ORIGINAL ARTICLE

Study approach used by undergraduate occupational therapy students in Universiti Teknologi MARA (UiTM) Selangor.

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Abstract:

Studying in a post-secondary education environment involves conceptual changes. There are three approaches to studying which are the deep approach, strategic approach and surface approach. Type of study is important in acquiring knowledge given and needed for certain profession. Thus, valuable to identify the approaches used by students on it would help program to tailor annual effective delivery system and curricular review. This study was conducted to determine approaches used among undergraduate Occupational Therapy (OT) students. A cross-sectional study conducted involving 91 participants from semester four, semester six and semester eight of undergraduate OT in students UiTM Selangor, Puncak Alam Campus. All the participants need to answer a questionnaire that consist of Approaches and Study Skills Inventory for Students (ASSIST) short version was used to identify the tendencies of students to adopt approach to studying. 91 participants, 35% of students used deep approach (n=32), 33% used surface approach (n=30), and 32% used strategic approach (n=29). A Kruskal Wallis H test had determined that there are significant difference between the types of study approach and the demographic characteristic (level of study and age) ($p<0.05$). There are significant different between the mean of study approach with level of study and age of participant.

Keywords: Deep approach, study approach, , surface approach, strategic approach

1. INTRODUCTION

Studying in a post-secondary education environment involve conceptual changes [18]. Education makes student autonomous and responsible thinkers that reflex people perception and to involve in discourse to validate universal values from the others [17]. A study [13] defined approaches to studying as the process of studying in academic and thought to perceived task need like teaching and assessment method. There are three approaches to studying which are the deep approach, strategic approach and surface approach [14, 22].

A deep study approach is student's thoughts in their study material and critically relating it to other experiences, combining formal knowledge with the individual event, and connecting facts to the conclusion. A strategic approach is referring to the learner's intention to maximize good performance and gain the top achievable grades; and surface approach is the learner's aspiration to fulfill the requirement with less effort and engagement [13]. An approach to studying is associated with a student's general orientation toward learning in everyday academic situations [20]. Studying approach means the student's goals when facing a learning situation [9]. A deep and strategic approaches to study was related to the effectiveness of the ongoing learning process [11].

Type of study is important in acquiring knowledge given and needed for a certain profession. The deep and strategic approach is encouraging for the profession with the clinical skill [11]. There is a lack of research investigating occupational therapy approaches to studying in Malaysia. The lecturer must raise the awareness of students concerning their study approaches in order to help the student to adopt quality learning and assist them to understand the lesson well [15]. Hence, it vital to explore the study approach used by these participants as it would help lecturers to adopt a much effective approach.

Approaches of deep, strategic, or surface are not rigid because students can apply these approaches according to their option and needs of their context to learning [13]. However, a student usually adopts one or two study approach and this study approach chance overtime in a student that studying in specific courses [6]. A study by was conducted on first-year undergraduate Biomedicine student, Food and Nutrition student, Geology student and Science student that studying introductory chemistry subject and found that these entire group adopted surface learning style

[7]. However, student's adoption with a surface approach not because of the lack interest in chemistry but the content of this course was referred as being peripheral to the students' interest [6].

A study from Reid et al., [19] conducted the impact of modifying the second year of the medical course at the University of Edinburg to promote deep learning by implemented problem-based learning and assignment in their study. Medical students scored highest for deep learning approaches and the lowest score on surface approach and involve intangible change during revisions to their curriculum when assessing with ASSIST. Nursing student that enrolled in anatomy and physiology course more adopts the surface approach in their study rather than another two types of approach. This is because the learner lack understanding and purpose of studying that may lead them remembering the content of course in isolation of its applicability to professional practice [6].

There is some evidence said that individual student characteristics may indeed influence the adopted approach to study [1]. As age factor was found to be, the older the age of the student there found spontaneous change surface study approach towards deep study approach [3, 24]. After that, gender was also associated with the choice of study approaches. Questionable association with study approaches because male students have been found the more adopted surface approach to studying [16]. The strategic approach was higher in female rather than male in a study that has been done on first-year undergraduate students that learn an introductory chemistry course [7]. In contrast, a longitudinal study found there was no gender effect on the study approach across time [2]. The student from British undergraduate occupational therapy from a different level of the study found that there was no significant change in their study approach as there increasing their duration of enrolment [10]. Bonsaksen et al., [5] conducted study towards Norwegian occupational therapy students. More time on self-study has a significant association with a strategic approach in the study [5].

The aim for of the current study was to determine study approaches used by undergraduate OT students, to determine differences study approach as student advance from one semester to another and to determine the demographic factors that influence study approach among respondent.

2. MATERIALS AND METHOD

2.1 Research Design

A quantitative research design was used and employs a cross-sectional study.

Subjects and recruitment procedures

The study location for this study was the Department of Occupational Therapy, UiTM Selangor. Before the questionnaire distributes to the participant, approval from the ethics committee of the Universiti Teknologi MARA (UiTM) was obtained. The data were collect on semester 4, semester 6 and semester 8 of undergraduate occupational therapy students in UiTM Selangor, Puncak Alam Campus to compare the approach used according to the level of study. The respondents have given consent form that informed about the purpose of this study and has an explanation that the data were used only for research purpose and will keep its confidentiality. Questionnaires distributed in the classroom, collected after participant finish answering all the questions. Students participation is on a voluntary basis.

The inclusion criteria for the study were i) Occupational Therapy degree students in semester 4, 6 and 8, and ii) student who understand English. The exclusion criteria was the student pursuing a degree with a diploma qualification.

2.2 Research tool

There are two parts of the questionnaires used in this research. Part A: demographic information, Part B items are organized 18 items questionnaire to measure this three type study approach. 5- Point scale ranging from 1(disagree) to 5 (means agree) are used.

2.3 Data analysis

Demographic data and raw scores for the ASSIST were entered into the Statistical Package for Social Sciences (IBM SPSS) version 21. Descriptive analyses was performed on variables using frequencies and percentage. Kruskall- Wallis test was conducted to examine whether students in three cohorts differed on the ASSIST scale. Mann- Whitney U Test was done for the result that have significant difference.

3. RESULT

3.1 Participants

The participant characteristics are shown in Table 1. 91 students (semester four n=37, semester six n=29, and semester eight n=25) completed the questionnaire. The age of the participants in the semester four was 21 years (100%), while it was 22 years (100%) and 23 years (100%) for students in the semester six and semester eight respectively. Female students were the majority (89.2% - 96.6%) in all cohorts refer to Table 1. Most students studied from three to six hours per week. The fourth semester had the highest number studying in this range of hours, 20 participants (54.1%). This followed by semester six, which is 15 participants (51.7%) and semester eight had the lowest number studying in this range of hours, nine participants (36.0%).

Characteristics		Cohort			
		Sem 4 n(%)	Sem 6 n(%)	Sem 8 n(%)	All n(%)
AGE	21	37 (100)	0	0	37 (40.7)
	22	0	29(100)	0	29 (31.9)
	23	0	0	25 (100)	25(27.5)
GENDER	Male	4 (10.8)	1 (3.4)	1 (4.0)	6 (6.5)
	Female	33 (89.2)	28 (96.6)	24 (96.0)	85 (93.5)
Time spent for self-study (hours)	< 2	2 (5.4)	3 (10.3)	8 (32.0)	13 (14.3)
	3 – 6	20 (54.1)	15 (51.7)	9 (36.0)	44 (48.4)
	7 – 10	9 (9.9)	6 (20.7)	4 (16.0)	19 (20.9)
	11– 14	3 (24.3)	2 (6.9)	2 (8.0)	7 (7.7)
	>14	3 (8.1)	3 (10.3)	2 (8.0)	8 (8.8)

Table 1: The students demographic characteristic (n=91)

3.2 The study approaches commonly used among undergraduate occupational therapy students.

The ASSIST score is shown in Table 2. Approach to studying commonly used among undergraduate occupational therapy students is deep approach 32 (35%) then followed with surface approach 30 (33%). Students less adopted a strategic approach in their study 29 (32%).

Table 2: Result of approaches to studying among undergraduate occupational therapy students.

ASSIST category	N(%)	Mean (SD)
Deep approach	32 (35)	21.78 (3.30)
Strategic approach	29 (32)	19.56 (4.20)
Surface approach	30 (33)	20.05 (3.26)

3.3 Differences in study approach as the student advance from one semester to another.

Based on Table 3, we found that all students in the three semesters used deep approach. There was a higher number of student from semester eight (mean rank= 55.40) using deep approach followed by semester six (mean rank= 49.38) then the least was semester four (mean rank 37.00). These differences were found to be significant at p<0.05. Student more adopted the deep approach as they increase their level of study. Next, students also used a strategic approach in their learning. From this three level of study, semester eight more adopted this approach (mean rank= 56.84). Then followed by semester six (mean rank= 42.51) and semester four less adopted strategic approach (mean rank= 41.35). There was an improvement in the adopted strategic approach as the student advance from one semester to another. These differences were found not significant (p=0.06). In the other hand, the students in three semesters adopted a surface approach to learning. Then, the semester eight students were the higher number in adopted surface approach (mean rank= 48.76), followed by semester four (47.14) and semester six the least used surface approach (mean rank= 42.17). For surface approach to study, students were less used this approach when their advance from semester four to semester six. Then as increase their enrolment from semester six to semester eight, there was an increase in number student adopted a surface approach in their learning style. These differences were found not significant (p=0.06).

A Kruskal- Wallis was used to investigating the differences in study approach as the student advance from one semester to another. From Table 4, there is significant difference between the student cohorts were on the deep approach (χ^2 (2, N= 91) = 8.07, p=0.02), and on the subscales; use of evidence (χ^2 (2, N= 91) = 7.42, p= 0.03), alertness to assessment demand (χ^2 (2, N= 91) =8.53, p=0.01), and lack of purpose (χ^2 (2, N= 91) = 5.83, p= 0.05). Based on the finding, the null hypothesis is rejected as p-value <0.05.

When performing the Mann- Whitney U test, we found that students in the semester four and semester six, semester four and semester eight had different scores on the deep approach (p<0.05), whereas students in the semester six were not significantly different from students in semester eight. Based on the subscale use of evidence, students from semester four and eight had significant different (p=0.01). Based on subscale alertness to assessment demand, students in semester eight had significant differences between semester four and six (p<0.005). In addition, students in semester six and eight had significant differences in lack of purpose subscale (p=0.02).

Table 3: The Students' Approaches to Studying (n=91)

ASSIST category	ASSIST subscale	Year cohort				
		Sem 4 (n= 37)	Sem 6 (n=29)	Sem 8 (n=25)	All (n=91)	p-value
		Mean rank				*p*
Deep approach		37.00	49.38	55.40	8.07(2)	0.02
	Seeking meaning	40.11	51.79	48.00	3.70(2)	1.57
	Relating ideas	38.68	48.93	53.44	5.60(2)	0.06
	Use of evidence	39.19	45.14	57.08	7.42(2)	0.03
Strategic approach		41.35	42.51	56.84	5.90(2)	0.06
	Organized study	42.16	45.72	52.00	2.23(2)	0.33
	Time management	43.26	43.19	53.32	2.71(2)	0.26
	Alertness to assessment	41.27	41.09	58.70	8.53(2)	0.01

	demand					
Surface approach		47.14	42.17	48.76	0.96(2)	0.62
	Lack of purpose	47.19	37.74	53.82	5.83(2)	0.05
	Unrelated memorizing	50.46	39.14	47.36	3.16(2)	0.21
	Fear and failure	42.07	53.50	43.12	3.66(2)	0.16

a) Kruskall Wallis Test

b) ASSIST= Approaches and Study Skills Inventory for students, x^2= Chi-square.

*significant at p<0.05

Table 4: Result of pairwise comparison between semester with ASSIST category/ subscales

ASSIST category	Semester-semester	p-value
Deep approach	4 with 6	0.05
	4 with 8	0.01

a) Mann Whitney U test

b) The mean different is significant at the 0.05 level.

3.4 Influences of demographic factors of the respondent study approaches

Based on Table 5 we found that all students in the different age used deep approach. Then, the 23 years old students were using more deep approach. There was a higher number of student from 23 years old (mean rank= 55.40) using deep approach followed by 22 years old (mean rank= 49.38) then the least was 21 years old students (mean rank 37.00). These differences were found to be significant at p<0.05. Student more adopted the deep approach as they increase their age. Next, students also used a strategic approach in their learning. From these three groups of age, 23 years old students more adopted this approach (mean rank= 56.84). Then followed by 22 years old student (mean rank= 42.51) and 21 years old student less adopted strategic approach (mean rank= 41.35). There was an improvement in the adopted strategic approach as the student increase their age. These differences were found not significant (p=0.06). In the other hand, the three groups of age students adopted a surface approach to learning. Then, the 23 years old students were the higher number in adopted surface approach (mean rank= 48.76), followed by 21 years old students (47.14) and 22 years old students the least used surface approach (mean rank= 42.17). For the surface approach to study, students were less used this approach when the transition from 21 years old to 22 years old. Then as increase their age from 22 years old to 23 years old, there was an increase in number student adopted a surface approach in their learning style. These differences were found not significant (p=0.06).

Table 5, shown a summary table comparing learning approaches across the age of participants. A Kruskal- Wallis was used to investigating the differences in study approach as the student different in age. From Table 4.5, there is a significant difference between the student cohorts were on the deep approach (χ^2 (2, N= 91) = 8.07, p=0.02). Based on the finding, the null hypothesis is rejected as p-value <0.05.

Table 5: Summary table comparing learning approaches across age of subject.

ASSIST category	Age of participants				
	21 (n=37)	22 (n=29)	23 (n=25)	All (n=91)	P-value
	Mean rank	Mean rank	Mean rank	$x^2(df)$	p
Deep approach	37.00	49.38	55.40	8.07 (2)	0.02
Strategic approach	41.35	42.51	56.84	5.90 (2)	0.06
Surface approach	47.14	42.17	48.76	0.96 (2)	0.62

a) Kruskall Wallis test

b) x^2 = Chi-square

c) *significant at p<0.05

The results for age shown that there was a statistically significant difference in deep approach (p=0.02). Mann-Whitney U test was conducted and the result showed that there was significant difference between those who are 21 years and 22 years (p= 0.05), 21 years and 23 years (p= 0.01) for deep learning approach (Table 6).

Table 6: Result of pairwise comparison between ages of subject with ASSIST category.

Age	Deep Approach
21-22	0.05
22-23	0.38
21-23	0.01

a) Mann-Whitney U test

b) Significant at the p< 0.05 level

From Table 7 male and female students adopted all three approaches to studying in their learning style. Male students dominantly higher in the adoption of these three approaches than female students. For the deep approach, male students more adopted deep approach (mean rank= 49.83) than the female student (mean rank= 45.73). This difference was found not to be significant (p=0.71). Then, for strategic

approach male student (mean rank= 54.08) while female students (mean rank= 45.43). This difference was found not to be significant (p=0.71). Next, male student more adopted surface approach (mean rank= 55.42) while female students (mean rank= 45.34). This difference was found not to be significant (p=0.71).

Table 7, shown a summary table comparing learning approaches across the gender of participants. A Kruskal-Wallis was used to investigating the differences in study approach as the student different in gender. From Table 4.7, there is no significant difference between the student cohorts were on the deep approach (χ^2 (1, N= 91) = 0.14, p=0.71), strategic approach (χ^2 (1, N= 91) =0.61, p= 0.44), and surface approach (χ^2 (1, N= 91) =0.83, p= 0.36). Based on the finding, the null hypothesis is accepted as p-value >0.05.

Table 7: Summary table comparing learning approaches across gender

ASSIST category	Age of subject			
	Male (n=6)	Female (n=85)	All (n=91)	P-value
	Mean rank	Mean rank	$x^2(df)$	*p*
Deep approach	49.83	45.73	0.14 (1)	0.71
Strategic approach	54.08	45.43	0.61(1)	0.44
Surface approach	55.42	45.34	0.83 (1)	0.36

a) Kruskall Wallis Test

b) x^2= Chi-square.

c) *significant at p<0.05

Table 8, shown a summary table comparing learning approaches across the time spend on self-study in a week. A Kruskall- Wallis was used to investigating the differences in study approach as the student time spends on self-study. From Table 4.8, there is no significant difference between times spend on self-study and deep approach (χ^2 (4, N= 91) = 2.59, p=0.63). For deep approach, they were higher students studied more than 14 hours (mean rank= 56.69) and students less studied for three to six hours in a week (42.31). However, there is no significant difference between times spend on self-study and strategic approach (χ^2 (4, N= 91) =6.74, p= 0.15). For strategic approach, students more studied for more than 14 hours (mean rank 59.56) and student less studied for three to six hours (mean rank= 40.07). In addition, there is no significant difference between time spend on self- study and surface approach (χ^2 (4, N= 91) =8.83, p= 0.06). For the surface approach to studying, there were higher numbers of student spend time on their study for less than two hours (mean rank= 54.46) and student less studied for 11 to 14 hours (mean rank= 25.00). Based on this finding, the null hypothesis is accepted as p-value >0.05.

Table 8: Summary table comparing learning approaches across time spend on self-study

ASSIST category	Time spend on self-study (in a week/hours)						
	<2 (n=13)	3- 6 (n=44)	7- 10 (n=19)	11-14 (n=7)	>14 (n=8)	All (n=91)	P-value
	Mean rank					$x^2(df)$	*p*
Deep	46.58	42.31	49.71	45.86	56.69	2.59 (4)	0.63
Strategic	42.85	40.07	52.45	56.14	59.56	6.74 (4)	0.15
Surface	54.46	47.70	50.03	25.00	31.69	8.83 (4)	0.06

a) Kruskall Wallis Test

b) x^2= Chi-square.

c) *significant at p<0.05

4. DISCUSSION

4.1 Approaches to studying commonly used among undergraduate Occupational Therapy students.

The result of the study presents that undergraduate occupational therapy student most common adopted deep study approach followed by surface approach. From this study, students less adopted a strategic approach in their study. This study contrast with a study from Reid, Evans, and Duvall, (2012) on medical students. They found medical students have high scores for deep and strategic approaches to study and lower scores for a surface approach. This is because students approach to study may be promoted by a curriculum designed and learning environment[19]. The study found that four year-level cohorts suggested that students mostly adopted deep and strategic approaches to study [7].

Then study found that students less adopted surface approach in their study and the finding could be a result of the organization of the Australian curriculum [7]. Their curriculum needs completed clinical fieldwork during their final year and not during year subjected to exams, theoretical assessment, or production of a thesis in a delimited field of interest. Approaches of deep, strategic, or surface are not rigid because students can apply these approaches according to their option and needs of their context to learning [13]. However, the student usually adopts one or two study

approach and this study approach change over time in a student that studying in specific courses [7]. A deep and strategic approach to study was related to the effectiveness of the ongoing learning process [11] while a surface approach considered as less optimal [21]. OT students in this study most adopt a deep approach to study because they have the capacity to regulate their own learning style on the assessment and teaching methods.

4.2 Differences in study approach as the student advance from one semester to another

Based on the result, a student in the semester eight were most adopted a deep, strategic and surface approach to studying rather than semester four and six. There was a higher number of student from semester eight using deep approach followed by semester six then the least was semester four. Student more adopted the deep approach as they increase their level of study. In addition, there was an improvement in the adopted strategic approach as the student advance from one semester to another. For surface approach to study, students were less used this approach when their advance from semester four to semester six. Then as increase their enrolment from semester six to semester eight, there was an increase in number student adopted a surface approach in their learning style. There are significant differences between semester were found between four and eight and four and six on the deep approach to study . Based on subscale alertness to assessment demand, students in semester eight had significant different between semester four and semester six.

Students from three cohorts of the study did not differ in their strategic approach. This finding came as results [7] comparing from four cultural settings. In other study conducted by 19 cohorts of students at seven schools of occupational therapy in Denmark found significant differences in study approach across the level of study, in which they more developers to adopt deep study approach as the increasing level of study [21]. This is because as the students increase their level of education, the student learns by challenges and them capable to regulate their own learning style on the assessment and teaching that demand understanding [12]. In addition, a study found that the fourth-year student involved with 10-week clinical fieldwork placement and they tend to adopt deep and strategic approaches [7]. Student approaches to learning may be promoted by a curriculum designed. At the start of the medical program, medical student trends show relatively high for deep and strategic, and low for surface approach [19]. Then, the rise in scores for deep and strategic approach while surface approach decreased over years 1 to years 5 [19]. Studies revealed that this change of study approach is not clearly identified but the learning environment of students specifically curriculum influence adopted study approach [19]. During years 3 to 5, there is a slight trend toward deep learning as the student involved in the clinical attachment [19]. Students had significant different based on alertness to assessment demand because as increasing the level of education, the student makes an effort to impress the lecturer in the assessment.

4.3 Influences of demographic factors on the respondent study approach.

This study found some significant differences in demographic factors from comparing learning approaches across three demographic factors. The results for age shown that there was a statistically significant difference in deep approach. The result showed that there was a significant difference between those who are 21 years and 22 years, 21 years and 23 years for deep learning approach. Factors of higher student age being related with a more effective approach to studying and have been found in several studies in which as increasing age, student will spontaneously change surface study approach towards deep study approach [3, 25]. Higher students' age tends to adopt a deep approach while younger and inexperienced students to used surface approach [23]. The study conducted among occupational therapy students in four countries found that as increasing in student's age more adopted productive approaches to studying This is because higher age students have a lot of academic experience and maturity that lead to adopting effective study approach and been found related with better academic performance among occupational therapy students [4, 5].

There was no significant difference between genders in terms of the learning approaches used. Ballentine, Duff, and Larres [6] conducted a longitudinal study found there was no gender effect on the study approach across time. While study from Mattick et al., [16] gender is still questionable association with study approaches because male students have been found more adopted surface approach to studying while strategic approach was higher in female rather than male in study that has been done on first-year undergraduate students that learn an introductory chemistry course [6]. The study conducted among occupational therapy students in four countries found that female students' more adopted productive approaches to studying [4].

This study found that time spent on self-study does not have significant different towards study approach. A study was conducted towards Norwegian occupational therapy students found that more time on self-study statistically significant associated with the adoption of the strategic approach in the study. However, time spent on self-study influence study approach adopted by the student [5]. By spending more time for self-study, result with better performance in the study as it related with students motivational type and their ways of involving with studying [4].

5. CONCLUSION

This study had involved 91 respondents in which 40.7% (37) of respondent was from semester four, 31.9% (29) was from semester six and 27.5% (25) was from semester eight. The approach that undergraduate occupational therapy student most common adopted deep study approach 35% (32) followed by surface approach 33% (30) while students less adopted strategic approach 32% (29) in their study. There are significant different between semester were found between four and eight, and four and six on the deep approach to study ($p<0.05$). The results for age shown that there was a statistically significant difference in deep approach ($p=0.02$). There was no significant different between sex and time spent on self-study in terms of the learning approaches used.

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