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Differences Between Field Independent and Field Dependent Teachers and the Tendency to Acquire Information Through Modeling

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The necessity of individualizing instruction to meet varying needs of learners is a major concern of educators at all levels. The potential effect on learning of meeting individual differences is widely accepted. As a result, the refinement of alternative teaching strategies and instructional materials has generated attempts to identify specific variables which affect the learning process. Specifically, the relationship of learner effectiveness variables to particular instructional strategies has been investigated.

One group of learner variables which demonstrates a relationship to specific instructional strategies is cognitive style. The term cognitive style is used to refer to the basic individual differences in the ways in which people gain knowledge and understanding. Several dimensions of cognitive style have been identified. One such dimension, field independence-dependence, is the most acknowledged and researched of the components of cognitive style. Data from a number of studies on cognitive style suggest that this dimension influences one's performance in a number of learning situations. Although investigations of the influence of field independence-dependence on academic achievement are limited, those studies which have been conducted suggest a definite relationship between the two variables (Davis, 1973). Further, such studies indicate that different academic content areas present different requirements for the learner (Bracht, 1970). In a review of the relevant literature, Davis (1973) points out that learners manifesting specific cognitive styles are at an advantage in certain academic situations.

Despite the factors which have demonstrated an influence on the learning effectiveness process, investigations of learning under different instructional procedures usually examine the average performance of a group. With this design, the influence of a particular strategy on a particular cognitive style has probably been masked. Using a group as the unit of analysis restricts the scope of the variables studied (Snow, Tiffin & Siebert, 1965). Few studies attempt to identify which instructional methods are most effective for specific cognitive styles.

It is important to look at the influence of a teaching strategy on specific individual cognitive style dimensions. The need for more precise examination of this relationship is obvious in light of the educational trend toward the development of systems of instruction in which an integrated array of instructional materials are combined to produce optimum learner success on specified instructional tasks. In order to meet this goal of individualized instruction, not only must those variables predicting success be identified but also those variables having low or negative correlations with success in a given situation.

According to Kagan (1965) a careful analysis and evaluation of cognitive style variables which influence an individual's way of perceiving and responding to stimulation from his environment is essential to gaining an understanding of his final behavioral performance. Kagan suggests that all the behavioral responses of an individual are to some extent determined by his method of interpreting, transforming and integrating the stimuli he receives. In light of this, the study of cognitive styles and their interaction with observational learning has particular relevance to multimedia instruction.

The increasing awareness of the need to individualize instruction is bringing about significant efforts to individualize the teacher training process. It is particularly important to individualize instruction in this population for several reasons. As in

other learning situations, the provision of a variety of teaching strategies and instructional materials should serve to maximize student learning potential and increase learning efficiency. In addition, experience with individualization techniques would provide teacher trainees with a model to implement in their own classrooms.

One form of learning in which the role of cognitive style has received limited study is that of observational learning or modeling. The effect of individual differences is noted by Koran, Snow and McDonald (1971) who point out the potential influence of observer characteristics on observational learning.

Bandura (1969) points out that observational learning is one of the important educational processes because of the social environment in which most learning takes place. This statement is particularly relevant to teacher training programs. The students in teacher training programs are there to acquire the competencies necessary to teach. Each teacher training program demonstrates a model for its students. In some instances, the demonstrated model may contradict the philosophy of the program. In short, teacher training programs may in some instances become "do as I say, not as I do" experiences.

Such a contradictory approach to teacher education is not advocated. In fact, it may be a deterrent to the development of the teaching competencies outlined in the philosophy of a teacher training program. The implications of such a contradictory experience are important in a discussion of observational learning (Bandura, 1971). The influence of contradictory teacher training experiences will vary from student to student. If some students have a stronger tendency to model than others, this tendency may emphasize the impact of the contradictory teacher training experience. The philosophy of teaching demonstrated in the program may be learned along with or instead of the elements of the program which agree with the philosophy. If this is the case, then such students should be presented with models which demonstrate the philosophy of the teacher training program. Such a

structuring of the teacher training program may serve to facilitate teacher implementation of the desired competencies.

Purpose

The purpose of this study was threefold. First, the study examined the difference between field independent and field dependent inservice teachers in the tendency to acquire information through modeling. A second purpose was to examine the difference between field independent and field dependent inservice teachers in the tendency to model the visual aspects of a videotaped lesson. A third purpose was to examine the difference between field independent and field dependent inservice teachers in the tendency to model the auditory aspects of a videotaped lesson.

Procedures

The subjects were 35 inservice teachers. Each subject was employed in the greater Houston area and enrolled in graduate courses in special education. The age of the subjects ranged from 23 to 50. The teaching experience of the subjects ranged from one to twenty-two years.

Each subject completed the Group Embedded Figures Test (Witkin, Oltman, Raskin & Karp, 1971). The GEFT is a group administered pencil and paper test. The test was designed to measure the ability to identify configurations embedded in a perceptual field in spite of distraction. Subjects were required to locate a simple geometric design. The purpose of the GEFT scores was to provide a tool for defining the dimension of cognitive style identified as field independence-dependence. Subjects scoring seven and below on the GEFT were grouped together and labeled field dependent. Subjects scoring 11 and above were grouped together and labeled field independent.

Upon completion of the GEFT, subjects participated in the remainder of the study on an individual

basis. Each subject was asked to view a six minute videotaped lesson which showed a model teacher teaching a linear math concept. At the beginning of the videotaped lesson, the model explained what she would be teaching and that, after the observational experience, the subject would be asked to teach the same concept. She stressed that subjects could use any teaching style they deemed appropriate and could use any available materials regardless of whether or not these were the ones she had employed.

After viewing the videotaped lesson, the subject moved to an area identical to the environment observed on the tape. Following the instruction previously given in the videotaped lesson, each subject taught the same linear concept which he had seen the model teach. Each subject's teaching performance was videotaped to facilitate accurate rating of his modeling behavior.

A panel of three raters pinpointed the behaviors present in the videotaped lesson which each subject modeled. All raters were graduate students majoring in special education at the University of Houston. Before beginning the rating process, each rater was trained and tested for competence in using a standard rating form which was designed for use in this study. An interrater reliability score of $r = .89$ was determined for the three raters, indicating that raters were similar in their evaluation of subjects.

The rating form yielded three measures of each subject's modeling behavior. First, the overall tendency of each subject to acquire information through modeling was measured. This overall measure was a combination of the score for the visual behaviors modeled and the score for the auditory behaviors modeled. A copy of the rating form used in this study is shown in Figure 1.

Results

Mean ratings were calculated for each of the three areas evaluated by the standard rating form for each of

FIGURE 1

Observation Checklist

Subject Number:

Directions: Place a check in front of each of the behaviors listed below which the subject demonstrates.

Auditory Behaviors

LESSON SEQUENCE:

- Listing of materials to be used
- Review of previous day's work
- Importance of measuring
- Introduction to the concept of the foot measure
- Review of last lesson

TERMINOLOGY:

- Standard unit of measure
- Transition behaviors between review and textbook assignment
- Get out your book
- Turn to page 42
- Is everyone on page
- Textbook assignment

Visual Behaviors

ARRANGEMENT OF MATERIALS:

- Preassembly of materials to be measured
- Use of overhead projector as chart stand
- Lean pegboard whale against overhead projector
- Lean measuring chart against whale

BODY POSITION OF SUBJECT:

- Sitting on floor
- Legs crossed
- Kneeling
- Standing (consider only if subject has changed position during lesson)
- Use of all the above positions in sequence

POSITION OF THE SUBJECT DURING LESSON:

- Conducts lesson away from materials table

BODY POSITION CHANGE AT TRANSITION POINTS IN THE LESSON:

- Before beginning discussion of size of an inch
- Before beginning review
- Before giving textbook assignment
- Use of both sides of measuring chart
- Repeated use of same materials for measuring
- Use of textbook other than math textbook

the 35 subjects. The subject means ranged from zero to nine on the auditory aspects of the standard rating form. The subject means ranged from zero to eleven on the visual aspects of the standard rating form. The subject means ranged from .33 to 20.0 on the overall behavior rating.

The Mann Whitney U Test (Siegel, 1956) was used to test three hypotheses. First, regarding overall modeling behavior, results of $U=46$ ($p < .025$) indicated that there is a significant difference between field independent and field dependent inservice teachers in the tendency to acquire information through modeling. An observed U value of 41 ($p < .025$) was obtained in regard to differences in the tendency to model the visual aspects of a videotaped lesson. The observed U value indicated that there is a significant difference between field independent and field dependent inservice teachers in the tendency to model the visual aspects of a videotaped lesson. In comparing the two groups on auditory modeling, $U = 67$ ($p < .025$) indicated that there is a significant difference between field independent and field dependent inservice teachers in the tendency to model the auditory aspects of a videotaped lesson.

Conclusions

Results of the Mann Whitney U tests indicated that there was a significant difference between field independent and field dependent inservice teachers in the tendency to learn observationally. Field dependent inservice teachers were rated by the raters as having modeled more than field independent inservice teachers. According to the findings of this study, field dependent inservice teachers tended to acquire more information through observational learning than the field independent inservice teacher. Along with this, field dependent inservice teachers tended to model both the auditory and visual aspects of a videotaped lesson more than field independent inservice teachers.

The cognitive style dimension of field independence-dependence deals with the manner in which an individual perceives and analyzes a complex stimulus configuration. The field independent individual differentiates individual parts of a complex stimulus from the surrounding field. The field dependent individual perceives the stimulus configuration as a whole. Further, the field independent individual has been characterized as perceptually analytic in perception. The field dependent individual tends to passively conform to the perceptual situation in which he finds himself.

The findings of this study may be interpreted as consistent with the above stated characteristics of the field dependent individual. The field dependent inservice teachers were rated as having modeled the videotaped lesson more closely than the field independent inservice teachers. The field dependent inservice teachers appear to have conformed more closely to the videotaped lesson than the field independent inservice teachers. This conforming to the videotaped lesson may be due to the field dependent inservice teacher's seeming inability to analyze the perceptual experience provided in the videotape.

The implications of these findings for teacher training programs are important. Field dependent inservice teachers tend to model more than field independent inservice teachers. This finding is even more important when considered in conjunction with the findings of Koran, et al (1971). Koran and her associates stated that field dependent individuals learned more from an observational learning experience than from a written script. Field independent individuals learned more from a written script. It was suggested in the Koran, et al article that field independent individuals are more able to generate the perceptual schema an observational learning experience provides than field dependent individuals. In line with this, it is suggested that field independent individuals may become bored and frustrated when required to view the perceptual schema of an observational learning experience. The provision of a perceptual schema may serve as a compensation for those

who are less able to generate such information for themselves.

Consideration of these findings has implications for the training/retraining of both field dependent and field independent inservice teachers. These findings should focus attention on the importance of providing observational learning experiences which are consistent with the philosophy of a teacher training program. That is, a program that advocates individualizing instruction should individualize instruction for its students. Similarly, a program that advocates a multi-sensory approach to learning should not limit the instruction of its students to a lecture approach. Since field dependent inservice teachers seem to conform to the observational learning experience, this experience should be as closely aligned with the philosophy of the program as possible.

In addition to the need for evaluation of the observational learning experience, these findings in conjunction with those of Koran, et al (1971) stress the need for providing for instructional alternatives. Although the field independent inservice teachers were influenced by the observational learning experience, this influence was significantly less than that of the field dependent inservice teachers. While it cannot be said that field independent inservice teachers do not learn from observational learning experiences, Koran, et al (1971) states that they learn more from written information. Thus, the importance of providing more than one instructional alternative is underscored.

REFERENCES

- Bandura, A. Behavior modification through modeling procedures. In Krasner, L., & Ullmann, L. P. (Eds.), Research in Behavior Modification. New York: Holt, Rinehart & Winston, 1965.
- Bandura, A. Principles of Behavior Modification. New York: Holt, Rinehart & Winston, 1969.
- Bandura, A. Analysis of modeling processes. In Bandura, A. (Ed.), Psychological Modeling: Conflicting Theories. Chicago: Aldine-Atherton, Inc., 1971, 16-22.
- Bracht, G. H. Experimental factors related to aptitude-treatment interactions. Review of Educational Research, 1970, 40, 627-645.
- Davis, J. K. Cognitive Style and Hypothesis Testing. Paper presented at the American Research Association, New Orleans, 1973.
- Kagan, J. Reflection-impulsivity and reading ability in primary grade children. Child Development, 1965, 36, 609-628.
- Koran, M. L.; Snow, R. E.; & McDonald, F. J. Teacher aptitude and observational learning of a teaching skill. Journal of Educational Psychology, 1971, 62, 219-228.
- Siegel, S. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Co., Inc., 1956.
- Snow, R. E.; Tiffin, J.; & Siebert, W. F. Individual differences and instructional film effects. Journal of Educational Psychology, 1965, 65, 315-326.
- Witkin, H. A.; Oltman, P. K.; Raskin, E.; & Karp, S. A. Manual for Embedded Figures Test, Children's Embedded Figures Test, Group Embedded Figures Test. Palo Alto, Ca.: Consulting Psy. Press, Inc, 1971.