THE RELATIONSHIP BETWEEN STUDENT CHARACTERISTICS, PERCEPTIONS TOWARDS TEACHERS, LEARNING APPROACHES AND LEARNING OUTCOMES AMONG UNIVERSITY STUDENTS

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Introduction

The purpose of this study is to examine the relationship between student characteristics, perceptions of students towards their teachers, students’ learning approaches and learning outcomes among university students. Student characteristics in this context refer to students’ gender, academic major and critical thinking dispositions. Another variable related to students’ learning is their perceptions towards teachers, which clarifies the relation between student perceptions of the learning context, in particular students’ perceptions of teacher interpersonal behaviour and teaching approaches. Studies have also suggested that students’ perceptions of their learning environment are related to the learning approaches they adopt, and these approaches in turn will influence the quality of the learning outcomes. The learning outcomes in this study are students’ academic achievement and critical thinking skills.

Critical thinking dispositions is a student characteristic which has recently gained attention in research related to student attitudes and achievement (Jenkins, 1998). Critical thinking dispositions are approaches to life that contribute to critical thinking (Facione, 1990). Baron (1987), Ennis (1987) and Tishman et. al. (1992) stressed the importance of dispositions and made the strong claim that being a good thinker means having the right thinking dispositions.
Having the ability to think critically does not guarantee an individual is disposed to do so, and it follows that having certain critical thinking skills does not mean that one will use them which is supported by research showing that students often fail to use the thinking skills they are taught. For example, research on reasoning and argument shows that, when explicitly asked, people can easily give plenty of reasons opposite their favoured side of the case – that is, they have the ability. But typically, they fail to do so – that is, they lack the disposition (Perkins, Farady & Bushey, 1991).

An overall appraisal of critical thinking dispositions by gender revealed that the California Critical Thinking Dispositions Inventory (CCTDI) scores to be more similar than different. Yet small, but statistically significant differences were observed between the means for the 324 women and 262 men in three of the dispositional attributes scales: analyticity, open-mindedness and maturity (Facione et. al., 1995). Women were more disposed toward being open-minded and cognitively mature, whereas men were statistically more inclined toward being analytical. Preliminary conjectures attribute the differences in these two samples either to developmental differences in young adult men and women or to their perceptions of their social-gender roles.

Rimiene (2002) studied the relationship of critical thinking skills and critical thinking dispositions when a critical thinking programme involving brainstorming, problem-solving, reflexive writing, cooperative learning, discussions and debates were carried out on students. Two hundred twenty seven students from Vilnius Pedagogical University participated in the study. The California Critical Thinking Skills Test (CCTST) measuring critical thinking skills and the California Critical Thinking Dispositions Inventory (CCTDI) measuring critical thinking dispositions were administered to students prior to the course and again three months later.

In a study that sought to determine if a relationship exists between learning styles and critical thinking dispositions, Rudd et. al. (2000) collected data from 174 undergraduate students in the College of Agricultural and Life Sciences at the University of Florida. The Group Embedded Figures Test (GEFT) was used to
assess learning styles and the California Critical Thinking Disposition Inventory (CCTDI) was used to determine critical thinking dispositions. Interestingly, the researchers found significant differences of critical thinking dispositions between genders, however, no significant differences based on learning styles were found. There were also no significant differences between majors or between social science and biological science students in learning styles and critical thinking dispositions.

Past studies of interpersonal teacher behavior have indicated that this important element of the learning environment is strongly related to student outcomes. A study conducted among Australian science and mathematics teachers found that those teachers emphasizing leadership, friendly and understanding behaviors were more likely to promote student achievement. It also was found that those teachers whom were perceived as less strict were more likely to promote more positive attitudes, whilst those whom were perceived as more strict were likely to promote better achievement (Wubbels, 1993). The study of interpersonal teacher behavior is important not only for facilitating student outcomes but also for improving teacher competency in classroom communication, and for helping to provide the social and emotional backup that a teacher needs in reaching out to students.

There have been a number of studies that investigated associations between the learning environment and student outcomes in countries throughout Asia, including Indonesia (Fraser, Pearse & Azmi, 1982; Schibeci, Reed & Fraser, 1987), India (Walberg, Singh & Rashe, 1977), Thailand (Fraser, 1984), Singapore (Fraser & Chionh, 2000), Taiwan (Aldridge & Fraser, 2000; Aldridge, Fraser & Huang, 1999) and Brunei (Aghar & Fraser, 1995; Riah & Fraser, 1998). Each of these studies has replicated previous research and suggested that the psychosocial climate of classrooms is an important determinant of student outcomes.

This is supported by studies that showed that classes with directive teachers (i.e. those who provided a well-structured task-oriented learning environment) and tolerant/authoritative
teachers (i.e. those who provided a pleasant, well-structured environment and who had a good relationship with students) were associated with the greatest cognitive and affective gains for students (Goh & Fraser, 1996, 1998; Brekelmans, Levy & Rodríguez, 1993). The lowest student gains were associated with teachers who were uncertain/aggressive (i.e. those who offered an aggressive kind of disorder) and uncertain/tolerant.

Another related variable of students' perceptions of the learning environment is how they perceive the approaches of teachers' teaching. Prosser and Trigwell (1999) described two approaches to teaching: student-focused and teacher-focused. In student-focused approach to teaching, teachers aim to help their students change their worldviews or conceptions of the phenomena they are studying. Students are seen by teachers to have to construct their own knowledge, and their role as teachers is to help them achieve this end. The teacher-focused approach to teaching on the other hand, focused on what the teacher does rather than with a focus of what student does. These teachers use transmission methods.

Reinsmith (1992) describes a continuum of archetypal forms in teaching, from presentational to interactive. He talks of teachers' personality-based "teaching-style" as a barrier to movement along the continuum and suggests that movement towards the more student-centred interactive forms may be a function of teacher maturation.

Qualitatively different approaches to teaching have been found to relate to students' qualitatively different approaches to learning (Trigwell, Prosser & Waterhouse, 1999) and in many studies these learning approaches have been found to relate to the quality of the outcome of student learning. More recently, the relation between the way students approach their learning and the way teachers approach their teaching has also been clarified. Student-focused conceptual change approaches to teaching are associated with deep approaches to learning, and teacher-focused information transmission approaches to teaching are associated with surface approaches to learning (Trigwell et. al., 1999).

The students' perceptions of the learning context are a function of their previous experiences of teaching and learning.
and the design of that context. Those perceptions are, in turn, related to their approaches to study and their learning outcomes (Ramsden, 1992; Marton et. al., 1997; Prosser & Trigwell, 1999). Research suggests that higher quality and quantity learning outcomes are associated with deep approaches to learning, while lower quality and quantity learning outcomes are associated with more surface approaches to learning. In turn, deep approaches to study are typically associated with perceptions that the teaching is good, the goals and standards are clear and that there is some independence in how and what students learn. Surface approaches are typically associated with the workload being too high to understand, and assessment measuring reproduction rather than understanding (Prosser et. al., 2003).

Theoretical Framework

The study is structured within the 3P model of student learning developed by Biggs (1999; 1993). This model also provides a major theoretical background within the student learning literature. The other major theoretical foundation is found in the work of Dunkin and Biddle’s (1974) adaptation of Mitzel’s model of the learning process (Mitzel, 1960). In this model, the authors posit that presage variables and context variables influence process variables, which in turn yield product variables.

Biggs offers the 3P model as a way of explaining why students learn differently. This model connects where students are when they approach the learning task with what they do learn, and both of the above aspects with the outcomes. Biggs has adapted the model from Dunkin and Biddle’s presage-process-product model from the context of classroom teaching (Dunkin & Biddle, 1974).
Presage factors are observable and give an informed observer a foresight of expected learning outcomes. Presage factors exist prior to actual engagement in learning and comprise both teaching and student presage factors. These two sets of presage factors interact. Teaching presage factors are contextual, and include: the superstructure set by the teacher and the institution; the course structure; curriculum content; methods of teaching and assessment; and classroom climate. Student presage factors include learning-related characteristics of the student such as: prior knowledge, existing skills and experience; values and expectations concerning achievement; and a predisposition to engage in academic activities according to prevailing motives and strategies. Presage variables and context variables influence process variable. Process variables include the actual activities that take place in the classroom (Dunkin & Biddle, 1974). These include the observable behaviours of students and the observable behaviours of teachers. The interaction between observable student behaviours and observable teacher behaviours yields an observable change in student behaviour.
Process variables affect product variables. Product variables concern the outcome of teaching (Dunkin & Biddle, 1974). One measure of outcomes is immediate student growth, which can be measured by evaluating student learning of the subject matter and critical thinking skills acquired. Another outcome of the educational process is long-term student effects. These effects could include becoming fit citizens, acquiring the information needed to enter a profession, learning to meet the complex demands of a rapidly changing society, and contributing to the betterment of others.

Biggs asserts that outcome of learning is affected not only by learning approaches but also, that these approaches are affected by a range of preage factors concerning both the student and the classroom context in which the student finds him/herself in. He has further adapted his own model to a 3P model of teaching and learning to reflect the learner-centredness of each stage. Biggs (1993) also argued that the systems theory interpretation of the 3P model consists of the various parts independently constituted, but are in continuous interaction with one another. This model does not describe a causal process, but a continuously interacting system. The process of knowledge construction is driven internally through the processes of assimilation and accommodation (Trigwell & Prosser, 1996). The model is illustrated in Figure 1.

Based on the 3P model, a conceptual framework is proposed for the present study as illustrated in Figure 2. In the preage factors, student characteristics such as gender, academic major and critical thinking dispositions are variables crucial in students’ learning process. At the same time, students’ perceptions of teachers also play a role in learning and this can be examined by perceptions of teacher interpersonal behaviour and perceptions of teaching approach. Preage variables influence process variables, the students’ approach to learning. Process variables in turn affect product variables. Product variables in this context are students’ learning outcomes, academic achievement and critical thinking skill ability.
Figure 2: A Conceptual Model for examining the relationship of student and teacher variables on student’s achievement and critical thinking skills.

Hypothesis

This study has two dependent variables, achievement and critical thinking skills. Previous research has shown a relationship between these variables (Biggs, 1985; Rose et al., 1996; Rosli, 1998; Lim, 1999; Cano & Martinez, 1991). Based on the literature, the following null hypotheses were developed.

1. There is no difference in students' achievement and critical thinking skills based on students' demographic characteristics (gender and academic major).

2. There is no relationship between critical thinking dispositions with students' achievement and critical thinking skills.
3. There is no difference in students' achievement and critical thinking skills based on approaches to teaching.
4. There is no difference in students' achievement and critical thinking skills with teacher interpersonal behavior.
5. There is no predictive relationship between gender, academic major, critical thinking dispositions, perceptions of teaching approach and teacher interpersonal behavior with students' learning approaches.
6. There is no predictive relationship between gender, academic major, critical thinking dispositions, perceptions of teaching approach and teacher interpersonal behavior with students' academic achievement and critical thinking skills.

Method

Participants

The participants of this study will involve 300 undergraduate students in higher education in Klang Valley, Malaysia. Several universities will be chosen such as Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM), International Islamic University Malaysia (IIUM) and University Malaya (UM). Subjects will be chosen using stratified random sampling with demographic variables such as status of study, gender, age, race and academic major as the determining factors.

Instruments

Five instruments will be used in this research. All the research instruments will be back-translated and presented to the participants in both English and Bahasa Malaysia versions. The instruments are:

1. The California Critical Thinking Dispositions Test (CCTDI)
The CCTDI is designed for use with community college students, college and university undergraduate students, graduate and professional school students, adults, and working professionals. The inventory is developed specifically to measure disposition to use critical thinking as separate from cognitive skills and measures seven traits: truth-seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and maturity. It is theoretically generated and evolved from empirical analysis process. The instrument has 75 items, with 6 point Likert-scale questionnaire with "agree-disagree" responses. It has construct validity highly significant correlation with CCTST (r=.66, .67 p<.001) (Facione, P.A. & Facione, N.C., 1992) and believed to show acceptable level of reliability, need for more validity evidence (Bondy, Koenigseder, Ishee, & Williams, 2001).

2. The Questionnaire on Teacher Interaction (QTI)
The Questionnaire on Teacher Interaction (QTI) consists of 48 items with six items for each eight scales. The eight scales measure facets of teacher interpersonal behaviour which are; Leadership, Helping/Friendly, Understanding, Student Responsibility/ Freedom, Uncertain, Dissatisfied, Admonishing and Strict. The QTI was translated from Dutch into English and cross-validated (Wubbels & Levy, 1991) with 1,606 students and 66 teachers in United States. It was reported that all the QTI scales showed internal consistency reliabilities ranging from 0.76 to 0.84 for students' responses and from 0.74 to 0.84 for teachers' responses.

3. The Students' Perceptions of Teaching Approach
The Students' Perceptions of Teaching Approach Inventory will be adapted from the Approaches to Teaching (ATI). The ATI is an instrument designed to capture the qualitative differences in teachers' approaches to teaching (Trigwell, Prosser & Taylor, 1994). It has two scales, the Conceptual Change/Student-Focused (CCSF) approach and the Information Transmission/Student-Focused (ITTF)
approach. Each scale has eight items. Responses are sought on a five-point scale from rarely, if ever, to almost always. Scale reliabilities for the ITTF and CCSF were reported to be 0.73 and 0.75 respectively.

4. Revised Study Process Questionnaire (R-SPQ-2F)
The SPQ consists of 20 items with two deep and surface factors each with 10 items. Within each of these two factors it was possible to distinguish strategy and motive subscales. Each of the subscales consisted of five items. The final version of the questionnaire therefore has two main scales, Deep Approach (DA) and Surface Approach (SA), with four subscales, Deep Motive (DM), Deep Strategy (DS), Surface Motive (SM), and Surface Strategy (SS).

5. The Critical Thinking Skills Test
The instrument to measure critical thinking skills of university students will be developed by the researcher. This process will be undertaken guided by existing standardized critical thinking skills tests, namely the Watson-Glaser Critical Thinking Appraisal (W-GCTA) and the California Critical Thinking Skills Test (CCTST). The Watson-Glaser Critical Thinking Appraisal is an 80 item tool measures general critical thinking ability with five subscales: inference, recognition of assumptions, deductions, interpretation, and evaluation of arguments. The CCTST consists of 34 multiple choice short problem statements and scenarios that are discipline neutral which measures the core skills of analysis, evaluation, inference, deductive reasoning and inductive reasoning. Consideration will be given to construct a test that is appropriate with higher education content and culture of Malaysia.

Procedures

The researcher will apply for permission from the institutions selected. Once permission has been granted, subjects will be
chosen randomly from undergraduate students consisting of first, second and third year students. Five questionnaires will be administered to the students chosen. The researcher will give instructions to answer all questionnaires. After the questionnaires have been completed, they will be collected and keyed in the computer using Statistical Package for Social Sciences (SPSS).

Data Analysis

The data will be analysed using SPSS. Both descriptive and inferential analyses will be done. Descriptive analysis is done to see the distribution of subjects and their scores. Inferential analysis will be done to test the hypotheses using correlation, multiple regression, t-test and analysis of variance (ANOVA).

References


