A STUDY ON LEARNING APPROACHES USED AMONG POST-GRADUATE STUDENTS IN RESEARCH UNIVERSITY

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─**Abstract** ─

This paper aims to determine the method of learning approaches adopted by post-graduate students in Universiti Teknologi Malaysia (UTM) and to identify whether these approaches are associated with demographic factors (age, gender, main streams, mode of study and working experience). Participants included 354 post-graduate students from different faculties in UTM whereas questionnaires were distributed via email and through designated contact person. The One-Way Analysis of Variance (ANOVA) revealed that there were significant differences on the usage of the three post-graduates' learning approaches across age, main streams and years of working experience. Significance was not seen between learning approaches on gender and mode of study. Deep approach was found to be preferred approaches to their learning methods. Our investigation suggests that approach to learning should be included in their academics, however the suggestion is tailored according on the tasks given to the students. Hence, we concluded that further investigation could be carried out the effect of learning environment towards students dynamic in learning.

Key Words: *learning approaches, deep approach, surface-disorganized approach, surface-rationale approach, post-graduate students, Research University*

JEL Classification: I230 - Higher Education and Research Institutions

1. INTRODUCTION

At the higher education level, continuous assessment is vital in maintaining students' learning quality (Penglase, 2004). Several studies have shown that a student's academic performance at the university level is closely related to their learning approaches (Duff *et* al, 2004; Lu *et* al., 2003; Diseth *et* al., 2006; Spicer, 2004). Study on learning approaches is important to help academicians, programme owners and students to understand how learners could utilize several approaches in their problem solving in their study. The used of appropriate approach in learning could facilitate students in finding easier solutions in problem solving during their learning (Magno, 2011).

The different strategies, skills, and processes used by students in their learning have resulted into the study on students' learning approaches, a field which has gained popularity since the last few decades (Prat-Sala & Redford, 2010). Early work by Marton and Saljo had highlighted the difference between deep and

surface approach, however their study had emphasized only on students' approach in reading passages (Prat-Sala & Redford, 2010). One could explain both approaches by borrowing the explanation from Kirby *et* al. (2003) who claimed that; deep learning occurred when learners are able to integrate new information with previous knowledge, synthesize new material and make connections to form a wider perspectives. On the other hand, surface learning enables students to meet varieties of learning objective in academic environments. They prefer more structured learning environments, expected more direction and closer supervision (Fung, 2010). The surface approach was further explained in detail by Magno (2011) and it was related to surface-disorganized, the situation in which learners takes disorganization approach. By doing that they would not follow any structure in learning, and as the effect a student to becomes unprepared, and have a hard time concentrating and analyzing problems.

The study on students' learning approach has been extended by many researchers for instances Entwistle & Ramsden (1983); Evans *et* al. (2003); and Entwistle *et* al. (2001). One could consider that learners who use 'surface' approach to learning are motivated to meet minimum task requirements and generally put forth enough effort to avoid failing. In contrast, learners who apply 'deep' approach to learning tend to seek meaning and understanding (Kirby *et* al., 2003). One seeks to prove the fact that in the context of post-graduate nature and study environments deep approach is believed to be closely associated with high quality learning.

It is essential to investigate the post-graduate students learning approaches in conjunction with the Malaysian's universities efforts in to producing good, versatile students in every aspect. To fulfill this requirement, students are required and expected to become competent, creative and versatile professionals. In order to achieve this, students not only must possess a range of attributes and generic skills with sound disciplinary and professional knowledge, they also are expected to inculcate within themselves high self-esteem, effective skills in communication, team working, problem solving and lifelong learning. This would reflect in the use of learning approaches in solving problems.

It has been argued that higher education in Malaysia is still based on 'reception-based' learning whereby students memorize information for the sake of passing exams (Fung, 2010). Therefore, the various ways in which students approach their learning may determine and affect their participation to acquire generic skills

either in-class learning activities such as classroom discussions, group work and presentation or out-class activities such as project assignments, site visits and field trips. This implies that there is a significant difference in current learning environment for post-graduates students particularly since creative solutions and collaborative teamwork are necessary skills for them to master. These different orientations in learning require different type of skills. For example, nowadays post-graduates studies encourage learners to understand information from different disciplines and to make necessary connections among them beyond well-structured context and through the more 'real-world' constraint.

Although numerous studies are available in the area of learning approaches, research on learning approaches in relation to post-graduates students in Malaysian Research University is still lacking. Therefore, the aims of this study are to identify the level of learning approaches used among post-graduate students besides to identify the differences on learning approaches adopted according to demographic variables. According to Chan (2010), an individual difference is an important factor in learning and has strong influences on learning outcome, which includes learning approaches.

2. METHODOLOGY

This is cross-sectional study using questionnaires for data collection.

2.1. Participants and setting

Participants consist of post-graduate students from six faculties. The selection of faculties was based on three main streamline: engineering, social sciences and science and technology. A total number of 14 faculties were grouped according to the streamline, which enable two faculties to be selected randomly from each group. A total number of 100 questionnaires were distributed to each faculty. Participants were given a week to return the questionnaire to the designated contact person. Part time post-graduate students were also invited to participate in the study via email. Participation in the research is made on voluntarily basis.

2.2. Instruments

The learning approaches measurement is adapted from Kirby *et* al. (2003). The questionnaire was commonly used in the workplace learning, therefore we change the term "work" to post-graduate study context. The learning approaches are

divided into three categories: deep, surface-disorganized and surface-rationale. The examples of the items are as follows:

I find it helpful to 'map out' a new topic for myself by seeing how the ideas fit together (Deep Approach)

I seem to be a bit too ready to jump into conclusions without waiting for all the evidence (Surface-disorganized Approach)

I find it better to start straight away with the details of new tasks and build up an overall picture in that way (Surface-rationale Approach)

Respondents selected from a four point scale that was coded as binary variables; Strongly Disagree=1, Disagree=2, Agree=3 and Strongly Agree=4. The total amount for each learning scores were calculated. The questionnaire was pretested to assess the reliability of the instrument. The Cronbach's alpha values were 0.80 for deep approach, 0.83 for surface-disorganized, and 0.75 for surface-rationale. The questionnaire was distributed through email to the targeted respondents.

2.3. Data Analysis

Descriptive analysis such as frequency, percentage and mean were used to explain the level of learning approaches. For mean comparison, analysis of variance (ANOVA) and t-test were used to determine the significant level in terms of demographic differences.

3. FINDINGS

3.1. Respondents Profile

The response rate was 59%. The majority of the respondents is male (58.6%), between the age category of 20 – 29 years (69.4%), on the full-time study basis (64.6%) and have less than 5 years (73.3%) working experience (Table 1).

Table 1   Demographic characteristics of the study population

Demographic (n=333)	Category	f	%
Gender	Male	195	58.6
	Female	138	41.1
Age (years)	20-29	231	69.4
	30-39	82	24.6
	40-49	16	4.8
	Above 50	4	1.2
Main streams	Engineering	94	28.2
	Social Sciences	138	41.4
	Science and Technology	101	30.3
Mode of study	Full-time	215	64.6
	Part-time	118	35.4
Working Experience (years)	<5	244	73.3
	6-10	45	13.5
	11-15	22	6.6
	16-20	14	4.2
	>21	8	2.4

Table 2   The Level for Learning Approaches Used

Learning Approaches	Mean	SD	Level
Deep	3.07	0.36	High
Surface-Disorganized	2.78	0.48	Medium
Surface-Rationale	3.03	0.36	High

3.2. The Level of Learning Approaches Used

The results on the level for learning approaches used by respondents are summarized in Table 2. According to the findings, the highest level of learning approach used by respondents is deep approach (μ = 3.07 ±0.36), followed by surface-rationale approach (μ = 3.03 ±0.36) and surface-disorganized approach (μ = 2.78 ±0.48).

3.3. Learning approaches by demographics characteristics

Table 3 Summary table comparing learning approaches across five demographic factors

Demographic	Deep	Surface-Disorganized	Surface-Rationale
Main Streams	.166	.373	.013*
Gender	.200	.446	.608
Age	.009*	.000*	.390
Mode of Study	.724	.211	.286
Working Experience	.017*	.000*	.403

Note: * Significant at the p <0.05 level

The results from the independent t-test showed that there was no significant difference between gender (p = 0.200, p = 0.446, p = 0.608) and mode of study (p = 0.724, p = 0.211, p = 0.286) in terms of the difference learning approaches used.

The results for age shown that there was a statistically significant difference in deep (F (3, 329) = 3.9, p = 0.009) and surface-disorganized (F (3, 329) = 11.14, p = 0.000). Post-hoc analyses was conducted and the results showed that there was significant difference between those who are > 50 years and 20 to 29 years (p = 0.010, p = 0.000), > 50 years and 30 to 39 years (p = 0.005, p = 0.001) and between those who are > 50 years and 40 to 49 years (p = 0.009, p = 0.007) for both learning approaches.

There was a statistically significant difference among the three mainstream on the surface-rationale learning approach (F (3, 330) = 4.38, p = 0.013). The post-hoc analysis results showed that there was significant difference between engineering and social sciences (p = 0.011) in terms of the surface-rationale learning approaches used.

It was found that the deep (F (4, 328) = 3.23, p = 0.013) and surface-disorganized (F (4, 328) = 7.29, p = 0.000) learning approach has statistically significant difference among the categories of working experiences. Post-hoc analysis for deep learning approach shown that there was a statistically significant difference between those who have working experience > than 20 years and 6 to 10 years (p = 0.015), > than 20 years and 15 to 20 years (p = 0.022). For the surface-

disorganised, there was a statistically significant different between those who have working experience > than 20 years and < than 5 years (p = 0.000), > than 20 years and 6 to 10 years (p = 0.000), > than 20 years and 11 to 15 years (p = 0.001) and > than 20 years and 15 to 20 years (p = 0.001).

4. DISCUSSION AND CONCLUSION

The result of the study presents that post-graduates students use deep and surface-rationale higher than surface-disorganized. This indicates that both approaches are the preferred strategy used in aiding students' learning process when solving problem. In this context of study the application of disorganized approach is used moderately. It is assumed that to solve problem effectively, students must organize knowledge and depend on the nature of knowledge. They might have obstacles in concentrating and analyzing problem when using disorganized (Magno, 2011).

The usage of the three learning approaches is found to have no differences on mode of study and gender. While previous researches prove that gender may have influence on study behavior (Richardson, 2006) and learning approaches (Fung, 2010; Chan, 2010), this finding is supported by Lu *et* al. (2003) who also found that gender do not differ in learning approaches and performance. According to Chan (2010), mode of study is an important factor in understanding the type of approach used by part-time and full-time students and how it is related to students' maturity level. However, the present results fail to find any significant difference of the three approaches towards mode of study among post-graduates students. As such, finding by Chan (2010) also supports this statement; there is no association between study mode (full-time and part-time) and learning approaches of sub-degree students.

The results of the present study do not support the claims of Chan (2010) with regard to age difference. He indicates that age difference does not influence learning approaches. Mature students may also need assistance in study skills and tendency to perform at the level similar to young students. In the case of this study, the deep and surface-disorganized are found to have significant difference on age factor. Though there is no solid definition of young and mature students' age (Chan, 2010), previous works have claimed that older students tend to adopt deep approach while younger and inexperienced students tend to adopt surface approach. However, this present study proves differently. Both older and younger

students use deep and disorganization approach and the significant differences which occurred in every category of age group categories.

The influence of age and working experience is closely related to one another in learning approaches. The usage of deep and surface-disorganized are found to have significant differences on working experiences between those with over 20 years working experience and certain categories. This may imply that an experience learner who tries to examine and exploit their prior experience in analyzing information and new situation will utilize deep learning. It has been argued that only deep approach is associated to high quality of learning (Kirby *et al.*, 2003). In this case of present study, deep is highly required by experienced post-graduates students to adopt problem for problem solving. Indeed, it could be related to task assigned in post-graduates courses that required them to adopt deep approach. On the other hand, the results can postulate that they also use disorganization differently in relation to certain situation; learning anxiety and unpreparedness (Magno, 2011). If this strategy is used continuously, students may experience difficulty in analyzing problems (Magno, 2011) and at the same time the students are not able to master importance study skills that will allow them to cope with the task given (Chan, 2010).

The significant differences are also found between the usage of surface-rationale on main streams particularly between engineering and social sciences. According to Magno (2011), surface processing involved the usage of memorization in study and this not aiding students in understanding technical materials such as mathematical problem solving. However, the finding in this present study is not able to show sufficient evidence to prove that those using surface-rationale does not ensure have better learning outcomes. The results of high usage of surface-rationale among the social science and engineering post graduates in their studies might generate other assumptions. The assumptions include lesser usage of deep structure in analyzing problems if students are given repetitive tasks or same patterns of problem, which ended up with them having the tendency to skip analyzing things that they studied (Magno, 2011).

In conclusion, this study recommends that future study should include academic staff and students simultaneously to have a clearer and more holistic understanding on the development of learning approach. This is due to the fact that the method in which students choose and utilize their approach are closely related to the task given to them. At the same time, researchers will be able to

study the relationship between academics teaching pattern and students learning approach. In relation the study within Malaysian context further investigation is needed to identify the effect of learning environment in Malaysia towards students' dynamic in learning particularly among post-graduates studies. For example, to answer the issue of whether highly emphasis on formal assessments (grades) in university tend to promote 'superficial learning' (Fung, 2010) and 'mechanical learning' (Magno, 2011) which ended up with producing rote learners students.

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