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A Multiperspective Learning Approach among Malaysian University Students in the Context of Epistemological Beliefs

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ABSTRACT

Students in higher education institutions, particularly in public and private universities in Malaysia share certain common epistemological beliefs among them, while other aspects of the beliefs are significantly different. The characteristics of students based on epistemological beliefs enlighten those who are responsible in academic and soft skill development of higher education on how to appreciate and utilize the talents and strength in each student. Their characteristics could be identified by observing the way they put on their perspective on the list of given scenarios in a survey questionnaire used in this research. These characteristics are identified from their responses to various constructs of epistemological beliefs and learning approaches used in this research. This move is in line with the intention of educationists and policy makers of higher education in Malaysia to dig up the potential among the country's future leaders as much as possible. This is one of the efforts taken by the educationists and policy makers of higher education in Malaysia to uncover the potential of students at the higher education level for future leaders of the country, beginning with their beliefs in knowledge and their learning approaches. Generally, these students are very prospective human capital in this country who need be groomed continuously. Hence, as one of the sources of prospective human capital in this country which needs continuous grooming, there is a need to examine their learning approaches and their concepts of knowledge as conducted in this study. In answering the research questions, the following significant differences were established between the variables used in this study: significant relationship between students' epistemological beliefs and their surface learning approaches; significant difference between male and female students' epistemological beliefs and learning approaches; significant difference

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in terms of epistemological belief and learning approaches between students from physical and social sciences; a significant difference in term of epistemological belief based on the years of study amongst the students; a significant difference in term of learning approaches used amongst students of different ethnic groups. Hence, a survey questionnaire was administered to a total of 1,422 Malaysian students from higher education institutions in Malaysia, both private and public universities, as respondents. Based on the findings of the study, it can be concluded that there is a relationship between the epistemological beliefs and learning approaches among Malaysian university students based on their gender, field of studies, years of study, ethnic background, as well as the types of institutions they are studying in.

Keywords: Epistemological beliefs, learning approaches, higher education institutions in Malaysia, source of knowledge, knowledge development

INTRODUCTION

As there is evidence that epistemological beliefs influence academic achievement (Schomer, 1993; Schoenfeld, 1988; Dweck & Leggett, 1988), there is a need to research on the relationship between epistemological belief and academic performance. In general, it has often been assumed that academic performance is significantly related to learning approaches. Hence, it is viable to conduct a research based on the three components, namely, epistemological beliefs, learning approaches and academic performance, by studying the relationships between them in the context of the dynamic educational system in Malaysia. In the context of higher education, Malaysia has institutions that are public or government aided, apart from the ones that are private in nature. The educational system that is publicly acknowledged is the education system that exists in higher education institution, be it private or government aid institutions. The focus of this paper is on the relationship between the epistemological beliefs and the learning approaches of the students of these higher institutions. This writing focuses only on the relationship between the first two, namely, the epistemological beliefs and learning approaches. The relationship was then studied in the context of higher education institutions in Malaysia, which acts as a catalyst and an initiator to pave ways for more similar studies in other contexts of different educational levels in this country. The findings of this study can pave a way for future studies within the context of epistemological belief and study approaches at other levels of education in the country adopting various research approach and variables.

In relation to this and the three component variables, various research approaches are expected to be implemented in different settings and research grounds. Most importantly, we are able to generally get a clear picture of the relationships between these three components in any education sector in this country. The specific pattern of these relationships could

also be identified by considering other variables as well. To a certain extent, a process of introducing modelling could also be conducted in adapting the concept of regression. The purpose is to forecast the result that is going to be produced for any identified dependent variable for a list of common independent variables, which were mostly used in this research.

Epistemological belief is a construct with different dimensions of metacognition. It focuses on the concept of knowledge in nature, which includes its type, category, source and form in various ways (Rodriguez & Cano, 2007). For this study, a questionnaire on the philosophical aspect of education was developed for the purpose of measuring the epistemological beliefs. It is an adaptation of Schommer's instrument consisting of four sub-constructs that reflect beliefs, innate ability, quick learning, simple knowledge and certain knowledge (Schommer 1993).

Epistemological Beliefs

> "Research has suggested that the epistemological beliefs of learners may influence the learning processes that students choose to engage in" (Hofer, 2001).

Adapting the five-construct instrument developed by Schommer (1993), this research used an instrument developed after taking into consideration the current educational scenario in Malaysia, with reference to the higher education context. In considering these epistemological beliefs, various items were included to measure them. In adapting the constructs of the items developed by Schommer (1993), this research has its own approach in deciding the five constructs, based on the current scenario of the education context and higher education in Malaysia.

The first construct, which relates to the level of knowledge development, includes the following items: uncertainty in knowledge, conformity to science as being the true source of knowledge, the meaning of wisdom as means and ways to seek for an answer rather than focusing on the answer itself, the consistency of knowledge truth; the impossibility of ascertaining one clear method used in problem-solving that can lead to time waste; today's truth may not necessarily hold in the future, originality of ideas is an important aspect of knowledge and generally, all problems only have one true answer. What can be seen from all these items that are forming up this construct is, there is a clear pattern of strategies in measuring the level of knowledge development, and thus, the individuals' different level in this construct can be identified.

In the second construct of the instrument used in this study, the following items were measured: how information from one chapter is connected to the other chapters, understanding the meaning of learning as a means to decipher salient facts; the best approach used to understand a text is to restructure information to one's conceptual understanding; the difficulty in

understanding a text or material without prior knowledge of writer's intention; an idea is not meaningful unless one understands the situation and context of how the idea was created; the necessity of memorization and rote-learning to pass an examination; the belief that a concept can be better understood in a new topic if new information and ideas are associated with prior knowledge and, the belief that scientists will always get to the truth of knowledge through perseverance.

The third construct of the knowledge belief instrument used in the study consists of the following items: conforming to the needs and expectations of the knowledge perspective of the lecturers in order to succeed in university education; the belief among students of the need to always conform to the lecturers instruction in order to succeed in a university education; the usefulness of knowledge acquired at the university level depends on the quality of its lecturers; the belief that practically, the content of a text book has truth pertaining to knowledge; the students' curiosity with respect to the depth of an individual lecturer's knowledge on a particular content area; the uneasiness on the part of students if a lecturer displays lack of confidence in the knowledge delivery and, the issue of students contesting and challenging a lecturer's knowledge belief and perspective.

Perhaps, as the data suggest, the fourth construct can be considered a significant one since it emphasizes on the concept of students' speed in processing various types of knowledge acquisition. In particular, an item of the construct solicits the students' views on their tendency to unquestionably accept the lecturers' explanation of particular knowledge content without really understanding it. This item also suggests that if a particular content of knowledge can be easily grasped and understood the first time it is being conveyed, it then indicates that the knowledge is indeed easily understood. This is in line with the view of Conley (2008), who believes that students who are able to cope with knowledge understanding at the initial phase and master it faster will usually excel in the academic aspect. This item also touches on the concept of learning, which suggests that a holistic perspective or idea of a text read is more constructive and field independent compared to the detail approach in learning or the field dependent. The conceptual and holistic approach is more favourable since reading the difficult content of the text another time will enhance one's comprehension of it, apart from the fact that the best approach to understand a difficult concept is to familiarize it the first time. Hence, as has often been espoused, memorization, which does not create critical thinking in knowledge taught, is perceived otherwise by Scribner and Beach (1993) who contended that memorizing facts is the primary way of learning for academically excellent students.

A wise person is one who can still give new idea based on reading, even though they forget many relevant facts. Also, if someone does not understand something within a short period, he or she should keep on trying. There is also an argument which states that

trying hard to solve a difficult problem in a long run will only benefits truly clever students. Supporting the notion of the fast acquisition of knowledge content on the first reading is Zimmerman and Schunk (2001) who believe that an attempt to understand a difficult concept at the initial or beginning stage will lead to more confusion. This is due to the fact that students should only be made to glean for information from the reading materials on the first reading. Conceptual and higher order knowledge can be constructed with focus and concentration without any form of external interference. This coheres with Klatter *et al*. (2001) whose view claims that learning is a process of acquiring knowledge gradually.

The fifth construct is the ability to master knowledge which claims that learning a skill course is useful in order to succeed in a university education. There is an argument that learning skill course is useful to succeed in university. Although the ability to learn is natural, the most successful people realize the way to enhance their learning ability. Besides that, the students themselves will decide on how far they could understand a text they read. Claims on the naturally endowed learning ability among individuals can be seen in the view of Boaler *et al.* (2000) who believe that some individuals are born smarter than others who have limited abilities. In other words, genuinely clever students do not need to study hard to succeed. An average student in school will become an average student throughout his or her life. In addition, an expert has natural talent in specific field. Last but not the least, there is also an argument that self-learning book does not help.

In brief, this study sought to address various aspects of epistemological beliefs which are discussed from the following aspects: various knowledge structures, knowledge sources, speed of knowledge acquisition, and students' mastery of knowledge. The views pertaining to these aspects of knowledge beliefs or epistemology were studied by the students of the higher institutions of learning in the country in the context of the current educational scenario, as stated earlier.

Students' Learning Approaches

On the other hand, students' learning approaches have also been investigated in relation to academic achievement. Learning approaches are explained and measured in this study by looking at the four constructs of items. Firstly, the construct on deep motive, which works based on the attractiveness of the subject matter. How to make a new topic to be interesting and to attract (motivate) people to spend extra time to study more about it? Another aspect in relation to this is rote-learning, which relies on pure memorization without understanding of the knowledge. Yet, some can pass easily in exam using this approach. Another argument is focusing on key points, i.e. some lecturers believe that students should not spend too much time on learning materials which will unlikely be questioned in examination. Besides, a topic will become more interesting when it is appreciated.

Secondly, the construct on deep strategy, in which students will only be satisfied once they can summarize a topic they have learned. An uninteresting course will not be studied seriously. Besides, one will limit the study to certain topic merely to avoid extra work. Another way is coming to class with preparation for any possible questions. Then, self testing with a topic until full comprehension is attained.

Thirdly, the construct of surface motive, i.e. learning approaches are set on the aim of passing examinations with minimum effort. Thus, there is an inclination to practice repeatedly (drilling) without comprehension. Besides, some may study hard due to interesting study materials, and thus, they will usually refer to reading materials suggested during lectures.

Fourthly, the surface strategy. In this aspect, one will only study hard for items delivered in lectures or stated in course outlines. Besides, there is an argument which states that studying academic materials is as interesting as reading novels or watching interesting movies. Hence, one can spend a lot of time searching for more information on interesting topics that have been discussed in the lectures. Most people find that the items which will not be evaluated are unimportant and therefore not worth studying. There is another argument which supports this learning approach by claiming that it is unnecessary to study a topic deeply, as it will be confusing and time consuming (Nolen, 1996). Meanwhile, the important thing is merely the passing of grade. Hence, the best way to pass examination is to memorize answers of all expected questions.

In brief, learning approaches amongst students are discussed here in term of the motive and strategy used for conducting learning process, as well as the motive and strategy used in the quest of any study initiatives conducted at different mode of time and situations.

Based on the perspective of university students in their different contexts, investigation was done to determine whether there is any relationship between epistemological beliefs and learning approaches. Next, these two aspects were further studied to find their associations with the students' academic performance.

Malaysian Higher Education Institutions

Since independence, educational and national leaders in Malaysia have been continuously trying to develop the country by developing the country's human capital, particularly the undergraduates who form a large population of the youth. Higher education is one of the areas in which the development of human capital begins. School leavers in Malaysia are selected through a system to fill in the places available in higher education. They are then systematically trained to acquire the knowledge and skills they need in any critical and useful discipline. This process is currently ongoing to maintain the development of the nation.

The students have become an important group in higher learning. They have

to be trained to provide skilled human resources in the future. Higher education has become a pool of expertise (as it might be termed). This is because it is a base or a centre in which academics and senior administrators, who are experts in their own fields, can practice their expertise. Besides that, potential experts are also produced every year in an encouraging number of graduates at several levels, namely diplomas, bachelors, masters or doctoral degrees. Hence, they can work in the private, public and business sectors. This group of people will, of course, be dependent on to generate productive outcomes in whatever sectors they are involved in.

University leavers, due to their exposure to various specialized academics and subjects, will generally do better as compared to non-graduates. Their cumulative role is expected to make healthy contributions to the development of the country. A supporting fact to this argument/ opinion can be seen in increasing jobs and opportunities being open only to those with qualifications.

The academics, primarily teachers, play an important role in moulding the students' minds in ways that are expected by the people of a dynamic society (Day, 2001). Teaching is not just simply standing in front of a lecture room and discussing a topic. The academics must be very innovative, creative, up-to-date and even inspiring when giving lectures. They should always look for other effective teaching methods so that the students can be trained successfully in the university. All in all, students in higher education institutions should have enough exposure in the process of developing a pool of excellent contributing nation, and in the process of realizing Vision 2020 towards a developed Malaysia.

Higher education institutions are primarily a place to build up the awareness of epistemological beliefs. This awareness is important as it demands the comprehension of epistemology beliefs, in term of what, how, why and where the knowledge is formed and developed. Furthermore, any kind of problem-solving and decision-making will therefore be analysed deeply and philosophically by using this approach. The purpose is to ensure the right action and decision are made at the right time and place to produce positive impacts. This is because they know every move prescriptively, comprehensively, logically, reflectively and speculatively. This also implies that one has to utilize, apply, transform and manipulate knowledge in any particular context and situation with strong faith and belief. In other words, they must believe in the form of knowledge they use. Higher education institutions are indeed a perfect platform filled with such situation, as any level of individuals involved deal directly with knowledge, ranging from students and administrators to professors. Knowledge need not be accepted and understood only, but it needs to be believed as we know its usage to human nation, unless the knowledge is useless.

In addition, the awareness of learning approaches in HEI is also important. This approach is undoubtedly a great

argument among the students, as well as the academicians and the administrator. The benefits of the students are greatly discussed in the argument of both parties because they are the major clients in HEI. The pattern of academic achievement in HEI in the end will be identified, analyzed and evaluated, as it clearly shows the achievement of a university.

Briefly, we could indirectly evaluate and analyse on the lecturers, administrators and students' perspectives, regarding the aspects of epistemological beliefs and learning approaches. They are the main groups that form up the HEI in any setting in any country. Thus, their philosophical views on this are greatly beneficial and important.

This study was carried out to assess the perspectives of the individuals in higher education regarding their epistemological belief and learning approaches while pursuing their studies. The relationship between these two was identified. In addition, the relationship between each variable and academic achievement was also be analyzed.

METHODS

The researcher selected a sample of 1422 students from five established higher education institutions in Malaysia. The sample population unit was formed by using stratified random sampling with three strata to represent as closely as possible the students' population as in the sampling frame. This then represented the population of higher education institution students in Malaysia (because the sampling frame included almost all the students in the five institutions, and the institutions had first been selected among all higher education institutions in the country). The first criterion would be the five institutions. The second criterion would be the disciplines of study, whether the students belong to physical or social sciences. The third criterion was the gender. Cells representing the combination of different categories among the three strata were formed with the number of sample in the proportion. The students were selected from each cell as the sample by using random sampling technique according to a Table of Random Numbers. For the purpose of this research, the table used is as suggested by Borg (1983).

In addition, information on ethnicity, age, religious, year of study, semester of study and sponsor type was also included as demographic variables. The survey questionnaire, which had previously undergone a pilot survey to get results for validation and reliability test, was structured as follows: 49 questions from 5 different constructs were designed to assess the respondents' perspectives on epistemological beliefs (i.e. nine questions from Construct 1, eight questions from Construct 2, six questions from Construct 3, fourteen questions from Construct 4 and twelve questions from Construct 5). The constructs of the epistemology beliefs included the level of development of knowledge, structure of knowledge, source of knowledge, the speed of gaining knowledge, and the ability of conquering knowledge. In addition, in order to understand the

participants' learning approaches, nineteen more questions were formed with the aim to assess four constructs of learning approaches, namely, five questions from Construct 1, five questions from Construct 2, three questions from Construct 3 and six questions from Construct 4. The constructs of the learning approach were in-depth motive, in-depth strategy, surface motive and surface strategy. The sample population of students in this study did not come from all (more than thirty) public and private higher learning institutions which currently exist in Malaysia. Of all the higher learning institutions, only two public universities (Universiti Putra Malaysia and Universiti Kebangsaan Malaysia), and two private universities (Universiti Tenaga Nasional and Multimedia University of Malaysia), as well as International Islamic University (which is considered a public university established under the corporate act, and therefore, representing both public and private universities) were selected. The five institutions were carefully chosen to represent the number of public and private higher learning institutions in Malaysia. All the data were then stored and analysed by using SPSS version 19.

RESULTS

Out of almost 2000 expected respondents, 1422 from five higher learning institution (consisting of four public universities and one private university) agreed to fill in the questionnaire. Evaluation on the epistemological belief of the respondents is descriptively shown in Table 1. Looking at the data score, the mean and standard deviation of each construct in this variable (epistemological beliefs) were differentiated by the respondents' year of study (years 1, 2 3 or 4).

A further analysis of this outcome showed significant results of mean difference of epistemological beliefs based on the students' year of study by using the Analysis of Variance (ANOVA). These results are presented in Table 2.

TABLE 1
Descriptive Statistic on the Constructs of Epistemological Beliefs according to the Year of Study of the Respondents

Constructs of Epistemological Beliefs	Year of Study							
	Year 1		Year 2		Year 3		Year 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Epistemological Beliefs (Overall)	2.74	.27	2.76	.26	2.80	.30	2.88	.25
Level of knowledge development	2.94	.39	2.99	.40	2.92	.41	3.00	.45
Structure of knowledge	2.91	.32	2.89	.35	2.95	.34	3.02	.34
Source of knowledge	2.88	.42	2.84	.49	2.81	.40	2.80	.39
Speed in grasping knowledge	2.74	.37	2.78	.36	2.84	.40	3.00	.35
Ability to mastery knowledge	2.40	.46	2.44	.50	2.54	.47	2.60	.40

TABLE 2
ANOVA of the Mean Difference on Epistemological Belief based on Students' Year of Study

Constructs of Epistemological Beliefs	Significant/not	ANOVA	p
Epistemological Beliefs (Overall)	Significant	F (3,843.54) = 9.79	.000
Level of knowledge development	Not significant	F (3,1316) = 1.60	.187
Structure of knowledge	Significant	F (3,1357) = 5.72	.001
Source of knowledge	Not Significant	F(3,952.42) = 2.61	.050
Speed in grasping knowledge	Significant	F(3,1359) = 13.25	.000
Ability to mastery knowledge	Significant	F(3,986.88) = 9.83	.000

TABLE 3
Descriptive Statistic on Constructs of Learning Approach In Regard to Year of Study of the Respondents

Constructs of Learning Approach	Year of Study							
	Year 1		Year 2		Year 3		Year 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Learning Approach (Overall)	2.15	.33	2.18	.38	2.21	.33	2.33	.28
In-depth Motive	2.02	.46	2.08	.52	2.08	.46	2.21	.40
In-depth strategy	2.26	.41	2.24	.49	2.30	.41	2.40	.40
Surface Motive	2.09	.44	2.11	.53	2.12	.44	2.22	.40
Surface Strategy	2.21	.43	2.25	.45	2.32	.45	2.44	.44

Based on the students' year of study, the findings show that there are significant results on the Epistemological beliefs mean different as a whole on the structure of knowledge, speed in grasping knowledge and ability to mastery knowledge. However, a significant F-value above tells us only that the means are all equal (accept the null hypothesis) or not equal statistically (reject the null hypothesis). In order to know exactly which means are significantly different from others, *post hoc* tests were conducted and showed that in all the significant results, the means of epistemological belief are different between year 4 and year 1 students. These findings indicated the maturity and vast experience the students had after being studied a few years in the university that had helped them in grasping more meaning on the epistemological belief and its components.

A deeper understanding of the learning approaches of university students is also obtained in this study. The evaluation on this particular aspect or variable is shown in Table 3. Looking at the score data, the mean and standard deviation of each construct in this variable (learning approach) were also differentiated by the respondents' year of study (Year 1, 2, 3, or 4).

This outcome could be analyzed further, as shown in Table 4 below. It shows the

significant results by using Analysis of Variance (ANOVA), on the mean difference of Learning Approach based on the students' year of study.

Based on the students' year of study, the findings shown above indicate that the means of Learning Approach are significantly different in all situations. However, a significant F-value above merely tells us that all the means are not equal statistically (does not accept the null hypothesis). In order to determine exactly which means are significantly different from which other mean, *post hoc* tests were then conducted, and they showed that in all these significant results, the means of Learning Approach are statistically different between Year 4 and Year 1 students. This findings indicate that the maturity, experience, learning process and exposure of the students had after studying a few years in the university helped them in grasping more suitable and effective ways in conducting their learning process. We can also see a pattern from the results in Table 3, i.e., in any construct of Learning Approach variable, the mean is getting larger as the students' year of study getting higher from Year 1 to Year 4.

Reliability

The reliability coefficient, Cronbach alpha for reliability scale of Epistemological Beliefs is 0.76, and this is 0.33 for the first construct, 0.13 for the second construct, 0.21 for the third construct, 0.57 for the fourth construct, and 0.68 for the fifth construct. As for the scale of Learning Approach, the whole reliability coefficient obtained was 0.73, and 0.48, 0.27, 0.18 and 0.41 for the first, second, third and the fourth constructs, respectively.

Relationship Studies

In answering the most important research question of this study, i.e. the relationship between the students' epistemological belief and their learning approaches, the research findings showed that there is a positive moderate significant relationship ($r = .44$, $n = 1191$, $p < .0005$). The significant level is at $p < 0.001$, indicating that the more the students hold on the naive epistemological beliefs, the higher their tendency to choose the learning approaches that are rather 'surface' in terms of characteristic.

TABLE 4
ANOVA of the Mean Difference on Learning Approach based on Students' Year of Study

Constructs of Learning Approach	Significant/not	ANOVA	p
Learning Approach (Overall)	Significant	F (3,1034.57) = 10.99	.000
In-depth Motive	Significant	F (3,1034.76) = 6.25	.000
In-depth strategy	Significant	F (3,1025.87) = 4.76	.003
Surface Motive	Significant	F(3,995.10) = 2.99	.030
Surface Strategy	Significant	F(3,1387) =12.71	.000

CONCLUSION

Epistemological beliefs in this study examined the origin of knowledge from the perspective of students in higher education institutions. In this context, their views were investigated in terms of how they perceive knowledge in different sources, types and values. These students also have their own opinions in interpreting what knowledge is, and have their ways of learning a particular knowledge. Briefly, the nature of knowledge has been explored in this study. Apart from that, the students' learning approaches were also investigated as they have a lot of impacts not only on the students' academic performances, but also the way students believe in knowledge. Therefore, the relationship between epistemological belief and learning approach was studied in a deeper manner for a better understanding on the aspect of appreciating the knowledge among them. This study suggests that epistemology belief is something that is embedded naturally in the students' minds and is actually helpful in moulding effective learning approaches. However, they should first be able to recognize and define the belief in this context clearly, so that they will know which action is right. This is important so as to contribute back to the society with individuals who undergone well-balanced and holistic personal growth, in the aspects of emotion, physical, spiritual and intellectual. Subsequently, the objective of the National Education Philosophy in Malaysia can be achieved with the fulfilment of all these elements that are stressed in it. This study seems to reveal the beneficial results from the context of higher education, which serves as a reference for the Ministry of Education, as well as relevant authorities and policy makers. Therefore, although this study is very timely, it is worth conducting.

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