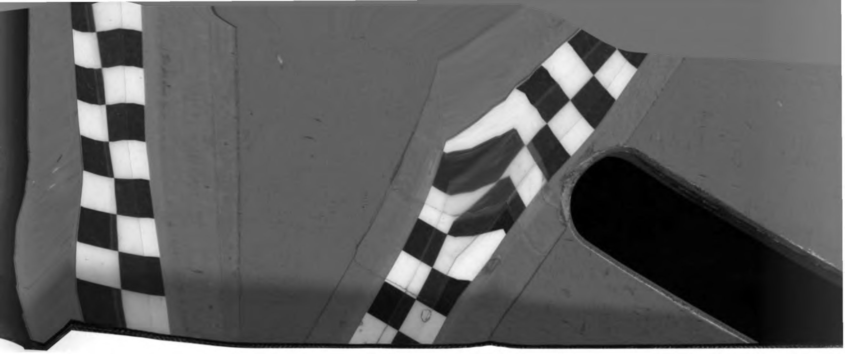

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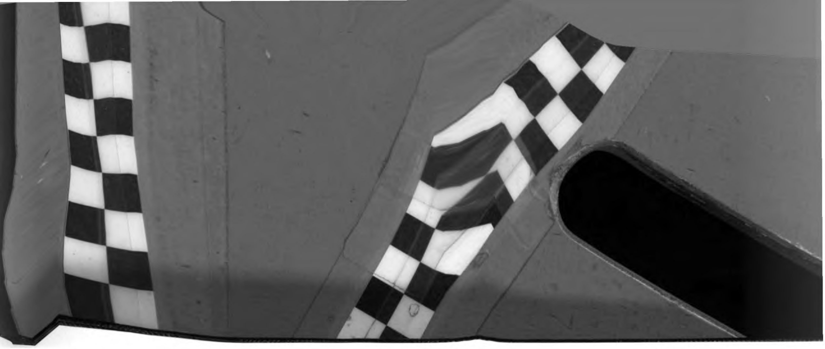

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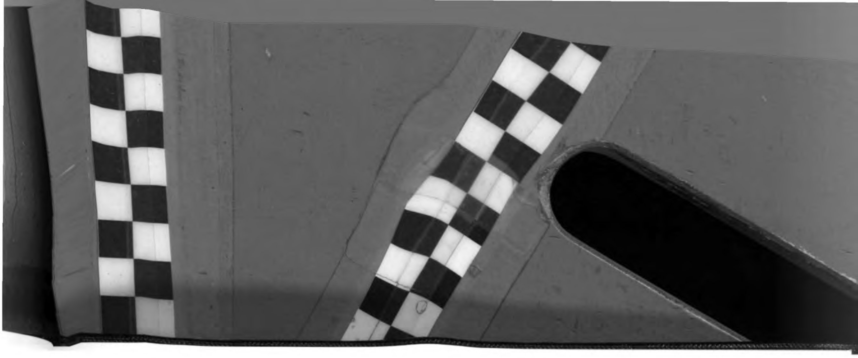

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