Accommodating Cognitive Styles: International Or Domestic Graduate Students

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Abstract

Cognitive styles of international and domestic graduate students from two departments in a College of Agriculture were assessed with the GEFT. Relationships between gender and major were also examined. A mixed-method approach examined antecedents in the international students. International students were found significantly more field dependent than domestic graduate students. Implications are drawn for teachers and advisers.

Colleges of agriculture throughout the United States annually provide educational programs for large numbers of international students, primarily at the graduate level. The teaching and advisement of these international students sometimes pose unique challenges for the professors when not only cultural differences exist, but reasoning strategies of the students may also be dissimilar to that of the adviser, teacher, or domestic graduate students.

Cognitive style is a dimension of learning style and can be defined as the distinctive and preferred way a learner organizes and retains information (Keefe, 1979). The two dimensions of cognitive style discussed by H. A. Witkin form the theoretical basis of this study. He divided cognitive style into the relative dimensions of field dependent and field independent.

When individuals are presented with a task designed to assess their cognitive style, relative field dependent individuals perceive a seen field as a whole; such a person would have difficulty separating a pattern from the surrounding environment (Escolme, 1988). They have a global perception of their environment.

Field independent individuals, on the other hand, tend "to experience parts of the field as discrete from the surrounding field even when the field (was) so organized as to strongly embed the part" (Witkin & Moore, 1974). They perceive their environment analytically.

Because individuals have different ways of retaining and organizing information, different learner characteristics develop. According to the literature, the selection of an academic major, the chosen method of problem solving, and preferred teaching methods reflect learner cognitive style. The cultural background of an individual can influence cognitive style (Witkin & Berry, 1975). International students may come to academia from very diverse and different cultural backgrounds as compared to domestic American students. Would cognitive style be diverse as well?

International students studying in the U. S. may already be experiencing stress by encountering changes in language, diet, climate, attitudes, and culture. They may also encounter conflicts in their academic pursuits as a result of their cognitive style, i.e., their preferred method of reasoning and remembering. A paucity of literature exists on this topic.

University faculty, in their role as advisers and teachers, should be aware that their line of reasoning may be less easily understood by students whose cognitive styles differ greatly from their own. The level of misunderstanding may be exacerbated by language and other cultural differences. Knowledge produced from this study might also have implications for those professors who teach abroad.

Testing procedures are examples of where problems might arise for the international student. Using objective tests is commonplace in the U. S. and domestic students have grown accustomed to their use and developed a certain level of test taking skill, but international students, particularly those schooled in the British tradition, may find such examinations new and alien.

Purpose and Objectives

This study sought to describe the cognitive styles of both international and domestic graduate students in two departments related to the social sciences. Four research questions were used to guide the investigation:

1) What is the relationship between the nationality of the students and cognitive style?
2) What is the relationship between the gender of the students and cognitive style?
3) What is the relationship between the academic major of a student and cognitive style?
4) What factors of educational background might help identify problem areas an international student may encounter when studying in an American university?

Methodology

The design of this study was descriptive/correlational and employed mixed methods. The target populations were graduate students in the Departments of Agricultural Economics and Agricultural Education at The Ohio State University. The study was limited to these groups to control any potential variation resulting from differences between social and discipline-specific agricultural sciences. All full-time (N=120) graduate students in the two departments were invited to participate. Cognitive style was measured with the Group Embedded Figures Test (GEFT) which has been shown to be reliable (Goldstein & Blackman, 1980) and valid (Witkin, Oltman, Raskin & Karp, 1971). An interview schedule was developed by the researchers with face validity

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confirmed by a panel of experts knowledgeable about interview techniques.

Data were gathered in group or individual sessions. Eighty students supplied data (66%) with non-response appearing to be a function of personal scheduling and not any extraneous variable. Individual scores on the GEFT could potentially range from 0 to 18, and actually ranged from 1 to 18. In this study, the division between field independent/dependent was set at 12, as recommended by Witkin, Oltman, Raskin & Karp (1971).

Students scoring above 12 were classified as field independent and below 12 were field dependent. Four international students were selected from each style category for interviews to represent different hemispheres of the world. Interviews were taped and primary answers transcribed.

Findings and Conclusions

Graduate students participating in the study were both domestic (51%) and international (49%), male (79%) and female (21%), and nearly equally distributed between agricultural education (49%) and agricultural economics (51%).

International graduate students had significantly different mean scores on the GEFT than domestic students (Table 1). The domestic students, with a mean of 13.2, tended to be field independent; and the international students, with a mean of 10.5, tended to be field dependent. Further examination of the data revealed that domestic students and Asian students tended to exhibit the greater field independence,

African students were equally distributed between the two categories, and South American students showed the highest percentage of field dependent individuals. Years studied in the U. S. did not explain the variability in cognitive style, in a separate analysis.

Overall, gender did not account for significant differences among the students. However, international males in agricultural education were more field dependent than any other subdivision of the groups studied.

International female graduate students were proportionally more field independent than U. S. female graduate students. Correlations were calculated among GEFT scores and geographic area, academic major and gender with the results being low in magnitude.

The average scores for agricultural education majors was 10.8 and 12.9 for agricultural economics majors. Thus, agricultural economics majors tended to be more field independent, although the difference was not statistically significant. Analyzing interest areas within the majors, likewise, did not account for statistically significant differences.

Interviews were conducted with international graduate students in each of the cognitive style categories to attempt to explore potential problem areas for these students studying in the U. S. During the interviews, students responded to questions about teaching techniques or methods, testing, and teacher/student interactions from their home country.

All students reported lectures to be the primary teaching method they had experienced. Most students spoke of very limited teacher/student interactions, as one student stated, "There is very little interaction -- don't give argument to the teacher, that is our customs" (sic). When asked to describe an ideal university professor, both academic and personal skills were described. All students indicated that thorough knowledge of the subject matter and willingness to help students were important characteristics they perceived an ideal teacher should possess.

All students reported that comprehensive examinations had been used as a basis for academic promotion from one grade to the next in their home country. Essay and short answer items were most frequently used for the examinations they had taken in their home country, and several students encountered multiple choice questions for the first time in the U. S.

Using a list of words which might be used in examinations, specifically selected to indicate various levels of cognitive activity (Newcomb & Trefz, 1978); students were asked to indicate words which might frequently be used for examination purposes in their home country. Remembering level words were most often used, with some reference to processing, creating or evaluating items. Most interviewees perceived that a greater variety of teaching methods were employed in the U. S.

Discussion

International students carry a unique set of cultural and educational experiences to graduate education when they come to the U. S. to study. These findings must be confined to the groups studied, but they may in fact be typical of other groups as could be verified by replication studies.

Professors advising and teaching international students must be cognizant of ways to most effectively enhance learning. The more teachers and advisers can learn about their students then the better the individual cognitive styles of students can be accommodated. A variety of teaching and testing methods should be employed in a given course to fit the cognitive styles of all students, or to give students equal opportunity to perform irrespective of cognitive style. Highly field dependent students, such as international students, may require more individual guidance to enable them to adjust if a more field independent way of reasoning is characteristic of the instructor and teaching method.

Agricultural faculty should be aware that their own line of reasoning and cognitive style may be less well understood by students whose cognitive style differs from their own, and, therefore, professors may wish to determine their cognitive style with the GEFT. Language and cultural differences may become the next learning barriers to overcome. Professors may desire to provide practice examination exercises using objective items prior to formal testing and/or direct their advisees to programs which develop test-taking skills.

Table 1. Average GEFT Score of United States and International Students.

Status	n	Mean	SD	df	t
United States	41	13.2	4.7	78	2.35*
International	39	10.5	5.5		

Mean = 11.9 * Significant at $p < .05$

The literature (Johnson & White, 1981; Witkin et al., 1977; Witkin & Moore, 1974; Witkin et al., 1971) eludes to educational implications from knowledge of cognitive style. Related to problem solving abilities, field dependent individuals (international students) may not do as well solving problems in which an essential element must be separated from the context in which it is presented and used in a different context; however, field independent students (domestic students) are more likely to spontaneously organize material lacking structure, be less reliant on teacher imposed structure and prefer their own strategies.

Considering interaction with people, field dependent individuals (international students) are very socially sensitive, interested in others, verbal, and may be more easily influenced by peer pressure. Field independent individuals (domestic students) are inclined to be less attuned to social cues, have more theoretical and abstract interests, be less verbal, and may be more individualistic.

Related to preferred subject matter, field dependent (international) students more easily learn socially oriented materials, like personal application of concepts, and avoid majors in science. Field independent (domestic) students more easily learn impersonal material, tend to have a difficult time with detail, and avoid majors in social and behavioral sciences.

Students whose cognitive styles are mismatched with the nature of the curricular content in their major may need assistance in adapting their cognitive style to the content of that discipline.

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NATIONAL SURVEY

Student Access to Instructional Computers As Viewed by Heads of Agricultural Economics

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Abstract

A national survey of Agricultural Economics department heads revealed that the goals and methods of using microcomputers instructionally varied by whether the user was to be an undergraduate or a graduate student. Differences in the stated goals of using microcomputers instructionally may have effect upon the way resources are allocated to instructional use of microcomputers in the future.

Introduction

The use of microcomputers has become an integral part of the education process in the field of Agricultural Economics. Studies have examined the role of microcomputers in Agricultural Economics curriculum (Litzenberg), evaluated students' computer literary (Curtis, Gardner, and Litzenberg), and have discussed the potential impact of students' computing skills upon their employability (Litzenberg and Schneider; Ray and Li). These studies have primarily focused on the instructional use of microcomputers for undergraduates. However, a 1988 survey of heads over Agricultural Economics Departments in the U.S. revealed that the goals and methods of using microcomputers varied by whether they were being used as an instructional tool for undergraduates or graduates.

Identifying the goals of using microcomputers for instructional purposes is an important first step in planning the computer needs of instructional units, as well as those of the students. Analysis of the currently formulated goals may provide some explanation for the allocation of computing resources and suggest future allocations.

Objectives

The objectives of this paper are to identify, from the survey, some of the differences in how microcomputers are used for instructional purposes for undergraduate students versus graduate students in Agricultural Economics programs. While there are many factors which may influence differences in use, this study focuses on three primary areas: 1. enumerating the differences in the goals for using microcomputers for instruction, 2. discussing the general availability of microcomputers and software, 3. evaluating the range in instructional environments.