

Developments In Business Simulation & Experiential Exercises, Volume 20,1993

MATCHING OF STUDENT - TEACHER COGNITIVE STYLE AS A FACTOR IN STUDENT SUCCESS IN AN INTRODUCTION TO INFORMATION SYSTEMS COURSE

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ABSTRACT

Computer education has become a mandatory component within virtually every higher education discipline. Failure to complete computer courses successfully causes some students to react negatively towards information technology, as well as repeating the course. This study investigates factors involved in successfully completing an Introduction to Information Systems (Intro to IS) course by comparing performance when the cognitive style of the student matches the cognitive style of the instructor.

INTRODUCTION

During the last decade, microprocessor usage spread into all areas of the workplace. To satisfy the needs of today's business school graduates, many schools of business added the requirement for a course on basic computer concepts. This study took place at a major university (The University) in the southwest United States where the College of Business requires all undergraduate students to complete the Intro to IS course.

Many students at The University find Intro to IS a difficult course and frequently require more than one attempt to complete the course successfully. Other students do not display this same level of difficulty. Further, prior academic performance alone does not completely explain poor performance in the Intro to IS course.

RESEARCH DESIGN

Sample Population

The sample population for the experiment comes directly from the target population for the study. They are students in the College of Business at The University and were attending the Intro to IS course during the period of the experiment. The sample consisted of volunteers from the sections of Intro to IS taught by the participating instructors. Each student participating in the experiment received replacement credit for two quiz scores as a motivation factor. However, this incentive does place a limitation on the validity of the experiment.

Hypotheses

This experiment investigated the relationship between the cognitive style of a student, the student's success in a course, and the cognitive style of the student's instructor. There are two proposed hypotheses:

- H_{01} : Student performance in Intro to IS will be the same regardless of cognitive style.
- H_{02} : The performance in Intro to IS will be the same regardless of instructor cognitive style.

Research Variables

The experiment divided the independent variables (IV) into two sets. The first set of IVs contains demographic variables. The second set of IVs includes measures of individual differences, specifically cognitive style. Subjects took the Myers-Briggs Type Indicator (MBTI) and the Group Embedded Figures Test (GEFT) to provide the measures of individual differences.

The MBTI measures the basic differences in psychological type according to Jung's theory of type. It contains four separate scales for measuring each of the four basic Jungian preferences. The GEFT measures the level of perception. This test is a measure of field dependence-independence, which relates to a wide array of perceptual situations that share the requirement of perceptual disembedding.

The dependent variable (DV) in this study is performance in Intro to IS, The surrogate for this variable is a test score, The averaged score on two departmentally prepared and administered examinations provide the measure for the DV surrogate.

RESULTS

Analysis

One hundred sixty seven students completed the test instruments. The study utilized SAS to do statistical calculations. For each observation, the SAS procedure created four classification variables representing the matching of student and instructor on one of the cognitive style variables.

The statistical calculations consisted of running four regression models with the data, grouping the data according to one of the four classification variables. The analysis used backwards, stepwise regression with the test average as the DV. The IVs were the demographic responses, the student MBTI and GEFT scores, the instructor MBTI and GEFT scores, and the four classification dummy variables.

Discussion

Four instructors teaching Intro to IS participated in the experiment. For these four instructors, there was at least one with each of the eight MBTI scale values. There were 149 students included in the study calculations.

There are several interesting observations from the regression statistics. First, there is evidence that the cognitive style variables play a role in student performance. This supports the first research hypothesis. In each of the regressions, the significant variables represent a different set of variables. Further, each of the cognitive style variables is highly significant beyond a p-value of 0,05.

Second, the student GEFT score appears in each of the regressions for unmatched student and instructor scales, except unmatched JP. The GEFT measures the individual's ability to pick out embedded information, frequently represented as a component of computer knowledge. Therefore, the GEFT may represent the student's ability to disembed the steps to solve a problem from the problem itself,

Third, there is an instructor effect on cognitive style. Two results support this conclusion. Different variables are significant for matched and unmatched groups of students, and the instructor cognitive style variables and the classification dummy variables appear in several of the regression equations. These facts support the second research hypothesis.

There are several limitations to this study. First, the sample used in the study is a convenience sample. There is no validity that this sample accurately represents the parent population. A second limitation deals with the number of instructors. The study included four of six possible instructors. However, this leaves some of the cognitive style variables represented by only one individual. More instructors need to be included in the experiment.