Perceived Contextual Factors Affecting Learning Strategy Choice

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ABSTRACT

This study identified contextual factors that were perceived as influential in determining the learning strategy adopted by undergraduates at a higher learning institution in Sabah, Malaysia. Questionnaires were distributed to 168 students using survey items adopted from the Learning Approach model developed by Baeten et al. (2010). The data were analyzed using the statistical software, SPSS. The cross tabulation results indicated that more than 50% of the respondents adopted the deep learning strategy. It was established that "Clarity of Teaching and Learning Goals" (87.2%), "Teaching Quality" (80.1%) and "Assessment" (70.1%) were the main factors affecting students' choice of deep learning strategy. Similar results were also obtained through factor analysis, which can offer suggestions for educators and academics to consider improving the contextual factors in order to encourage university students to adopt the deep learning strategy.

Keywords: deep learning, learning strategy, surface learning

INTRODUCTION

Factors affecting the academic performance of university graduates have been studied in various disciplines for many years. Among the aspects that have been explored by scholars are teaching pedagogy (Caldwell, Weishar & Glezen, 1996; Ditcher, 2001; Norman, Rose & Lehman, 2004; Sullivan, 1996; Wijnia, Loyens & Derous, 2011), students' assessment (Clayson, 2009; Clinton & James Kohlmeyer III, 2005; Smith & Spindle, 2007), and students' background (Bryne & Flood, 2008). However, while most studies investigated the relationships between learning environments such as classroom methodologies and techniques, and academic performance, few empirical studies have explored learning strategies adopted by university students and how choices of learning strategy would impact students' learning outcomes (Entwistle, 2000). This paper aims to identify contextual factors that affect the learning choices made by undergraduate students at Universiti Teknologi MARA Sabah, Malaysia (UiTM Sabah) in adopting certain learning strategies. Specifically, this study investigates whether contextual factors such as workloads, teaching quality, clarity of teaching and learning goals, independent study and assessment as suggested by Baeten et al. (2010) are perceived by students as motivating factors in choosing the 'deep learning' strategy. Understanding contextual factors that can stimulate deeper learning among university students is crucial in assisting academics at higher learning institutions to design and provide effective and conducive teaching and learning infrastructure. This paper is organized in the following manner. The following section discusses related literatures pertaining to students' learning strategies and the Learning Strategy model by Baeten et al. (2010) which was adapted as the research instrument in this study. This is followed by a brief description of the research method used in the study. In the ensuing section, results and findings of this study are presented. The paper ends with a discussion on the practical implications of the study and a concluding remark.

LITERATURE REVIEW

A review of literatures on students' learning has indicated that successful learning is associated with effective learning strategies. Pintrich and De Groot (1990) suggested that the adoption of higher order thinking and self

regulated learning approaches are related to excellent academic performance (Blom & Severiens, 2008). The researchers stated that using metacognitive skills in learning such as 'elaboration' and 'critical thinking' will help students to better understand a particular subject matter. Students employing higher order thinking were found to have the ability to link items to be learned with prior knowledge and are able to retain their knowledge longer than those who employed 'surface learning', which is a strategy to learn only for the sake of obtaining a passing grade (Vos, Meijden & Denessen, 2011). Apart from that, these researchers also stressed that academic achievement is influenced by the students' attitude to learning. A self-regulated learner is found to be more successful because s/he is able to manage his or her own learning environment and therefore, the student is more motivated to achieve his or her study objectives (Blom & Severiens, 2008).

There are two learning strategies that are likely to be adopted by students, which are deep learning strategy and surface learning strategy. Deep learning refers to the active use of cognitive capacity in learning that involves a learner searching for a deeper meaning of a particular subject matter (Vos et al., 2011). It includes paying attention to the underlying meaning of study material and is associated with the use of analytic skills, cross-referencing, imaginative reconstruction and independent thinking (Warburton, 2003). Deep learning is driven by the intention of acquiring a deeper understanding, rather than to simply pass an assessment task (Warburton, 2003). Deep learning is oftentimes linked to the holistic learning approach where active learning is evident in the learning process. A learner who adopts the deep learning strategy knows how to interconnect different ideas and is able to transform disparate types of information into a new set of ideas (Diseth, Pallesen, Brunborg & Larsen, 2010; Warburton, 2003). Deep learners look for patterns and principles in study material and form arguments based on evidences and logic (Entwistle, 2000). This process enables such learners to monitor the development of their own understanding about certain subject matter. Self-consciousness in the pursuit of knowledge is a key feature of the deep learning strategy and this attitude enables learners to achieve more sustainable and successful learning outcomes (Warburton, 2003).

In contrast, surface learning is a rather shallow learning approach. According to Webb (1997, p. 195), "A person using the surface approach

does not see past the text to the sense and meaning of the passage: they would simply try to remember the text". In other words, surface learners simply memorize facts without making any effort to integrate the ideas that are embedded in the study material into their cognitive structure (Ke & Xie, 2009). Among learning methods used by a typical surface learner are skimming, memorizing and regurgitating study materials which are intended only to fulfill minimal test or assessment requirements (Newman, Webb & Cochrane, 2004). Contrary to the deep learning strategy, the motive to employ the surface learning strategy is driven by external factors, such as students' perception regarding the role of university and academic certificates as a means to obtain a desirable job (Biggs, 1991). It was further argued by Biggs (1991, p. 29) that students adopting this approach tend to take shortcuts in order to balance "avoiding failure against working too hard" and therefore, try to limit the target to what they perceive as essentials which can be reproduced through rote learning. Compared to the deep learning approach, surface learning is considered less effective as it focuses heavily on tangible aspects of a task component, rather than on their meaning, and treats them as unrelated to each other or to other tasks (Biggs, 1991). Therefore, it can be argued that surface learners are unable to produce high quality work outcomes due to their rather narrow and restrictive views.

In a study based on an eight year (1992-2000) review of literatures on students' learning approaches, Baeten, Kyndt, Struyven and Dochy (2010) identified several factors that led students to adopt the deep learning strategy. These factors were grouped into three main categories. The first category which was labeled as contextual factors, described those factors that were associated with the environment in which the student learned. This included teaching methods, course assessment, teacher's feedback and personality, classroom characteristics and so on. Factors affecting the learning environment as perceived by students were categorized as perceived contextual factors. Workload, teaching style and clarity of goals were among factors that fall under this category. Factors relating to student's nature or characteristics such as age, gender, intellectual ability and personality were categorized as student's factors.

Guided by the Learning Strategy model as proposed by (Baeten et al., 2010), this study sought to explore learning strategies employed by

students of UiTM Sabah and to investigate whether perceived contextual factors could explain the students' choice of adopting the deep learning strategy. Five contextual factors were considered in this study, as listed in Figure 1. The discussion pertaining to each contextual factor is presented in the following subsections.

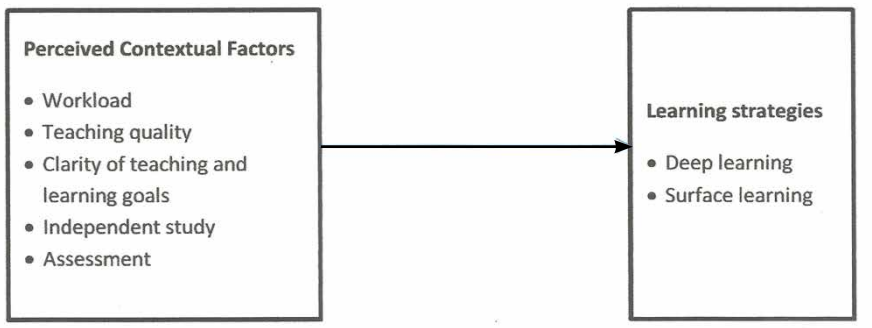

Figure 1: Learning Strategy Model (Baeten et al. 2010)

Workload

Previous studies have indicated that there is a relationship between workload and approaches to learning that students adopt. For example, it was found that the perceived appropriate workload was positively related to the deep learning approach, but was negatively related to the surface learning approach (Diseth et al., 2010). Moreover, Gibbs (1992) found that heavy workload is one of motivating factors for students to employ the surface learning approach (Kember, Leung & McNaught, 2008). Similar findings are also evident in a number of studies, such as Crawford et al. (1998), Diseth (2007), Kember et al. (2008) and Wilson et al. (2008) (Baeten et al., 2010). An explanation for these mixed results was provided by Kember (2008) where he stated that "students resort to short cuts and undesirable study approaches to cope with the perceived excessive demands" (Baeten et al., 2010).

Teaching Quality

Students' perception of teaching is also a factor determining their choice of learning approach. Teaching approaches that are perceived as

'good', refer to "the adequacy of a teacher's supportiveness, ability to deliver lessons effectively, and ability to guide students through potentially confusing concepts" (Barnhardt & Ginns, 2014, p. 800). It was found that students who perceive the teaching approach as 'good' (in terms of presentation, integration, lecturer's characteristics) are more inclined to use the deep learning approach (Baeten et al., 2010). It was also found that the delivery method employed by the lecturer plays an important role in determining students' choice of learning strategy. The perceived teacher centered teaching approach that uses a one way process of transferring knowledge was found to be positively correlated to surface learning. On the contrary, a positive relationship was found between the student centered teaching approach and the deep learning strategy (Baeten et al., 2010).

Clarity of Teaching and Learning Goals

Clear teaching and learning goals are important factors which could affect students' choice of a particular learning approach. According to Entwistle and Ramsden (1983), "Clear goals and standards reflect judgments of how clearly the specific purpose and performance criteria for work in a given class are communicated" (Barnhardt & Ginns, 2014, p. 800). It was found that students were more likely to employ the deep learning approach when they perceived that the lecturer had made teaching and learning goals clear throughout the course (Baeten et al., 2010; Crawford, Gordon, Nicholas & Prosser, 1998; Greene, Costa, Robertson, Pan & Deekens, 2010).

Independent Study

A number of studies have shown that students who planned and monitored their learning environments (practicing self-regulated approach in learning) had better chances of achieving high academic performance (Blom & Severiens, 2008; Greene et al., 2010). This self-regulated approach in learning or independent study is defined as the degree of what "…discretion students have over what learning they do in a course" (Barnhardt & Ginns, 2014). Prior studies have found that the independent study strategy is associated with deep learning as students play an active part in the learning and teaching process (Baeten, Douchy & Struyven, 2008; Blom & Severiens, 2008).

Assessment

It was found that differences in assessment preferences were correlated with differences in learning strategies (Baeten et al., 2008). A study conducted by Birenbaum and Feldman (1998) found that deep learners tended to prefer essay type questions compared to surface learners who preferred multiple choice formats (Baeten et al., 2008). In an earlier study by Gijbels and Douchy (2006), it was found that there was a significant positive relationship between the deep approach to learning and a preference for tasks that required higher order thinking. This finding supported the idea that students who adopted the deep approach in learning preferred assessment procedures that support their understanding (Baeten et al., 2008).

METHODOLOGY

A total of 168 students participated in this study. The respondents were final year students who were enrolled for the bachelor's degree in all six social science programs offered at UiTM Sabah. The rationale for selecting final year students was based on the researchers' assumption that students who have completed more than 50% of their study contents for a particular programme, are more likely to be able to provide views on contextual factors that affect their choice of learning strategies. In order to elicit respondents' views on contextual factors that affect their choice of learning strategies, a questionnaire was developed based on the Learning Strategy model as suggested by Baeten et al. (2010). Respondents' feedback on each question were measured using a five-point Likert scale ranging from 1= "Strongly Disagree", 2= "Disagree", 3= "Neutral", 4= "Agree" and 5= "Strongly Agree". The questionnaire was also used to attain information relating to respondents' background. Two types of statistical analyses were performed in this study. The first involved cross-tabulations to examine patterns with respect to the deep and the surface learning strategies among the respondents. This was followed with a factor analysis to identify main contextual factors that affect respondents' choice of a deep learning strategy.

RESULTS AND FINDINGS

Respondents' Demographic Profile

The average age of respondents in this study was 23, and the sample comprised 22.6% males and 77.6% females as shown in Table 1. The majority of respondents belonged to the Kadazan/Dusun (35.7%) and Brunei/Melayu (31.5%) ethnic groups. The largest number of respondents was from the Bachelor in Business Administration (Hons.) Finance (27.4%), followed by Bachelor in Business Administration (Hons.) Marketing (20.2%), Bachelor of Science in Tourism Management (Hons.) (18.5%) and other programs (33.9%).

Table 1: Respondents' Demographic Profile

Demographics	Frequency	Percentage (%)
Gender		
Male	38	22.6
Female	130	77.4
Ethnic groups		
Kadazan/Dusun	60	35.7
Bajau	26	15.5
Brunei/Melayu	53	31.5
Others	29	17.3
Programmes		
Bachelor in Business Administration (Hons.) Marketing (BM220)	34	20.2
Bachelor in Business Administration (Hons.) Finance (BM242)	46	27.4
Bachelor in Business Administration (Hons.) Business Economics (BM250)	15	8.9
Bsc. (Hons.) Tourism Management (HM241)	31	18.5
Bachelor in Accountancy (Hons.) (AC220)	13	7.7
Bachelor of Corporate Administration (Hons.) (AM228)	29	17.3

Learning Strategy Patterns

As evident from the mean scores in Table 2, the deep learning strategy was widely adopted by respondents for all contextual factors. It was also found that "*Clarity of Teaching and Learning Goals*" (87.2%), "*Teaching Quality*" (80.1%) and "*Assessment*" (70.1%) were highly rated by respondents as factors affecting their choice of the deep learning strategy.

Table 2: Learning Strategy Patterns Based on Contextual Factors

	Learning Strategy	
Perceived contextual factors	Deep (%)	Surface (%)
Workload	63.4	36.5
Teaching Quality	80.1	19.9
Clarity of Teaching and Learning Goals	87.2	12.7
Independent Study	56.1	43.9
Assessment	70.1	29.9

As can be seen from Table 3, similar patterns were also observed across programs whereby most respondents (> ⅔) were deep learners. In terms of types of programs, the majority of respondents who adopted the deep learning strategy were undertaking the Bachelor of Corporate Administration (Hons.) programme (75.48%), followed by Bachelor in Business Administration (Hons.) Marketing (73.24%), and Bachelor in Business Administration (Hons.) Finance (71.34%).

Table 3: Learning Strategy Choice Based on Academic Program

Programmes		BM220	BM242	BM250	HM241	AC220	AM228	Average
Learning Strategy		%	%	%	%	%	%	%
Workload	Surface	33.3	40.5	37.8	37.6	34.6	32.8	36.1
	Deep	66.7	59.5	62.2	62.4	65.4	67.2	63.9
Teaching Quality	Surface	20.6	20.4	12.2	26.3	25.6	16.7	20.3
	Deep	79.4	79.6	87.8	73.7	74.4	83.3	79.7

Clarity of teaching and learning goals	Surface	18.8	11.3	22.6	11.6	7.7	6.2	13
	Deep	81.2	88.7	77.4	88.4	92.3	93.8	87
Independent study	Surface	37.6	43.2	52	43.9	47.7	46.9	45.2
	Deep	62.4	56.8	48	56.1	52.3	53.1	54.7
Assessment	Surface	23.5	27.9	29.3	31.6	35.4	20	27.9
	Deep	76.5	72.1	70.7	68.4	64.6	80	72.1
Average (%)	Surface	26.76	28.66	30.78	30.2	30.2	24.52	
	Deep	73.24	71.34	69.22	69.8	69.8	75.48	

Factor Analysis on Perceived Contextual Factors Affecting the Deep Learning Strategy

A factor analysis was conducted to identify the main contextual factors that affected respondents' choice of the deep learning strategy. The analysis enabled researchers to identify emerging factor(s) based on items that are highly correlated with a particular factor. Three steps were involved in this analysis. In the first step, the Kaiser-Meyer Olkin (KMO) test was performed to determine the factorability of the analysis in terms of sampling adequacy. The Bartlett's Test of Sphericity was also carried out to examine the homogeneity of variances across factors that determine the suitability of using factor analysis. Results of both the KMO Test (0.787) and Bartlett's Test (Chi-square = 814.431, $p < 0.000$) indicated that data collected in this study fulfilled the requirements needed for conducting factor analysis (Field, 2009).

The second step involved performing the factor analysis using Principal Component Analysis and Varimax Rotation to identify factors based on scores of the deep learning strategy that were analyzed from the previous cross-tabulations analysis. There were fifteen items that represented three contextual factors (i.e. Clarity of Teaching and Learning Goals, Teaching Quality and Assessment) that were considered in this analysis. These factors were chosen because they were perceived by most respondents (⅔ students who adopted the learning strategy) as factors affecting their choice of the deep learning strategy. The initial eigenvalues indicated five factors which emerged from the analysis (eigenvalues > 1). However, the fifth factor was eliminated due to the fact that there was only one item. During this stage, an

item (TQ3) with factor loading less than 0.3 was removed, an item (TQ5) which initially belonged to the factor "*Teaching Quality*" was regrouped under a different factor (Assessment) and an emerging factor made up of two items (ASS1 and ASS2) was formed. Consistent with the term being used in a previous study (Pintrich and De Groot, 1990), the fourth factor was named "*Higher Order Thinking*" since the items that fell under this factor described metacognitive skills used in learning such as 'elaboration' and 'critical thinking'. These four factors that were retained in this study explained 59.59% of the variance in the dataset. Findings from the factor analysis for 15 items of the four factors are presented in Table 4.

Table 4: Factor Analysis for 15 items of Four Factors

Factors and items		Factor Loadings	Eigenvalues	Variance Explained
Clarity of Teaching & Learning Goals			**4.56**	**30.39**
CG1	Clarity of teaching goals enhance students' understanding	0.786		
CG2	Explanation of a lesson objective and significance in the early part of lecture	0.724		
CG3	Clarity of teaching objective helps in learning strategy planning	0.699		
CG4	Acquiring an overview of a lesson before attending lecture	0.657		
CG5	Explanation of a lesson objective	0.741		
Assessment			**1.75**	**11.44**
ASS3	Lecturers' comments on the On-going Assessment components	0.806		
ASS4	Prompt feedback from lecturers motivates student learning	0.873		
ASS5	Ensure consistent performance for both core and non-core courses	0.752		
TQ5	Feedback from lecturer on an academic task	0.604		
Teaching Quality			**1.51**	**10.09**

TQ1	The use of effective method in delivery lectures	0.807		
TQ2	The use of effective teaching aids	0.829		
TQ4	Two-way teaching approach	0.459		
TQ6	Supply of teaching materials	0.534		
Higher Order Thinking			**1.14**	**7.65**
ASS1	Assessment components that require higher order thinking	0.770		
ASS2	Assessment components that require elaboration	0.739		

In the final step, a reliability test for each factor was performed to examine the items' internal consistency. The reliability analysis indicated in Table 5 showed that the alpha values for "*Clarity of Teaching and Learning Goals*" (0.83), "*Assessment*" (0.82) and "*Teaching Quality*" (0.70) were within the acceptable range. This was achieved after the removal of three items as follows: "*Clarity of Teaching and Learning Goals*" – one item removed (CG4), "*Assessment*" – one item removed (TQ5) and "*Teaching Quality*" – one item removed (TQ4). The low alpha value for "*Higher Order Thinking*" (0.359) indicated a low correlation of items which was due to the small number of items that fell under this factor. The low alpha value disqualified "*Higher Order Thinking*" as one of main contextual factors affecting students' choice of the deep learning strategy.

Table 5: Reliability Analysis on the Contextual Factors

Factors and items		Reliability Coefficient
Clarity of Teaching & Learning Goals		**0.83**
CG1	Clarity of teaching goals enhance students' understanding	
CG2	Explanation of a lesson objective and significance in the early part of lecture	
CG3	Clarity of teaching objective helps in learning strategy planning	

CG5	Explanation of a lesson objective	
Assessment		**0.82**
ASS3	Lecturers' comments on the On-going Assessment components	
ASS4	Prompt feedback from lecturers motivates student learning	
ASS5	Ensuring consistent performance for both core and non-core courses	
Teaching Quality		**0.70**
TQ1	The use of an effective method in delivery lectures	
TQ2	The use of effective teaching aids	
TQ6	Supply of teaching materials	

Findings obtained in the analyses conducted in this study indicated three main contextual factors that explained the choice of the deep learning strategy among the selected undergraduates at UiTM Sabah. The factors were "*Clarity of Teaching and Learning Goals*", "*Assessment*" and "*Teaching Quality*". The next section will discuss practical implications of this study, specifically pertaining to the efforts needed to enhance contextual factors for the purpose of encouraging students to adopt the deep learning strategy.

DISCUSSION AND CONCLUSIONS

This study aimed to identify contextual factors affecting choices of learning strategies among university students at UiTM Sabah. It was found that "*Clarity of Teaching and Learning Goals*", "*Assessment*" and "*Teaching Quality*" are influential in determining students' adoption of the deep learning strategy. These findings have highlighted some important points relating to university students' choice of learning strategies.

First, it is apparent that students who adopt the deep learning strategy seek clarity of teaching goals so that they can set their own learning goals. Since students who adopt the deep learning strategy are concerned with their own understanding, it can be said that they will perceive understanding the learning process as equally important as understanding the study materials. Therefore, it is suggested that lecturers should provide students with a

comprehensive and concise overview of a particular course and its contents. This should be made at the beginning of the semester and be reiterated before the commencement of each lecture. These two aspects could be helpful for students to enhance their level of understanding for a particular course, hence helping them make necessary plans for their learning.

The second aspect of particular importance to the deep learning strategy choice pertains to how outcomes of assessment components are communicated to students. Findings of this study suggested that lecturer's feedback on students' assessment outcomes are vital as this will determine students' choice of learning strategy. Deep learners sought feedback on their assessments in order to evaluate their learning progress. Lecturer's feedback is perceived as vital in helping them identify areas in which they are still weak or lacking in knowledge which can therefore help them to strategize their learning. Apart from that, students adopting a deep learning strategy would expect prompt feedback from lecturers about their assessment outcomes. Therefore, lecturers teaching both core and non-core courses are expected to be cognizant of these needs.

Lastly, findings of this study indicate that teaching quality, in terms of materials used, teaching method as well as styles and teaching aids, are also important in determining learning strategy choice. Lecturers are expected to make the necessary effort to improve these teaching aspects by ensuring that their teaching materials are comprehensive, up-to-date and are readily available when needed. Lecturers are also expected to improve their teaching styles and adopt styles that can stimulate students' learning interest. This can be achieved by considering the integration of information technology in teaching.

However, efforts to encourage the adoption of the deep learning strategy among university students must not fall on the shoulders of lecturers alone. University administrators must also play a role, particularly in providing the physical and moral support needed in order to create a conducive learning environment that can promote deep learning among university students.

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