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# Environmental Factors and Students' Learning Approaches: A Survey on Malaysian Polytechnics Students

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## Abstract

Several studies have shown the impact of environmental factors on student learning approaches. Despite the importance of such studies, studies on technical learners are few. Thus, this study aimed to determine the influence of learning environment on Polytechnics students' learning approaches in Malaysia. Learning environment plays an important role in the cognitive, effective and social domains of students because it could improve students' learning outcomes. Learning approaches refer to the ways students deal with academic tasks that are related to learning outcomes. This study used Course Experience Questionnaire (CEQ) and Revised Two-Factor Study Process Questionnaire (RSPQ-2F) to collect the research data. Data were analyzed using AMOS Version 18. Multiple regressions were conducted to predict learning environment factors that influenced the level of students' learning approaches. The result shows that effective teaching is a major factor that influences students' deep approach followed by the assessment, learning resources and clear objectives.

**Keywords***: Learning approach, learning environment, learning outcomes, Malaysia, polytechnics*

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## Introduction

Many studies evolved around the concept of learning environment which conducted previously. However, studies on the effects of learning environment on learning approaches in technical institutions, which offer courses in the field of technical and vocational, are still scarcely found. Technical and Vocational Education (TVE) is recognised as one of the various disciplines of education that can generate economic growth of a country (Mustapha and Abdullah, 2004), TVE was introduced into the education system to provide opportunities for students with technology and vocational inclination to fulfil the technical workforce. With regard to TVE in Malaysia, one of the institutions providing TVE which is well-known is the polytechnic. The polytechnics system in Malaysia started when the first polytechnics, Ungku Omar Polytechnics, was established in 1969. The system had expanded to become Malaysia's largest public tertiary TVE provider with the number of students 60,840 in 2009 to 87,440 in 2012 (Abd. Wahab et al., 2010). It is therefore, TVE is seen as one of the crucial elements in enhancing the economics of productivity (Min, 1995; Mustapha and Greenan, 2002). There were five main objectives outlined during the Polytechnics Transformation Plan in 2010 (Department of Polytechnics Education, 2010):

(1) Enhance the polytechnics as a leading institution in the field of technical training in the semi-professional sector;
(2) Strengthen the relevance and responsiveness of polytechnics programs to the needs of the national economic development;
(3) Steer the niche technology areas to produce quality and competitive graduates;
(4) Build excellent reputation and brand;
(5) Diversify and expand its program.

In 1930s, Lewin (1936) examined the learning environment on human behaviour and started the concept of learning environment. According to Lewin (1936), environment and individuals are determinants of human behaviour. Lewin's ideas were further developed by Murray (1938) using the Model of Needs-Pressure to explain the relationship between individuals (I) and the environment (E). Just as needs represent significant determinant of behaviour in a person, the concept of pressure represents the effective or significant determinant of environment (Hall et al., 2000). Murray (1951) concluded The Murray's model of learning environment was further refined by Walberg at the end of the 1960s and Fraser in the early 1980s. The studies of learning environment are still relevant because of its importance in helping to improve learning outcomes. Moos (1974) studied the characteristics of individuals in a human environment and he had categorized them into three dimensions - relationship, personal development, and change of the system. Relationship dimension assessed the nature of the relationships, the level of involvement, support and assistance given by individuals in their psychosocial environment. Personal development dimension assessed individual progress toward personal growth and self-enhancement. The third dimension, change of a system, assessed the extent to which the environment is regulated and controlled.

According to Fraser (1998), learning environment refers to the social, psychological and pedagogical contexts in which learning occurred that affect the student's attitude and the achievement. There are many ways to assess the psychosocial environment but according to Kuert (1979), self-reported questionnaire is the most common tool used to assess the psychosocial environment. Using students' perception to evaluate the learning environment is essential because the students are individuals who are directly involved in the learning environment. The learning environment could reflect the quality of teaching and learning in which the context occurs (Biggs, 1999; Ramsden, 1991). Ramsden (1991) and McInnis et al. (2001) perceived learning environment could be categorized into:

### *(1) Teaching*

A process of delivering knowledge, cultivating new confidence, changing attitudes or behaviour of students is known as teaching. During the process of teaching, teachers need to make adaptations based on the ability of students in a class. Various suitable methods should be used by a teacher in order for effective learning process to take place. This is supported by Alsagoff (1983) where she stated that an effective teacher should master various methods and techniques that are appropriate for different types of students. Advanced planning and preparing for a class is a precursor for successful teaching. It is crucial for an effective teacher to possess adequate content knowledge, pedagogical skill and positive attitudes. An experienced teacher will plan systematically his or her teaching that will directly benefit the students in the future (Abu *et al*., 2007). Furthermore, a teacher acts as a role model in guiding and educating students to demonstrate positive attitudes toward their academic achievements. Thus, a teacher is a critical factor that may contribute to excellent academic achievements of students (Othman, 1998).

***(2) Learning Resources***

In order to meet the learning needs of the students, the educational institutions require sufficient facilities. A classroom with adequate learning resources is more likely to succeed than classes with poor facilities (Chan, 1996). Physical conditions of the class such as lighting, temperature, air quality and resources should be of concern prior to beginning of the teaching and learning process. Conducive environment will enhance students' interest in learning and they are more likely to focus on the lesson delivered by the teacher. The use of appropriate teaching aids could enhance teaching effectiveness (Dwyer *et al*., 1991). Norlia *et al*. (2006) investigated the relationship between environment, element of input and output of students found through multiple regression analysis that environmental factors such as learning resources was a significant contribution. A study conducted by Md Tahir (2010) in assessing the level of community college students' generic skills revealed that the learning facility was a significant contribution to the students' generic skills development.

***(3) Learning Workload***

The responsibilities of academic work to be undertaken by a student in a learning process are known as the learning workload. Workload which is too heavy is detrimental to the students in their learning process (Abu *et al*., 2007). Studies conducted by Kember and Leung (1998) found that students' workload did affect their achievement levels. Students, who were burdened with heavy duties, did not have time to apply their thinking skills in completing their tasks.

***(4) Assessment***

Assessment is defined as a system that includes activities to evaluate the strengths and weaknesses of students, teaching and learning activities in order to take appropriate decision such as planning of effective teaching activities (Mok, 2009). Assessment procedures include the aspects of testing, measurement and interpretation. An assessment is conducted to see whether the teaching and learning activities have achieved the planned objectives. Assessment given to students should be able to appraise the overall capability and not just to focus on the facts alone. Assessment should be conducted in a formative and summative manner. There are various types of assessment used such as quizzes, assignments, tests, examinations, presentations, projects or research.

***(5) Learning Community***

A community that involves the students, peer interaction and the teachers in the learning environment is the learning community. A study conducted by Md Tahir (2010) in assessing the level of community college students' generic skills found that peer interaction in a learning community contribute significantly to the level of generic skills acquisition among college community students in Malaysia. The main finding showed that the interaction among peers was the highest contributor followed by interaction with the instructors who teach. Norlia *et al*. (2006) also obtained similar result in her study evaluating the relationship between environment and element of input and output of students. Environmental factors such as the quality of academic interaction were revealed as a major contribution through multiple regression analysis.

***(6) Program Goals/Objectives***

The formulation of curriculum should involve the goals and objectives of teaching and learning intended as stated in Wheeler's Curriculum Development Process Model (cited in Mok, 2009). Clarity of the objectives presented to students is assumed to facilitate students' understanding of content and skills needed to master the learning and produce the expected outcomes of the curriculum. Clarity of goals and learning objectives will influence the students' mastery of the content.

Barrie and Prosser (2003) stated that learning is a function of current and past experiences. Thus, to enhance the learning outcomes, learning institution should be concerned with the context and experiences of the students. This study aims was to determine whether the students' personal factors (ability, motivation, prior knowledge, gender, race) and the learning contexts (program goals, evaluation, task load, good teaching, teaching approach) affect the students' learning approaches. There were various aspects of learning environment studied by previous researchers such as workload (Karagiannopoulou & Christodoulides, 2005; Kember & Leung, 1998, Lizzio *et al*., 2002;), assessment (Gijbels & Dochy, 2006; Karagiannopoulou & Christodoulides, 2005; Kim, 2002), teaching approach (Cabrera, Colbeck & Terenzini, 2001; Karagiannopoulou & Christodoulides, 2005), learning resources and learning community (McInnis *et al*., 2001; Smith & Bath, 2006). Table 1 shows the aspects of learning environment studied by previous researchers.

Table 1. Learning environmental factors.

| | Factor | Researcher |
|---|---|---|
| 1. | Assessment | Ramsden (1991); Kember & Leung (2005); Gijbels & Dochy (2006) |
| 2. | Work load | Ramsden (1991); Kember & Leung (1998); Biggs (1999); Karagiannopoulou & Christodoulides (2005) |
| 3. | Learning community | Pascarella (1985); Fraser (1998); Smith & Bath (2006); Norlia (2006); Kamaruddin (2010) |
| 4. | Learning resources | Norlia (2006); Smith & Bath (2006); Kamaruddin (2010) |
| 5. | Teaching approach | Ramsden (1979, 1991); Biggs (1999); Kember & Leung (2005) |
| 6. | Clear objectives | Ramsden (1991); Biggs (1999); Lizzio *et al*. (2002); Kember & Leung (2005) |

Marton and Saljo (1976) had conducted a series of important studies and then through their highly influential book, *The Experience of Learning*, they introduced two different learning approaches; surface and deep approaches to learning. Their study which took place at the University of Gothenburg, Sweden in the 1970s where they asked students to read an article written by a professor of education on some proposed university reforms in Sweden. They told students that the students will be asked some questions by them about the text once the students finished reading it. They met with the students and asked them open-ended questions to assess their approach to reading and their understanding of the text. They also reported that while reading the text, some students simply identified some isolated facts mentioned in the text, which they believed the researchers would ask them during the interview, and then memorized those facts. These students could not make any connections between these facts and failed to see any connection to their realities. Another group of students attempted to understand what the author was saying, focused on the underlying meaning of the text, and sought to integrate the different facts mentioned in the text. The first group of students focused on the surface level of the text while the second one adopted a deeper approach. Marton and Saljo (1976) identified two different levels of processing which were termed as deep and surface learning approaches.

## Purpose

The purpose of this study was to determine the influence of learning environment on Polytechnics students' learning approaches in Malaysia. This study also explored the relationship between learning approaches and learning environment. There were several research questions of this study:

(1) What is the appropriate instrument to be used based on the learning environments in Malaysia?
(2) What are the learning environments factors influencing the Polytechnics students' learning approaches in Malaysia?

## Methodology

There are several instruments developed by researchers who studied learning environment. Among the instruments that were developed by researchers in the past include the *Course Experiences Questionnaire* (Ramsden, 1991; McInnis *et al*., 2001), *WIHIC* (Fraser, 1998), *Classroom Environment Scale CES* (Moos, 1974), *My Class Inventory* (Fraser & Fisher, 1982). *Course Experiences Questionnaire CEQ* (Ramsden, 1991; McInnis *et al*., 2001) and *What is Happening in Classroom WIHIC* (Fraser 1998; Dorman 2003). They were developed to examine students' perceptions on learning environment at higher education institutions. According to Ramsden (1991), CEQ is a valid instrument developed based on the theories of the relationship between students' experiences in teaching and learning outcomes. However, these instruments were not tested in Malaysia yet. Therefore, this study focused on determining the appropriate instrument based on the learning environments in Malaysia.

This survey research was conducted at Malaysian Polytechnics involving 527 final-year engineering students. A questionnaire was developed based on CEQ and WIHIC to collect the research data. The questionnaire contained three parts, namely Part A, B, and C. Part A consisted of items related to student demographics. Part B of the questionnaire is about learning environment consisting of

six constructs adapted from Moos (1974), Ramsden (1991), Fraser (1998), and McInnis *et al*. (2001). Part C consisted of 20 items related to learning approaches adopted from the Revised Two-Factor Study Process Questionnaire [R-SPQ-2F] (Biggs *et al*., 2001). This part which was designed to measure the conventional approach to learning by individuals could fulfil the task of learning in a learning environment. The learning environment factors based on the Moos' scheme is as shown in Table 2.

Table 2. Learning environment factors based on The Moos scheme.

| | Factor | Researchers | Moos Scheme |
|---|---|---|---|
| 1. | Teaching approaches | Good teaching relates to the quality of the teaching approach. | Relationship |
| 2. | Clear objectives | Clear objectives show whether the students were given clarification about how and what knowledge and skills that are being developed in their program. | System maintenance and change |
| 3. | Assessment | Assessment shows the extent of quantity and quality of students' assessment's role. | Personal development |
| 4. | Work load | Work load reflects the burden and quantity of assignments in students' learning. | Personal development |
| 5. | Learning resources | Learning resources show the learning resources provided for the students. | System maintenance and change |
| 6. | Learning community<br>- Peer interaction<br>- Cooperation<br>- Equality | Learning community shows the influence of peers on the learning. | Relationship and personal development |

***Reliability of the instrument***

The internal consistency of the items was measured in order to validate the questionnaire. The values of the reliability index (Cronbach Alpha) are as shown in Table 3. The values of Cronbach Alpha for all the sub-constructs for the questionnaire in this study are between 0.77 and 0.86. According to Babbie (1992), Cronbach Alpha values are classified based on the classification in which the reliability index of 0.90-1.00 is very high, 0.70-0.89 is high, 0.30-0.69 is moderate, and 0.00 to 0.30 is low. The result shows that the Cronbach Alpha for this instrument is relatively high. According to Sekaran (2003), Cronbach Alpha value must be greater than 0.5 while Abd. Ghafar (1999) suggests a minimum value equal to 0.6. Thus, it can be concluded that this instrument has high reliability since Cronbach Alpha value for this questionnaire is more than 0.5 (Table 3).

Table 3. Values of Cronbach Alpha for the sub-constructs in the learning environment.

| Sub-constructs | Number of Items | Number of Items Excluded | Cronbach Alpha |
|---|---|---|---|
| Assessment | 5 | | 0.77 |
| Good teaching | 7 | | 0.79 |
| Approach work load | 5 | | 0.86 |
| Teaching objectives | 5 | 1 | 0.79 |
| Learning community | 5 | | 0.86 |
| Learning resources | 6 | | 0.78 |

## Results and Discussion

Factor analysis was performed on the six sub-constructs, i.e. instructional objectives (O), assessment (P), work load (T), learning communities (KP), learning approaches (PP), and learning resources (SP) using the varimax rotation (Table 4). Results show that the six factor with Eigen values above 1.0. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.868 which is adequate for inter-correlation while Barlett Test was significant (Chi Square = 5962.485, $p < 0.05$). The anti-image correlation matrix by the Measure of Sampling Adequacy (MSA) was more than the value of 0.5. Items O2, PP6, PP7, P1, SP3 and SP4 were dropped based on the criteria by Hair *et al*. (2006) where the items

did not reach the 0.50 cut-off point. The total variance explained for this loading was 61.5%. This value is sufficient according to Sekaran (2003), the total variance explained must be more than 50%.

Table 4. Factor analysis.

| Items | Objectives | Assessment | Work load | Learning community | Learning approach | Learning resources | Extraction |
|---|---|---|---|---|---|---|---|
| 01 | 0.673 | | | | | | 0.540 |
| 03 | 0.829 | | | | | | 0.668 |
| 04 | 0.799 | | | | | | 0.655 |
| 05 | 0.757 | | | | | | 0.610 |
| P2 | | 0.735 | | | | | 0.598 |
| P3 | | 0.785 | | | | | 0.685 |
| P4 | | 0.772 | | | | | 0.609 |
| P5 | | 0.714 | | | | | 0.608 |
| T1 | | | 0.717 | | | | 0.517 |
| T2 | | | 0.837 | | | | 0.720 |
| T3 | | | 0.796 | | | | 0.684 |
| T4 | | | 0.815 | | | | 0.676 |
| T5 | | | 0.781 | | | | 0.672 |
| KP1 | | | | 0.800 | | | 0.688 |
| KP2 | | | | 0.751 | | | 0.672 |
| KP3 | | | | 0.775 | | | 0.651 |
| KP4 | | | | 0.846 | | | 0.726 |
| KP5 | | | | 0.701 | | | 0.591 |
| KP6 | | | | 0.800 | | | 0.557 |
| PP1 | | | | | 0.751 | | 0.485 |
| PP2 | | | | | 0.645 | | 0.589 |
| PP3 | | | | | 0.760 | | 0.544 |
| PP4 | | | | | 0.690 | | 0.516 |
| PP5 | | | | | 0.577 | | 0.430 |
| SP1 | | | | | | 0.569 | 0.568 |
| SP2 | | | | | | 0.715 | 0.681 |
| SP5 | | | | | | 0.804 | 0.689 |
| SP6 | | | | | | 0.810 | 0.540 |
| | | Total variances explained | | | | | 61.5% |

The reliability of the items in the two-domain approach to learning is as shown in Table 5. The Cronbach Alpha for items measuring the deep approach is 0.73 while the surface approach is 0.85, respectively. Factor analysis (Table 6) was performed using varimax rotation to confirm the two constructs studying the deep approach (DS) and surface approach (SS). Result of the analysis showed that two factors had Eigen values exceeding 1.0. The value of Kaiser-Meyer-Olkin measure of Sampling Adequacy was 0.851 which is adequate for intercorrelation while Barlett test was significant ($\chi^2$ = 1577.558, p <0.05). The Measure of Sampling Adequacy MSA for anti-image correlation matrix was more than the value of 0.5. Item DS1, DS2, DS3, DS4, DS10, SS1, SS7, SS9 and SS10 were < 0.05 so they were dropped. The total variance explained for this loading was 53.16 %.

Table 5. Cronbach Alpha for learning approaches scales.

| Variables | Item | Cronbach Alpha | |
|---|---|---|---|
| | | In this study | Published in 2001 (Biggs et al.) |
| Surface | 10 | 0.85 | 0.64 |
| Deep | 10 | 0.73 | 0.73 |

Table 6. Factor analysis.

| Item | Deep | Surface | Extraction |
|---|---|---|---|
| DS5 | | 0.600 | 0.370 |
| DS6 | | 0.589 | 0.389 |
| DS7 | | 0.700 | 0.490 |
| DS8 | | 0.653 | 0.426 |
| DS9 | | 0.706 | 0.501 |
| SS2 | 0.771 | | 0.603 |
| SS3 | 0.826 | | 0.688 |
| SS4 | 0.828 | | 0.690 |
| SS5 | 0.786 | | 0.620 |
| SS6 | 0.724 | | 0.542 |
| SS8 | 0.718 | | 0.529 |
| Total variance explained % | 33.42 | 19.74 | 53.16 |
| Eigen values | 3.9 | 1.9 | 5.8 |

Table 7 shows the correlation between criterion variable (DS) and predictor variable of good teaching was 0.360 and the correlation between criterion variable and a combination of good teaching and assessment is 0.418. While the correlation of criterion variable (DS) and linear combinations of three predictor variables of learning resources, assessment, good teaching is 0.452. While the correlation of criterion variable and linear combinations of the four predictor variables of learning resources, assessment, good teaching and a clear objective is 0.469. The $R^2$ of 0.130 shows that 13% change in the criterion variable (DS) is due to change in the good teaching. The combination of good teaching and assessment contributes 17.5%. The combination of good teaching, assessment, learning resources accounted for 20.4%. The linear combination of the four predictor variables accounted for 22% of the variance in the criterion variable (DS).

Table 7. Regression model.

| Model | R | $R^2$ | Adjusted $R^2$ | Std. error of the estimate |
|---|---|---|---|---|
| 1 | 0.360 a | 0.130 | 0.128 | 0.42372 |
| 2 | 0.418 b | 0.175 | 0.172 | 0.31294 |
| 3 | 0.452 c | 0.204 | 0.200 | 0.40596 |
| 4 | 0.469 d | 0.220 | 0.214 | 0.40239 |

a good teaching;
b good teaching, assessment;
c good teaching, assessment, learning resources:
d good teaching, assessment, learning resources, clear objectives

Results of F (4, 510) = 35,884 and $p<0.05$ indicate that the relationship between the four predictor variables and the criterion variable is significant. This value shows the 22% contribution of the four constructs (instruction, assessment, learning resources, clear objectives) of the criterion variable (DS) is significant. This situation clearly shows that good teaching is a major factor affecting the increase in students' deep approach followed by the assessment, learning resources and clear objectives. Table 8 shows the regression coefficient b for the four predictor variables in linear combinations. The value of regression coefficient β represents the standard for four predictor variables in the form of linear combinations. While the value of t indicates significant results at $p<0.05$. Thus, the multiple linear regression is:

$$Z_{DS} = (0.186)\ Z\ \text{teaching} + (0.188)\ Z\ \text{assessment} + (0.157)\ Z\ \text{objectives} + (0.143)\ Z\ \text{resources}$$

Table 8. Multiple regression analysis (stepwise) for predicting deep learning approaches.

| Model | b | B | t | Sig. |
|---|---|---|---|---|
| Constant | 1.400 | - | 6.944 | 0.0 |
| Teaching | 0.179 | 0.186 | 4.103 | 0.0 |
| Assessment | 0.173 | 0.188 | 4.339 | 0.0 |
| Learning resources | 0.101 | 0.157 | 3.722 | 0.0 |
| Clear objectives | 0.144 | 0.143 | 3.178 | 0.002 |

Criterion Variable: Deep learning approach

Table 9 shows that the correlation between criterion variable (SS) (Surface Approach) and predictor variable workloads is 0.340 and the correlation between criterion variables and a combination of workload and assessment is 0.447. The correlation between criterion variable and linear combinations of the three predictor variables workload, learning community and assessment is 0.468 while the correlation of criterion variable (SS) and linear combinations of the four predictor variables workload, assessments, learning resources, learning community is 0.485. The $R^2$ of 0.115 shows that 11.5% change in the criterion variable is due to changes in workload. Combination of workload and assessment contributed 20%. The combination of work load, assessment, learning community contributed 21.9%. The linear combination of the four predictor variables accounted for 23.5% of variance changed in the criterion variable (SS).

Table 9. Modelsummary.

| Model | R | $R^2$ | Adjusted $R^2$ | Std. error of the estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | 0.340 a | 0.115 | 0.114 | 0.71809 | |
| 2 | 0.447 b | 0.200 | 0.197 | 0.68353 | |
| 3 | 0.468 c | 0.219 | 0.215 | 0.67589 | |
| 4 | 0.485 d | 0.235 | 0.225 | 0.66950 | 1.864 |

a workload; c workload, assessment, learning community;
b workload, assessment; d workload, assessment, learning community, learning resources

The result of F (4, 510) =39.272 ($p<0.05$) indicates that the relationship among the four predictor variables and the criterion variable is significant. The value shows the23.5% variance is attributed to the four sub-constructs (work load, assessment, learning communities, learning resources). This situation clearly shows that the work load is a major factor influencing the increase in the surface approach followed by the assessment, learning communities and learning resources. Table 10 shows the regression coefficient b for the four predictor variables in linear combinations. The value of regression coefficient β represents the standard for four predictor variables in the form of linear combinations. While the value of t indicates significant results ($p<0.05$), thus the multiple linear regression is:

$$Z_{PP} = (0.330)\ Z\ \text{workload} + (-0.242)\ Z\ \text{assessment} + (-0.192)\ Z\ \text{communities} + (0.136)\ Z\ \text{resources}$$

Table 10. Multiple regression analysis (stepwise) for predicting surface learning approaches.

| Model | b | B | t | Sig. |
|---|---|---|---|---|
| Constant | 3.115 | - | 9.175 | 0.0 |
| Work load | 0.349 | 0.330 | 8.398 | 0.0 |
| Assessment | -0.373 | -0.242 | -5.861 | 0.0 |
| Learning communities | -0.261 | -0.192 | -4.403 | 0.0 |
| Learning resources | 0.147 | 0.136 | 3.285 | 0.002 |

Criterion Variable: Surface learning approach

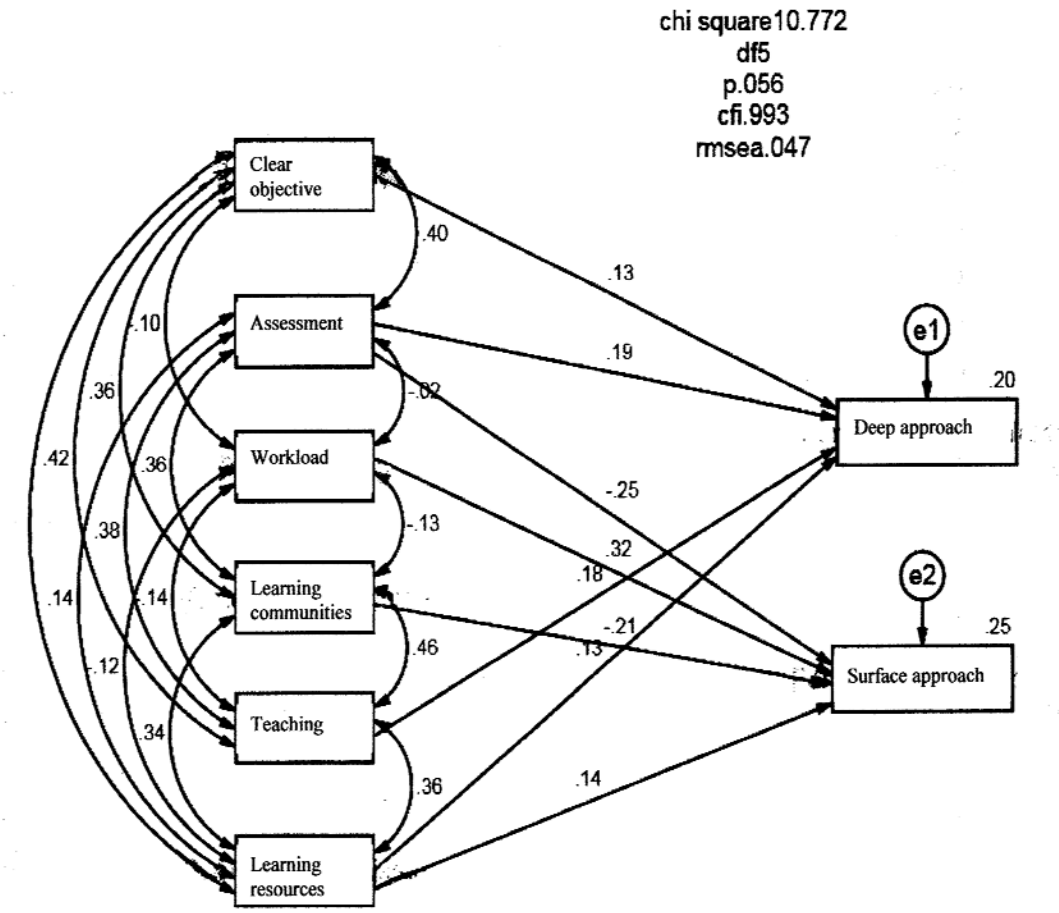


Figure 1. Relationship model between learning environment and learning approaches.

In addition, a path analysis was conducted using AMOS 18 to test the relationship between learning approaches and learning environment (Figure 1). Various goodness off it indices were used to evaluate the proposed model based on the data in the study. Literature reported that some measure of the index matching is often used as a bench mark in determining goodness off it indices matching a model such as chi-square ($\chi^2$), root mean-square error of approximation (RMSEA) (Bollen, 1989; Browne and Cudeck, 1993; Hu & Bentler, 1999; Hair *etal*., 2006), Tucker-Lewis index (TLI), normed fit index (NFI) (Hu & Bentler, 1999; Hair *etal*., 2006), comparative fit index (CFI) and normedchi-square ($\chi$2/df) (Hair *etal*., 2006). Table 11 shows the values of the RMSEA, CFI and NFI that could be assumed that the model has a nearly perfect fit. Further, the findings of the standardized regression weight indicated that there was a direct effect of the learning environment and learning approaches.

Table 11. Fit indices.

| Fit indices | Model | Value suggested | Sources |
|---|---|---|---|
| Df | 5 | | |
| $\chi^2$ | 10.772 | | |
| $\chi^2$/df | 2.15 | ≤ 5.00 | Hair *et al.* (2006) |
| CFI | 0.993 | ≥ 0.90 | Bagozzi & Yi (1988); Hair *et al.* (2006) |
| RMSEA | 0.047 | ≤ 0.08 | Browne & Cudeck (1993); *Hair et al.* (2006) |

## CONCLUSIONS

It was clearly shown by the result of this study that good teaching is a major factor affecting the increase in students' deep approach followed by the assessment, learning resources and clear objectives. Workload was also shown as a major factor influencing the increase in the surface approach followed by the assessment, learning communities and learning resources. A student who adopts a deep approach is interested in academic work and enjoys the process of doing and finding the meanings in their academic work; work to own experience of actual situation; integrates parts or aspects of a task (eg., linking evidence to conclusion); relates the findings to previous knowledge; tries to build a theory of the task or to form hypotheses. However, a student who adopts surface approaches, sees the work as a condition to be fulfilled; views part or aspect of work as something separate and not connected to each other or with other tasks; takes concerned about the time taken to do the task; avoids other meanings carried by the task; and tries to produce work that only have surface meaning.

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