



## Study Process of Private and Public Universities Students Using the Revised Two Factors Study Process Questionnaire (R-SPQ-2F)

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### ABSTRACT

This research examined the impact of students' demographic background on the study process of public and private university students. The Revised Two Factor Study Process Questionnaire (R-SPQ-2F) consisting of 20 items was used to collect data from 217 conveniently selected participants from public and private universities. To answer the research questions, descriptive statistics, an independent sample t-test, and a one-way analysis of variance (ANOVA) were employed. The research findings indicate that regardless of university types, students tend to use the deep approach ( $M = 2.685$ ) of learning more compared to the surface approach ( $M = 1.928$ ). The researchers have found statistically significant differences between study approach and gender, types of universities, fields of study, academic level, year(s) of study and ethnicity. The research results reveal that demographic background has a significant influence on students' approaches to learning. In terms of university type, the results indicated that students at public universities preferred the deep method of learning more ( $M = 2.809$ ,  $SD = 0.515$ ) than students at private universities ( $M = 2.537$ ,  $SD = 0.581$ ).

## 1. INTRODUCTION

As the 4th industrial revolution (IR) gears up with technological advances, it has gradually become obvious that future employment skills are highly likely to depend on cognitive skills that involve creativity, critical thinking and decision-making (Gray, 2016; Shaturaev, 2022). The reshaping of educational institutions to embrace the IR needs to welcome major changes that could integrate technology and humans. The integration needs adaptability and self-directed thinking (Penprase, 2018). With the above notions in mind, the researchers aim to look into Public and Private university students' study approaches and their relationship with the Students' Approach to Learning (SAL) using The Revised two Factors Study Process Questionnaire (R-SPQ-2F) developed by Marton & Saljö (1976). The concept of the student approach to learning (SAL) has become increasingly popular since the 1970s in the education field (Biggs, 1987; Entwistle & Ramsden, 1983; Marton & Säljö, 1976a; Habsah Ismail et al., 2013; Zakariya, 2019; Lim, 2020).

The deep learning approach matches the IR requirements because it nurtures students' soft skills that are useful for the workforce, such as critical thinking, and independent learning skills (Murawski, 2014). Kirby et al. (2003) believe that learners practicing a deep approach are more inclined to pursue meaning and understanding. They incorporate a higher cognitive level. The learners gain broader perspectives when they analyze the information and make a connection between them (Lee & Choi, 2017). This process is similar to the integration of new knowledge into the existing one. This is among the most compelling reasons why it is necessary for higher education institutions

to divert the curriculum focus to creating deep learners (Trigwell & Prosser, 1991). On the other hand, the surface approach in learning happens when motivation is an external force, which means highly depending on positive or negative consequences (Biggs, 1999). According to Shaik et al. (2017), students who use this learning approach usually fail to recognise the importance of the topic they learned as surface approach learners are rote learners who memorize facts even though the information is not related.

The purpose of the present study is to discover private and public university students' study process preferences. The following research questions were addressed to guide the study design and the data collection process: (1) Which study process is preferred by private and public university students?; (2) Do the students' demographic features (Age, Years of Study, Academic Level, Field of Study, and Ethnicity) affect the study approaches?; (3) Do the study approaches of students from public and private universities differ from each other?

This study is significant for curriculum developers and policymakers in changing curriculum directions to enhance curriculum attainment and suit the deep learning approach (Zhao, Hou & Gu, 2022). It helps educators to systematically arrange curriculum/teaching-learning materials in accordance with the educational stage, to minimize boredom and unproductive learning (Hunskin & Ornstein, 2016). It will promote the cognitive advantages because the challenges arising in the classroom are highly surmounted; and learning is authentic and involving (Seif, 2018) given that comprehension is beyond the basic level of learning. Also, a study on learning approaches is essential to help academics, educational program managers, teachers, and students to understand how learners could utilize different approaches in students' studying habits (Magno, 2011).

## 2. LITERATURE REVIEW

Biggs (1987a) presented different directions of SAL by introducing three main scales of the study approach: surface, deep, and achieving (with sub-scale; strategy, and motive in each main scale), as described in Figure 1. It provides a useful context for understanding the importance of students' learning approaches. Originally, the framework was based on Dunkin & Biddle's (1974) model for the study of classroom teaching (Watkins & Biggs, 2001). Biggs et al. (2001) claimed that the 3P framework conceptualizes an interdependent and interacting system that progresses from presage to process and product. Those elements are hypothesized to determine how an ongoing approach to learning tasks will determine the outcome. The presage section in the framework can refer to any factors that affect learning before the learning process happens (Biggs et al., 2001). There are two main factors in the presage stage, namely student factors and the teaching context (Biggs et al., 2001); for example, on the student side, their prior knowledge, characteristics, abilities, and preferred learning approaches while regarding the teaching context, the nature of the content being taught, teaching methods and assessment, the institutional climate and procedures.

According to Biggs (2001), the process level of 3P can be described as an approach, technique, and methods students use to learn. Overall, one way to describe the student learning process is through SAL with its components belonging to these three-way learning approaches: surface, deep, and achieving. Specifically, the surface approach refers to learning that focuses on memorization and replicating what has been learned, while the deep approach is defined as learning through understanding to master the contents. Finally, the achieving scale refers to the learning style to achieve the highest results in the assessment.

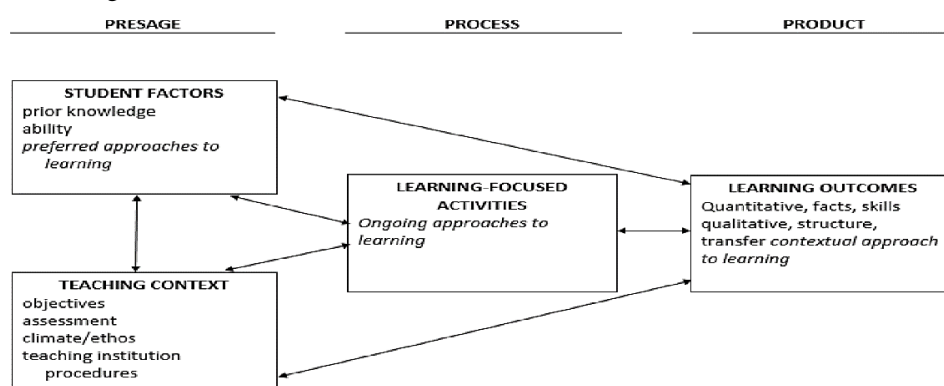


Figure 1. The 3P Model of Teaching and Learning (Biggs et al., 2001)

The product in the 3P framework can be any type of learning outcome achieved by students, for instance, the student's Cumulative Grade Point Average (CGPA), exam marks, skills, or any other consequences that resulted from learning, including the affective aspect such as the student's feelings about the learning experience (Biggs, 1993).

The reversible arrows in the framework indicate that each factor affects the others. For instance, the student's preferred learning style would adjust to specific conditions and courses, or subjects being taught, and the outcome could be success or failure. However, this study only discusses the relationship between presage (students' demographics) and process (SAL). The 3P framework in Figure 1 presents the dynamics between the presage, the process and the product of learning.

### 3. MATERIALS AND METHODS

The study utilized descriptive statistics, Independent Sample t-test, and One-Way Analysis of Variance (ANOVA) to define the features or characteristics of the population or phenomenon so that the research questions 1 'Which study process is preferred by private and public university students?' and 3 'Does the study approach of students from public and private universities differ from each other?' can be addressed. The research approach also describes the data and characteristics of what is being studied through frequencies and averages (Shields & Rangarajan, 2013). Concerning research question number 2, an Independent sample t-test and One-way ANOVA were used to analyze data. Independent-samples t-test is an inferential statistical test that examines if two unrelated groups' mean differs statistically significantly (Gay et al., 2012; Rojewski et al., 2012). Thus, the difference between undergraduate and postgraduate students, different fields of study (science/social science) and type of university (public/private), are analyzed using an independent sample t-test. ANOVA was used to analyze academic level, age and year of study, and whether there are any statistically significant differences between the means of more than two unrelated groups (Gay et al., 2012; Rojewski et al., 2012).

Using a convenience sampling method, a total of 248 questionnaire responses were collected, but only 217 were eligible for the research. A total of 99 respondents were from private universities and the remaining were from public universities in Klang Valley. The participants consisted of university students, whose level of study varied from diploma to Ph.D., student's age ranging from 17-46 years and, mostly in the 22-26 age group (126 persons or 58.1% of the total participants).

The participants completed the questionnaire through a designated Google form. The researcher invited the students to answer the questionnaire using the student's Facebook & WhatsApp groups, which directed the students to the Google Forms link. The questionnaire was sent through web-based platforms because face-to-face data collection and traveling were not encouraged during the early stages of Covid-19. Before the student participated in this study, the researcher informed the students that their participation should be voluntary and that they were not forced to complete the questionnaire.

A 20 items R-SPQ-2F questionnaire was used in this study. It was adapted from Biggs, J.B., Kember, D., & Leung, D.Y.P. (2001). The SPQ and R-SPQ-2F were often used in research in education in many topic areas and nations to measure students' study process (Thang and Alias, 2007; Fung, 2010; Habsah et al., 2013; Zakariya, 2019; Norshidah et al., 2013; Shaik et al., 2017; and Lim, 2020).

The instrument for this study was developed as follows: In Section 1, the items are related to the students' demographic features such as level of study, nationality, age, type of university, and field of study. In a survey, demographic questions allow researchers to learn more about their respondents, as these questions give context to the survey data obtained, allowing researchers to characterize their participants and evaluate their data more effectively (Allen, 2017). The participants' demographic data is crucial as it acts as the presage factor based on the framework and we compare it with their study process, which is the process factor. The data gained from Section One, which is demographic, is analyzed with descriptive analysis and presented in percentages and frequencies, then used to compare with results from section two.

In section two, R-SPQ-2F measured the preferable student's study process. Section two consists of ten items measuring the surface approach and its sub-scales, surface motive & surface strategy with five questions for each subscale to learning and another ten questions for measuring the deep approach and its subscales (deep motive & deep strategy), with five questions for each subscale. Briefly, (the main scale) a deep approacher in learning is someone more inclined to pursue meaning and understanding when learning. While surface approachers are the vice

versa; they study because there are positive or negative consequences, and quietly accept facts and memorize them (Shaik et al., 2017). Next, the motive subscales for both main scales (deep & surface) reflect why students are studying, e.g., to gain a certificate, pursue interests, or achieve the best grades. While the strategy subscale reflects how they conduct in studying, e.g., rote-learning, doing the bare minimum; relating ideas; or trying to be an exemplary student. In general, the study process questionnaire aims to measure complex tactics, strategies, and approaches dictated by students' relevant values and attitudes in their approaches to learning.

The respondents rated the items with five response categories: 0-Strongly Disagree, 1-Disagree, 2-Neutral, 3-Agree, and 4-Strongly Agree. Quite some studies could confirm that this questionnaire has a good construct of validity and acceptable internal consistency (Justicia et al., 2008; States et al., 2013; Habel, 2012; Shah et al., 2016; Martinelli & Raykov, 2017; Wan Shahrazad et al., 2013).

The result of the Cronbach alpha coefficient in Table 1 shows that the R-SPQ-2F questionnaire is reliable as the Cronbach alpha's scales range around 0.569-0.849, which is considered acceptable as some researchers claim that the Cronbach's alpha value of 0.65 and above is still acceptable (McMillan & Schumacher, 2006; Sekaran, 1992; Mohd Majid, 2000). Since Cronbach's alpha is sensitive to the number of items present, lower numbers of items such as deep motive that have 5 items, often produce lower alpha values, even if the items are reliable to one another (Tavakol & Dennick, 2011). According to Tavakol & Dennick (2011), if the number of test items is too small it will also violate the assumption of tau-equivalence and will underestimate reliability (Graham, 2006). However, when test items meet the assumptions of the tau-equivalent model, it will produce a better estimation for reliability. In practice, Cronbach's alpha is a lower-bound estimate of reliability because heterogeneous test items would violate the assumptions of the tau-equivalent model (Cortina, 1993).

## 4. RESULTS AND DISCUSSIONS

### 4.1. Which study process is most preferred by private and public university students?

A descriptive analysis of the study process was conducted to answer RQ1. According to the descriptive statistical results presented in Table 1, most of the respondents applied the deep approach ( $M=2.685$ ,  $SD=0.561$ ) in learning compared to the surface approach ( $M=1.928$ ,  $SD=0.744$ ). For the motive subscale, the students were more in favor of the deep motive ( $M=2.686$ ,  $SD=0.625$ ) compared to the surface motive ( $M=1.778$ ,  $SD=0.811$ ). For the strategy subscale, the students preferred to use the deep strategy ( $M=2.685$ ,  $SD=0.592$ ) compared with the surface strategy ( $M=2.077$ ,  $SD=0.776$ ). The reported result is on a scale from 0.0 (minimum) to 4.00 (maximum).

Table 1. A descriptive test result of SAL

Scales	Mean	SD
Deep Approach	2.685	0.561
Surface Approach	1.928	0.744
Deep Motive	2.686	0.625
Surface Motive	1.778	0.811
Deep Strategy	2.685	0.592
Surface Strategy	2.077	0.776

The result is consistent with the other studies on Malaysian university students, where the results suggested that Malaysian students were more inclined to use a deep approach in learning compared to the surface approach (Roziana et al., 2011; Norshidah et al., 2013; Teoh et al., 2014; Nurshafikah et al., 2020; Behzadnia et al., 2018; Hee, 2014). However, a study by Malakolunthu & Joshua (2012) found that participants from the faculty of computer technology in a private university college did not fully adopt the deep approach, where the researchers found that the means of the deep approach ( $M=3.01$ ) and surface approach ( $M=2.94$ ) were not far apart from one another. The research considered many factors, including the learning environment, the capacity of instructors, and the lack of instructional rigor (to encourage a deep approach) in the program. Nevertheless, this could indicate that the participants in the study tend to use both approaches interchangeably as student's methods of learning can differ by the type of course,

workload, and type of assessment given (Struyven et al., 2005; Zahariah et al., 2013; Habsah et al. 2013; Zakariya et al., 2020; Lonka et al., 2020).

However, the result of this study contradicts the research by Zahariah et al. (2013) that was conducted on students at the Faculty of Business Management in one Malaysian public university in Klang Valley. The correlation analysis found that the participants were more inclined to the surface approach as it gave the highest correlation compared with the other scales. The researcher suggested the curriculum design, teaching and assessment methods be changed toward a deep approach.

#### 4.2. Do the students' demographic features (Age, Years of Study, Academic Level, Field of Study, and Ethnicity) influence their study approaches?"

##### 4.2.1. Age

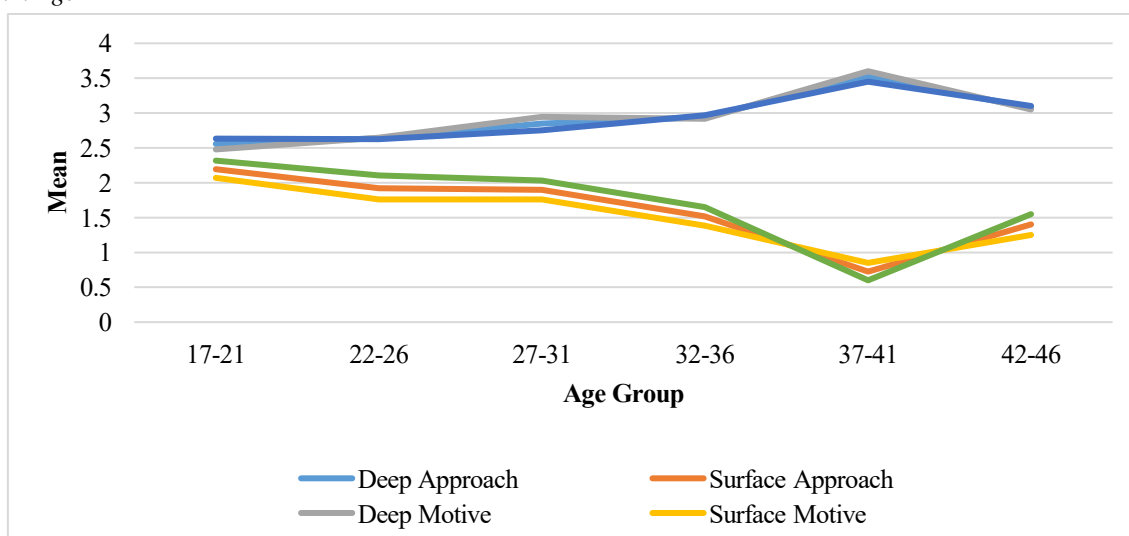


Figure 2. Comparison between students' age and SAL

Figure 2 shows that the popularity of the deep approach increased with age, but slightly dropped for the age group 42-46. While it's opposite with surface approach, where its usage decreased as the age increased, with a slight increase in the 42-46 age group. Statistically, a significant result was observed on the post hoc test where students at age 37-41 had the strongest tendency to adopt a deep approach and its sub-scale deep motive and deep strategy compared with students at age group 17-21 and 22-26. Also, a student at age 37-41 had the lowest possibility to adopt a surface approach and its sub-scale, surface strategy compared with students at age group 17-21, 22-26 and 27-31. The results suggest that older students are more likely to adopt a deep approach while younger students are more likely to go for a surface approach to learning.

This result is similar to some previous studies that found that older students tend to adopt a deep approach (Jones, 2003; Oliveira et al., 2015; Lake & Boyd, 2015; Choo, 2006). For example, Oliveira et al. (2015) administered R-SPQ-2F to Portuguese college students whose ages varied between 18 to 40 years old and reported that older students (age 23-40) scored higher in the deep approach dimension compared to younger students (age 18-22). A similar result was reported by Jones (2003), where 185 undergraduate psychology students aged 17 to 52 years old showed that age was a significant predictor of SAL. Jones (2003) claimed that younger students reported higher scores on the surface approach and its scales while older students reported higher scores on the deep scales. According to Zeegers (2001), the older a student is, the more ready or able they are to commit to the usage of a complex but effective learning approach even if it requires a lot of effort. Furthermore, older students are more willing to devote themselves to their studies and are more likely to complete their degrees.

Other studies focused on the relationship between SAL with postgraduate students in research universities (Roziana et al., 2011) and executive diploma programs in public universities (Hee, 2014) and reported that there were no significant differences with regard to students' ages. The dissimilarities of the later research could be because both studies have a more limited age range compared to this study and other studies that found age is significant. Additionally, Roziana et al. (2011) and Hee (2014) researched postgraduate and professional diploma students, who

are considered mature students. Postgraduate students tend to use a deep approach compared with a surface approach. Thus, it will increase the probability that older students will score higher in the deep approach.

#### 4.2.2. Year of Study

Table 2. Comparison between students' year of study and SAL

Scale	Year of Study	N	Mean	SD	F	P (sig)	$\eta^2$
Deep Approach	1 <sup>st</sup> year	23	2.626	0.617	1.020	0.385	0.121
	2 <sup>nd</sup> year	62	2.789	0.617			
	3 <sup>rd</sup> year	84	2.667	0.538			
	4 <sup>th</sup> year	46	2.620	0.501			
Surface Approach	1 <sup>st</sup> year	23	1.683	0.662	2.722	0.045	0.197
	2 <sup>nd</sup> year	62	1.844	0.829			
	3 <sup>rd</sup> year	84	2.099	0.679			
	4 <sup>th</sup> year	46	1.870	0.742			
Deep Motive	1 <sup>st</sup> year	23	2.600	0.644	0.814	0.487	0.108
	2 <sup>nd</sup> year	62	2.788	0.671			
	3 <sup>rd</sup> year	84	2.664	0.620			
	4 <sup>th</sup> year	46	2.635	0.574			
Surface Motive	1 <sup>st</sup> year	23	1.557	0.726	0.975	0.406	0.163
	2 <sup>nd</sup> year	62	1.720	0.871			
	3 <sup>rd</sup> year	84	1.933	0.781			
	4 <sup>th</sup> year	46	1.700	0.807			
Deep Strategy	1 <sup>st</sup> year	23	2.652	0.650	1.860	0.137	0.117
	2 <sup>nd</sup> year	62	2.790	0.644			
	3 <sup>rd</sup> year	84	2.669	0.575			
	4 <sup>th</sup> year	46	2.604	0.522			
Surface Strategy	1 <sup>st</sup> year	23	1.809	0.704	3.066	0.029	0.209
	2 <sup>nd</sup> year	62	1.968	0.851			
	3 <sup>rd</sup> year	84	2.264	0.716			
	4 <sup>th</sup> year	46	2.039	0.764			

The ANOVA results found that the students in the 2nd year of study were associated with the numerically highest means in deep approach and its sub-scales. The students in the 3rd year of study have numerically the highest means in surface approach and its subscales compared with the students in other years. The ANOVA test shows that there is a statistically significant in surface approach and surface strategy (see Table year of study & SAL). However, no statistical difference was found in the post-hoc test. Nevertheless, a trend in Table 2 illustrates that the adoption of the deep approach and its sub-scales increased in the first year, then dropped from the 2nd year to the 4th year. Although the surface approach and its sub-scales showed an increase in popularity from 1st year to 3rd year, it then

dropped from 3rd year to 4<sup>th</sup> year. The result of this research suggested that the study approach changed over time throughout students' years in university.

These findings are consistent with Lietz & Matthews (2010), Biggs (1987b) and Gow et al. (1994). In a sample of Australian undergraduate students, Biggs (1987b) noticed an overall reduction in the deep approach from the first to the last year of study, but no significant difference in the other learning approaches. Furthermore, Biggs indicated that the drop was due to the heavy workload that final-year that the students experienced, which resulted in a declining deep learning approach and its sub-scales deep motive and deep strategy.

The result of the current study resonates with the previous findings of Lim (2020) and Xie & Zhang (2015) who also found that the 3rd year students had the highest mean on surface approach compared with another year of study. Lim (2020) studied undergraduate students in Singapore and found that the deep approach declined from 1st year through to the 3rd year of study, then the use of the surface approach to learning increased throughout their undergraduate study. The researcher suggested students tend to use study approaches that they perceive are most relevant to the tasks at hand. Lim (2020) suggested as students progress with their study there is also an increase in education demand, examination pressures and rigorous schedules, and there will be a change in study approach and strategy during their 1st year to the last year of study.

In this study, the participants are from different academic levels with older students on the higher academic level which could influence the SALs' score. To determine the relationship between student age and SAL, further research is needed. Additionally, there are a number of factors that influence SAL across a year of study in terms of learning environment, workload, and assessment method, which could also influence SAL (Zeegers, 2001).

*Table 3. Independent t-test result and Comparison between Undergraduates and Postgraduates*

Scales	Study level	Mean	SD	t	df	Sig. (2-tailed)	Cohen's d
Deep Approach	Undergraduate	2.605	0.537	-3.088	215	0.002**	0.441
	Postgraduate	2.851	0.577				
Surface Approach	Undergraduate	2.049	0.705	3.546	215	<0.001***	0.505
	Postgraduate	1.678	0.764				
Deep Motive	Undergraduate	2.589	0.617	-3.344	215	0.001**	0.488
	Postgraduate	2.885	0.597				
Surface Motive	Undergraduate	1.900	0.782	3.253	215	0.001**	0.467
	Postgraduate	1.527	0.816				
Deep Strategy	Undergraduate	2.621	0.570	-2.315	215	0.022*	0.330
	Postgraduate	2.817	0.618				
Surface Strategy	Undergraduate	2.199	0.732	3.377	215	0.001**	0.481
	Postgraduate	1.828	0.809				

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

*Table 4. One-way ANOVA results regarding academic levels*

Scale	Academic Level	N	Mean	SD	F	P (sig)	$\eta^2$
Deep Approach	Foundation	5	2.080	0.396	4.633	0.001*	0.296
	Diploma	8	2.488	0.664			
	Degree	133	2.632	0.526			
	Master	60	2.800	0.579			

	PhD	11	3.127	0.502			
Surface Approach	Foundation	5	1.620	0.444			
	Diploma	8	2.200	0.518			
	Degree	133	2.056	0.719	4.436	0.002**	0.289
	Master	60	1.740	0.754			
	PhD	11	1.336	0.763			
Deep Motive	Foundation	5	2.120	0.415			
	Diploma	8	2.500	0.756			
	Degree	133	2.612	0.611	4.102	0.003**	0.278
	Master	60	2.843	0.603			
	PhD	11	3.109	0.532			
Surface Motive	Foundation	5	1.640	0.607			
	Diploma	8	2.125	0.385			
	Degree	133	1.896	0.804	3.320	0.012*	0.250
	Master	60	1.577	0.823			
	PhD	11	1.255	0.749			
Deep Strategy	Foundation	5	2.040	0.518			
	Diploma	8	2.475	0.709			
	Degree	133	2.651	0.555	3.929	0.004**	0.272
	Master	60	2.757	0.615			
	PhD	11	3.146	0.545			
Surface Strategy	Foundation	5	1.600	0.374			
	Diploma	8	2.275	0.835			
	Degree	133	2.217	0.730	4.712	0.001**	0.298
	Master	60	1.903	0.789			
	PhD	11	1.418	0.832			

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

#### 4.2.3. Students' Academic Level and their influence on SAL

The results in Table 3 suggest that the learning approaches of the undergraduate and postgraduate students were significantly different in every scale and subscale. Then, a more detailed comparison of SAL and students' academic levels was obtained when the data were analyzed using One-way ANOVA to examine the differences in students' academic levels from foundation, diploma, Degree, and Master to Ph.D. The one-way ANOVA result in Table 4 shows that the Ph.D. students had the strongest tendency to adopt a deep approach and its sub-scale deep motive and deep strategy compared to the students at the other levels of study. Subsequently, the Ph.D. students had the lowest tendency to adopt a surface approach and its subscales compared to the other students in the other academic levels. Then, the ANOVA test reported that diploma students had the strongest tendency to adopt a surface approach and its sub-scale surface strategy compared with the students at other academic levels. The foundation students had the lowest score in the deep approach and its sub-scales compared with the students in other academic levels. Oliveira et al. (2015) found that Portugal university students at a higher degree level scored higher with a deep approach than students with a lower degree, and students with a lower degree scored higher with a surface approach than students with a higher degree. Leung et al. (2008) explained that the undergraduate nursing students' predisposition to utilize the surface approach was due to the course's evaluation methods, which supported the surface approach, with the nursing students' enormous workload, which would enhance surface approach scores while decreasing deep approach scores (Leung et al., 2008).



## 4.2.4. Field of study

Table 5. Independent t-test result regarding SAL and Field of study

Scales	Field of Study	Mean	SD	t	df	Sig. (2-tailed)	Cohen's d
Deep Motive	Sciences	2.582	0.634	-2.022	215	0.044*	0.278
	Social-Sciences	2.755	0.612				

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ 

An Independent t-test was conducted to explore the distinction between science students and social science students. The results in Table 5 show that there was no statistically significant in all scales, except in the deep motive scale. The comparison between the means suggested that social-science students ( $M=2.755$ ,  $SD=0.612$ ) tend to adopt the deep motive more compared to science students ( $M=2.582$ ,  $SD=0.634$ ) with the condition of  $t(215) = -2.022$ ,  $p=0.044$ .

A few studies agreed that social science students adopt a deep approach more than science students (Biggs, 1987b; Booth et al., 1999; Neumann et al., 2002; Felder & Brent, 2005; Smith & Miller, 2005; Laird et al., 2008; Tarabashkina & Lietz, 2011; Habsah et al., 2013). For instance, one study from Malaysia by Habsah et al. (2013) found similar results where the social science students were more inclined to use a deep approach compared to the science students. Research by Biggs (1987b), using the SPQ instrument, reported that students from different fields of study do have different learning approaches in comparison to art students. The study reported that science students have a higher score on surface approach and achieving strategy compared to art students. Neumann et al. (2002) claim that this is because each fields has unique teaching methods and learning requirements. Neumann et al. (2002) compared types of teaching methods and student learning requirements of hard knowledge (such as sciences and engineering programs) and soft knowledge (such as education and management programs). When compared to hard disciplines, soft knowledge programs were more likely to use effective teaching techniques, participate in critical thinking, and foster deep learning. Furthermore, the students in the arts disciplines were the most likely to show intrinsic interest in their studies and take a thorough approach to learn the subject. In contrast, the science students were more motivated by practical concerns and relied on rote-learning methods such as memorization to learn (Watkins & Hattie, 1981; Neumann et al., 2002).

However, there are studies that have found that science students displayed a substantially higher degree of adopting the deep approach in their final year of study than their peers in the social sciences (Tarabashkina & Lietz, 2011; Smith & Miller, 2005; Watkins & Hattie, 1981). The reason for this is probably at the end of their study, science students finally have an opportunity to show and develop their high-order thinking skills as they prepare for a dissertation or final year projects. In the earlier years before, their assessments are based on the examination that encourages the surface approach. Additionally, those who engaged in deep learning performed better and reported greater satisfaction with their college experience than those who engaged in surface learning Laird et al. (2008). Nevertheless, concerning the sample used in this research, it is worth providing a brief overview of learning approaches in students of different study fields.

## 4.2.5. Ethnicity

Table 6. One-way ANOVA results regarding ethnicity

Scale	Ethnicity	N	Mean	SD	F	P(Sig.)	$\eta^2$
Surface Approach	Malay	104	1.827	0.742	3.761	0.012*	0.230
	Chinese	80	2.128	0.735			
	Indian	9	1.500	0.403			
	Others	24	1.858	0.745			
Surface Motive	Malay	104	1.633	0.778	4.868	0.003**	0.262
	Chinese	80	2.030	0.824			

Indian	9	1.333	0.469
Others	24	1.733	0.806

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

This study found that the Chinese students had the strongest tendency to adopt a surface approach and surface motive compared to the Malay students and Indian students (Table 6).

Habsah et al. (2013) found similar results that Chinese students have a greater tendency to use a surface approach compared to students of other ethnicities. Watkins and Biggs (1996) suggested that rote learning adopted by Chinese students probably was an adaptive strategy for coping with the assessment method. As Chinese culture is familiar with the Confucian work ethic that believes in the value of hard work and is driven by results (Baumann & Winzer, 2017). Thus, rote learning by Chinese students is one of their methods to gain understanding by repeating and memorization to adapt to their learning evaluation method which probably encourages surface learning.

Next, research by Taher & Jin (2011) that focused on MBA students in China, found that the nature of the postgraduate method study requires a high thinking order that encourages them to use a deep approach instead of a rote-learning method. Students are encouraged to adapt their learning techniques to their learning environment, more specifically to the assessment method. Thus, it could be concluded that students' approaches to learning do change according to the learning environment.

#### 4.3. "Are the study approaches of students from public and private universities different from each other?"

##### 4.3.1. Type of Universities

Table 7. Independent sample t-test result regarding SAL and Type of university

Scales	Field of Study	Mean	SD	t	df	Sig. (2-tailed)	Cohen's d
Deep Approach	Public University	2.809	0.515	3.656	215	<0.001***	0.495
	Private University	2.537	0.581				
Deep Motive	Public University	2.823	0.580	3.652	215	<0.001***	0.495
	Private University	2.521	0.639				
Surface Motive	Public University	1.661	0.815	-2.343	215	0.020*	0.320
	Private University	1.917	0.787				
Deep Strategy	Public University	2.795	0.544	3.048	215	0.003**	0.414
	Private University	2.553	0.622				

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Interestingly, the comparison between private and public university students results in Table 7 suggests that the public university students prefer the deep approach and its sub-scales compared to their private university peers. In the deep approach scale, the result suggested that the public university students ( $M=2.809$ ,  $SD=0.515$ ) preferred the deep approach compared to the private university students ( $M=2.537$ ,  $SD=0.581$ ) with condition  $t(215)=3.656$ ,  $p < 0.001$ . Based on this study's findings, it seems that the type of institution can influence the student's approach to learning because different institutions can have different learning environments and cultures. However, the difference between Chinese vs Malaysian students in this study can be explained by the fact that the private universities had more Chinese students compared to the Malaysian public universities that were dominated by Malaysian students. Below are the number and percentage of participants ethnicity from public and private university.

Table 8. Participants ethnicity and university

Demographic (N=217)	Category	Public University (N=118) 54.4%(N)	Private University (N=99) 45.6% (N)	Total
Ethnicity	Malay	76.3 (90)	14.1 (14)	47.9 (104)

Chinese	8.5 (10)	70.7 (70)	36.9 (80)
Indian	2.5 (3)	6.1 (6)	4.1 (9)
Others	12.7 (15)	9.1 (9)	11.1 (24)

It is also found that Chinese students tend to adopt a surface approach more compared to the other races. This could influence the conclusion of this part as the number of Chinese participants from the selected private universities are much higher than that from the public universities (See Table 8).

In Malaysia, there is a shortage of research comparing private and public universities in terms of SAL. Previously, Habsah et al. (2013) conducted a study that evaluated the learning practices of students from both public and private higher education institutions. The study discovered a substantial difference related to the surface approach to learning, implying that private higher education institutions are more likely than public universities to employ the surface learning approach. Habsah et al. (2013) commented that the meritocracy method of enrolment in public higher institutions of learning can be a possible cause for the more popular deep learning approach among students with the assumption that students who score higher in the examination are deep learners.

A study by Malakolunthu & Joshua (2012) found that the Computing School students at a private university college in the Klang valley did not adopt the deep approach fully in their learning as the two mean values showed that the students in the study did not fall strongly on either the deep approach side ( $M=3.01$ ) or the surface approach side ( $M=2.94$ ). The difference between universities can be related back to the learning environment discussed before. The students' factors, teaching contexts, and learning tasks could influence students' approach to learning (Biggs, 2001). Furthermore, Malakolunthu & Joshua (2012) suggest that learning conditions, instructor abilities and lack of Instructional rigor toward deep approach could influence private universities' lack of deep approach in their study.

## 5. CONCLUSION

Generally, this study has shed light on how students' approach to learning with regard to some of their demographic backgrounds to pinpoint the differences and similarities between students across a variety of backgrounds. This study found that R-SPQ-2F is reliable to observe the learning process from a student's perspective. Furthermore, this study also found that there is a possible correlation between presage and process in the 3P framework. Understanding these relationships could influence program development, student counseling, teaching methods, and learning assessment.

In terms of the different study approaches in public and private universities, as different institutions and courses have different learning environments such as assessment methods, curriculum, academic demands which influence student learning approach, further studies on specific institutions and even courses and subjects are needed. Hopefully, this research study would provide some insights and ideas to further explore students' approaches to learning as there are still numerous miles to go in this journey.

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