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PREVIEW

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COMPARISON OF COMPUTER-ASSISTED INSTRUCTION, TRADITIONAL
INSTRUCTION, AND COGNITIVE STYLE ON ACHIEVEMENT OF POST
SECONDARY STUDENTS IN APPLYING ALPHABETIC FILING RULES

The University of Nebraska - Lincoln

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INSTRUCTION, AND COGNITIVE STYLE ON ACHIEVEMENT OF POST
SECONDARY STUDENTS IN APPLYING ALPHABETIC FILING RULES**

by

Craig A. Agneberg

A DISSERTATION

**Presented to the Faculty
of the Graduate College in the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Doctor of Education**

**Major: Interdepartmental Area of
Administration, Curriculum, and Instruction**

Under the Supervision of Professor Gordon F. Culver

Lincoln, Nebraska

August, 1985

TITLE

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Craig A. Agneberg, Ed.D.

University of Nebraska, 1985

Adviser: Gordon F. Culver

The purpose of this study was to research the following hypotheses: (a) There is no significant difference between the experimental (CAI) and control (Practice Set) groups in final mean score on the posttest; (b) there is no significant difference between field independent (FI) and field dependent (FD) groups in final mean score on the posttest; (c) there is no significant difference between the Group Embedded Figures Test (GEFT) groups and group achievement in final mean score on the posttest; and (d) there is no significant difference between experimental and control groups or between field independent/dependent groups in reported time spent studying the filing rules.

Students in two sections (n=29) of an office machines course at the University of Nebraska-Lincoln were administered the GEFT and pretest. Based on GEFT scores, the subjects were divided into four groups--CAI/FI, CAI/FD, Practice Set/FI, and Practice Set/FD.

Two teachers were utilized to introduce and interact with the different groups. Each teacher worked with both an experimental and a control group. After a brief introduction to their method of instruction, the students were given two weeks to complete their study of the alphabetic filing rules, whereupon they were given a posttest.

The CAI publication used was Rules for Alphabetical Filing, published by Bytes & Books, Inc. The practice set utilized was Filing Systems for Information Management, published by John Wiley & Sons, Inc.

Analysis of variance with repeated measures was used to study the interactions between variables. There were no significant interactions between groups. The following within-group interactions were obtained: (a) Control group scored significantly higher than the experimental group; (b) field independent group scored significantly higher than field dependent group; (c) both experimental and control groups scored significantly higher between pretest and posttest scores; and (d) field independent group spent significantly less time studying the rules than did the field dependent.

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With the support of Dr. Hazel Crain and Fay Larson who gave me the opportunity to work full time while finishing this study, I extend a special thank you. I'd like to also extend gratitude to my co-workers in the Center for Business and Vocational Teacher Education for their encouragement and patience.

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Special thanks also to Gloria Vogt who was the other teacher in this study. Her time commitment during test construction and her attention to following instructions is appreciated.

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PREVIEW

CHAPTER 1

INTRODUCTION

Significance of the Study

Realistic simulation within the classroom of on-the-job business practices continues to be a foremost challenge to business teachers at all educational levels. Written simulations and traditional, paper and pencil, practice sets are used throughout many disciplines and levels of education from science lab experiments to practice sets used in business filing and accounting courses. Possibly the most effective simulations and practice sets are typically based upon actual job situations that have been packaged into classroom exercises.

With more and more businesses and classrooms being equipped with computers, the traditional practice set will need to become more computerized to simulate more nearly the fast-changing, automated technologies. Many of the current practice sets utilize computer technology, yet little research has been conducted on the value of computer-assisted instruction (CAI) versus traditional instruction coupled with practice sets.

Researchers have hypothesized that students' learning styles differ and that students with certain learning styles achieve at a higher level utilizing CAI

versus traditional instruction. Evidence also indicates that traditional methods of instruction are more effective for certain student learning styles than other instructional strategies. However, educators typically teach students as a group, not taking into account individual students' learning styles. In researching learning style studies, Schmidt (1983b) concluded that there has been little research conducted utilizing individualized instruction and its effectiveness for different groups of students divided according to learning style.

Lambrecht (1982) addressed the issue of CAI in the business education curriculum with a thorough review of current research completed in this area. The current body of educationally-based CAI programs available for both teaching and learning purposes is very limited. However, many subject areas are suitable for CAI instruction due to the repetitive associations needed to teach a fairly stable body of knowledge. Stocker (1975) conducted a study to determine whether utilizing a technology-based individualized learning system for teaching filing rules was more effective than traditional methods. Johnson (1979) designed an individualized instructional program for teaching alphabetic filing rules in a business setting. Herbert (1981, 1982) conducted research on CAI versus traditional student instruction that supports CAI being

as good as the traditional approach in terms of final student achievement.

Because of the fast-changing technology, much of the literature on individualized instruction for both teaching and learning the alphabetic filing rules is outdated. Stocker (1975) utilized computer-punched cards coupled with a large mainframe computer to provide students faster turnaround time and a more realistic approach to learning the filing rules. Johnson's (1979) instructional program was individualized but had as its focal point teaching the alphabetic rules in a business setting. Herbert (1981, 1982) utilized a CAI approach to drilling students in business communications on certain grammar and punctuation rules. All of these studies individualized the instructional process, and two ventured to use up-to-date technology to reduce teacher grading time and increase student learning efficiency.

Determining student learning styles and developing instructional strategies to meet individual learning styles have been made easier through use of the Group Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971). The Group Embedded Figures Test (GEFT) is used to measure the cognitive learning style of field independence/dependence (FID).

The test requires the subject to locate simple geometric figures embedded in more complex figures. The

complexity of the 26 figures increases progressively. Individuals vary greatly in their ability to identify the figures, but field-independent (FI) students have greater success than field-dependent (FD) students (Schmidt, 1983b).

Hahn (1982) conducted an exploratory study between learner cognitive styles and three different teaching methods (one being CAI) used to teach computer literacy at the University of Pittsburg. Williams (1984) studied the effectiveness of CAI and its relationship to selected learning style elements among 300 fourth-grade students at six suburban schools. Dahl (1984) studied the interaction of FID and CAI structure with students enrolled in four sections of a freshman engineering course at Iowa State University. Post (1984) investigated the effect of students' FID on CAI achievement in a technical fabrications course at Purdue University. And Schmidt (1983b) conducted a study related to community college students' learning styles and their success with and attitudes toward individualized, competency-based typewriting instruction.

The primary question for educators and specifically for business educators is whether a stable body of knowledge, such as alphabetic filing rules, can be transformed into a CAI program that will produce student outcomes and achievement equal to the more traditional

practice set approach. Secondly, the question is whether learning style has a significant influence on student achievement between the two teaching/learning methods of CAI and Practice Set.

Herbert (1982) maintained there are other factors that may also contribute to CAI as an effective approach to teaching. These factors include more teacher class time, individualized student instruction, flexible schedules, student self-confidence and familiarity in operating computers, and higher student motivation because of pleasurable learning outcomes.

This study makes a unique contribution to the business education field because little research has been completed in business education on CAI and filing rules and on CAI and student learning styles. Practically no evidence exists that shows that traditional methods of teaching filing rules are as effective as newer computerized approaches. Furthermore, this study focuses on student learning styles and the groups' subsequent achievement using both the CAI method and the practice set method of instruction.

Statement of the Problem

The primary purpose of this study was to compare the academic achievement of an experimental group of post secondary students who learn alphabetic filing rules via CAI with a control group of students who use a practice set method of instruction. A secondary purpose of this study was to compare the interactions between the experimental and control groups based upon their learning styles, field independent/dependent.

Hypotheses

The following hypotheses were tested:

1. There is no significant difference between the experimental (CAI) and control (Practice Set) groups in final mean score on a 40-problem posttest on filing rules.
2. There is no significant difference between the field independent groups and the field dependent groups in final mean score on a 40-problem posttest on filing rules.
3. There is no significant difference between the GEFT score and group achievement in final mean score on a 40-problem posttest on filing rules.
4. There is no significant difference between experimental and control groups in reported time spent studying the filing rules.

5. There is no significant difference between field independent and field dependent groups in reported time spent studying the ARMA Filing Rules.

Definition of Terms

CAI. CAI is defined by Muscat (1980) as an activity in which the computer is used as the means of problem solving, drill and practice, simulation, or tutorial experience.

Practice set. An instructional technique which is designed for students to work individually with realistic instructional materials in which symbolic tasks are performed and from which students learn a skill to meet some theoretically perceived future need.

Simulation. The copying of an existing structure (a business) to provide realistic learning (Funk, 1970). A more technical definition is a reproduction of a real situation containing elements which the author identifies as necessary to the goals (Popham, Schrag, & Blockhus, 1975).

Drill and Practice. A lower-level use of the computer to provide remedial drill and practice on concepts that take much more classroom time.

Tutorial. This type of lesson introduces the topic, encourages the student to practice concepts, and provides drill and practice follow-up.

Alphabetic Filing Rules. A set of 35 rules that serve as a guide to help people and machines file and find information.

ARMA. The Association of Records Managers and Administrators is the professional association for records management personnel. The alphabetic filing rules used in this study are published by ARMA.

Traditional Instruction. The teaching methods used most often to teach alphabetic filing rules. The methods consist of lecture and discussion of each rule followed by individual and group practice concluding with a practice set for further reinforcement.

Post secondary Schools. Any publicly or privately supported two-year college or four-year college or university.

Group Embedded Figures Test. An instrument designed to measure the cognitive learning style of field independence/dependence via two sets of simple geometric figures embedded in more complex figures (Schmidt, 1983b).

Field Independent. A classification of cognitive learning style whereby individuals who identified a majority of the embedded geometric figures in the GEFT are placed at the higher end of the continuum.

Field Dependent. A classification of cognitive learning style whereby individuals who did not identify

a majority of the embedded geometric figures in the GEFT are placed at the lower end of the continuum.

Assumptions

1. The 40-problem pretest and posttest are appropriate instruments for measuring academic achievement on filing rules.
2. No differences exist between the CAI instructional materials and the practice set instructional materials in content of filing rules which are patterned after the ARMA Rules for Alphabetical Filing.
3. The teachers have no preconceived notions about the effectiveness of the CAI or the practice set materials.
4. Students at the University of Nebraska-Lincoln are representative of students throughout the United States.

Delimitations and Limitations

Delimitations of this study included the following:

1. The population involved in this study was confined to post secondary business education and office administration students in the Division of Business Education at the University of Nebraska-Lincoln who were enrolled in a class in which the learning of filing rules is a primary task.

2. The population was further delimited to students enrolled in Business Education 222--Office Machines.

3. The design for this study was experimental.

Limitations of this study included the following:

1. Conclusions for this study will only be applicable to post secondary business education and office administration students.
2. This study will concentrate on achievement as measured by scores on 40-problem filing rule tests.
3. The study is subject to uncontrollable problems inherent in the experimental design.

PREVIEW