

Student Engagement and Achievement in Active Learning Environment among Malaysian Polytechnic Commerce Department

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Abstract

Student engagement during learning activities is an important indicator in reflecting on student achievement. This study is to determine student engagement through Outcome Based Education (OBE) based upon four factors of student engagement: behavioral engagement, agentic engagement, cognitive engagement and emotional engagement. These factors have a relationship with student achievement. The sample size of this study consists of 148 students from the Commerce Department of Politeknik Tuanku Sultanah Bahiyah (PTSB). The methodology used for this study is quantitative analysis. Student engagement and achievement was also analyzed using SPSS version 20 of the instrument constructed based on Reeves (2013), and the reliability was 0.78. The results show that students are more likely to engage in behaviors ($\bar{x} = 4.07, SD = 0.50$) in teaching and learning than emotional engagement ($\bar{x} = 3.90, SD = 0.52$), cognitive engagement ($\bar{x} = 3.93, SD = 0.52$) and agentic engagement ($\bar{x} = 4.05, SD = 0.53$). The Pearson results also show that there is no significant relationship between the dimensions of student engagement and achievement; however, there is a positive significant relationship between four factors of student engagement. This implies that student engagement does not have any relationship to their achievement. However, this study suggests that deeper study could be done to look at the relationship with achievement.

Keywords: student engagement, achievement, active learning environment and Malaysian Polytechnic Institution

1. Introduction

Outcome Based Education (OBE) had been implemented in the Department of Polytechnic Education (DPE) since July 2010. It was introduced with the new syllabus and designed to be consistent with the vision and mission of the DPE (Curriculum Development Division, 2010) and undergo a transformation from the traditional education system to the OBE system (Bakhtiar & Yusmardi, 2012). OBE curriculum is competency-based, which can stimulate the active learning environment among students to achieve the educational goals that focus on learning outcomes, including the Program Learning Outcome (PLO) and Course Learning Outcome (CLO) (Bakhtiar & Yusmardi, 2012). Therefore, to achieve the learning outcome, Malaysian Polytechnic lecturers use Problem-Based Learning (PBL), Project-Based Learning (POPBL) and Student-Centered Learning (SCL) methods, and develop effective instruction based on CLO (Krishnan, Ruhizan Mohd Yassin & Malar, 2011), providing a clear way to deliver the course schedule and engage students in class (Papadopoulos & Santiago Roman, 2010).

According to Alias & Sulaiman (2010), OBE has changed the way of teaching and learning to a student-centered approach, changing the way students understand and act in their learning environment. Students are an important mechanism and benchmark in designing, evaluating and providing feedback on the OBE curriculum-based teaching and learning process. Valuable feedback from students is indicated through student engagement in their learning process (Belski, 2010). According to Steele (2014), this valuable

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feedback contributes to the educational experiences that emphasize learner independence, autonomy and responsibility.

Through the implementation of active learning environments, more students are engaged in class, which had positive impact on their achievement at learning institution (Totura, Karver and Gesten, 2014). According to Mohd Yusof, Noor Rahamah and Maizatul Haizan (2012), students' personality, environment, and influence of instructors and peers are the factors that motivate student to engage in what they have learned in class. Implementation of this new environment influenced student to engage in class more than the traditional systems that had been used since their inception in 1969 (Sahul Hamed, Mohd Amin, & Mohd Ali, 2010). Yet, student achievement is a priority in the teaching and learning process.

Problem Statement

Changing from the traditional to the OBE education system has led to changes in the teaching and learning process (Bakhtiar & Yusmardi, 2012). Lecturers should use active-learning teaching methods to get the best outcome when teaching a subject (McLaughlin et al., 2014). However, although polytechnic lecturers implement active learning environments, students are still disengaged in the classroom. Students could not learn by themselves, as independent learners, not by spending time with their lecturer (Daniel, Cosmas, Joyce, & Efiritha, 2014). Students are shown a PowerPoint slide, discuss it and present the results of the discussion in class. The level of student achievement must also be included in the students' engagement in the class. Consequently, insight into engagement trends and student outcomes at the PTSB commerce department alone has not been sufficiently provided in the mainstream higher education literature in recent years.

Research Objective

This study was conducted to ascertain the level of student engagement through the implementation of OBE system based on Reeve's (2013) four factor of student engagement; behavioral engagement, agentic engagement, cognitive engagement and emotional engagement. The study was also done to see the relationship between behavioral engagement, agentic engagement, cognitive engagement and emotional engagement and academic achievement.

The results of this study can help the lecturers gather relevant information about student engagement in the process of teaching and learning in the OBE system and the relationship with student academic achievement. This result will certainly add value to the teaching style approach for achieving the quality of learning that has been set on the syllabus and move forward to flip the classroom approach to meet the standards or requirements of the OBE system. The study's focus on student engagement will also help efforts by relevant parties to drive the design, implementation and delivery of the curriculum through the findings that led to these objectives.

Research Questions

- 1) What is the level of student behavioral engagement, emotional engagement, cognitive engagement and agentic engagement through the implementation of the OBE system?
- 2) Is there any relationship between behavioral engagement, agentic engagement, cognitive engagement and emotional engagement?
- 3) Is there any relationship between behavioral engagement, agentic engagement, cognitive engagement and emotional engagement and academic achievement?

Theoretical Framework

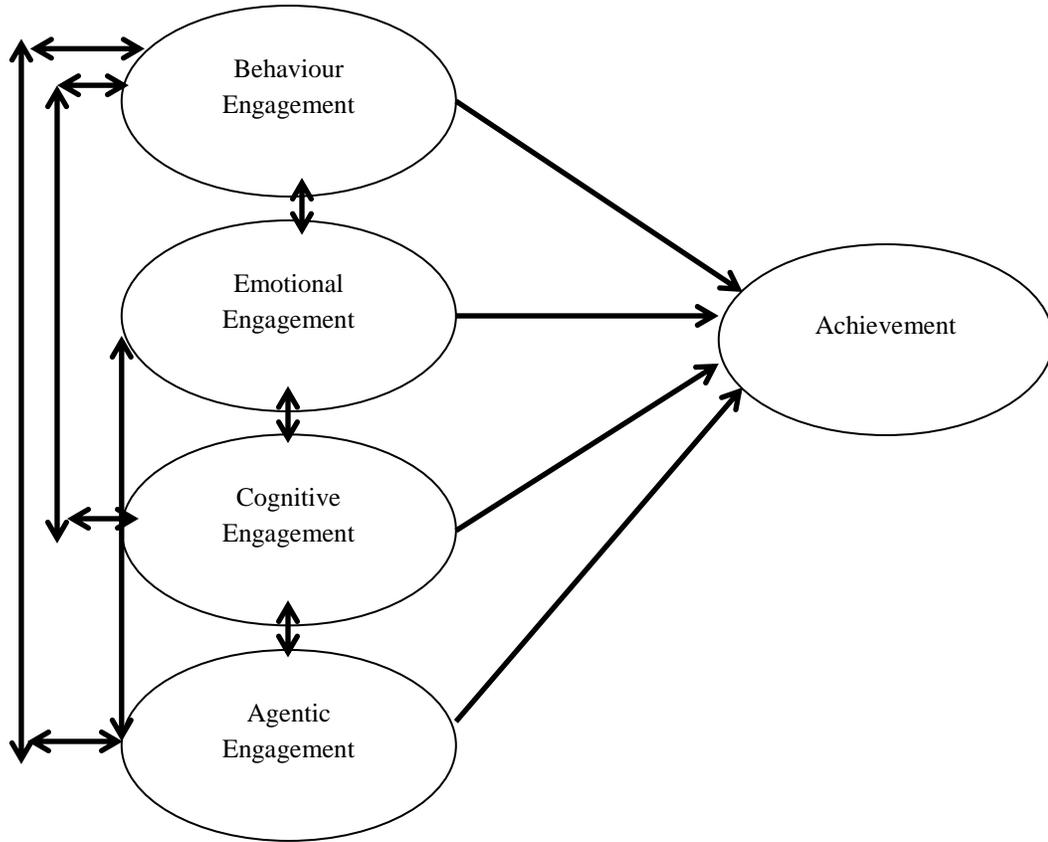


Figure 1: Theoretical Framework

Figure 1 shows the theoretical framework of this study, which is based on Reeve's (2013) four factor of student engagement. This study takes place in an active learning environment that was implemented based on the OBE system to determine four aspects of student engagement and the relationship between behavioral engagement, agentic engagement, cognitive engagement and emotional engagement and academic achievement

2. Literature Review

Carini, Kuh& Klein (2006) define student engagement as a positive condition that occurs when a student appreciates a challenging, but meaningful task for the foundation of skills to meet industrial needs. Optimal learning occurs when a student is actively involved in making judgments, reflective practices, and learning through experience (Reeve, 2013; Kahu, 2013; Sanders, 2013; Hallinger & Lu, 2013). According to Lawson & Lawson (2013) and Teoh, Abdullah, Roslan, & Daud (2013), through the development of an active learning environment, student engagement will occur when there is a reaction by students to the lecturer's teaching and learning process. According to Hallinger & Lu (2013) educator's had misconceptions of the goal of active learning environments with just student activities. Reeve (2013) stated that student engagement is a broad term that encompasses the dimensions of cognition, emotion, behavior and agentic, with each factor emphasizing different but connected aspects of the learning process.

Based on Reeve & Tseng (2011) student engagement can be measured in different constructed dimensions, including behavioral engagement, emotional engagement, cognitive engagement and agentic engagement. Behavioral engagement is a focus on learning and participation in academic work with a continuous effort, concentration, attention, questions and contributions to class discussions (Reeve, 2013). In general, institutional change usually focuses on involvement in order to modify the behavior of students (Reeve, 2012). Kahu (2013) stated, “Blending institutional practices with student behavior has resulted in a lack of clear distinction between the factors that influence engagement, the measurement of engagement itself, and the consequences of engagement” (p. 760). However, a study by Lawson & Lawson (2013) demonstrated that the engagement of students through the concepts of behavior is a reflection that provides an overview of behavior and how students respond to the information received and acted upon.

The cognitive dimension of involvement refers to the use of effective strategies; commitment to diversity also implementation of the learning strategies and problem solving (Reeve, 2013). Students' cognitive engagement is how the students feel through the way of learning process, about themselves, their work, their skills, and the strategies they use to control their work. A study done by Sherab (2013) shows that, if a student has difficulties in accessing the teacher and has a lack of humor, the overall level of engagement will be affected because the student does not participate in class. Therefore, cognitive engagement emphasizes the process of observation, thinking, memory and problem-solving in learning and academic tasks by both parties (Reeve, 2012; Brooks, Erickson, Greer, & Gutwin, 2014; Sherab, 2013). Cognitive engagement involves the transmission of ideas through consideration and a willingness to exert the effort required to understand complex ideas and master difficult skills (Sherab, 2013; Teoh et al., 2013).

Emotional engagement refers to the effective reactions of students in the class, including interest, boredom, joy, sadness and anxiety (Eren, 2013; Gilbert, Rose, Palmer, & Fuller, 2013; Lee & Reeve, 2013). Meanwhile, Kahu (2013) stated that emotional engagement is noticing and feeling a sense of belonging, as well as their level of concern about their educational institutions. A study by Eren (2013) shows that, although teaching plays an important role in effectively achieving the learning objectives, it can be a difficult role for them if they are not using effective learning strategies to overcome the boredom of students in class. Therefore, by using effective strategies, emotional engagement can expand the application of the idea in the mind, increase confidence, create joy and avoid boredom in class.

Reeve & Tseng (2011) introduced the fourth student engagement aspect: agentic engagement. Agentic is a concept of student engagement in which they wish to enrich the learning process by being active in their own way in the teaching and learning of certain conditions (Reeve & Tseng, 2011; Reeve, 2012; Reeve, 2013). Through participation in agentic, students will respond by giving expressions, suggestions and/or contributions, asking questions, communicating what they think and need. They also give suggestions on goals or objectives to be implemented, communicating their level of interest, sourcing opportunities to learn, finding space to add a relevant subject in person, looking for assurance, generating options, communicating likes and dislikes or using aid as a related model, tutorial, knowledge base, feedback or authentic sample (Eren, 2013; Reeve & Tseng, 2011). Therefore, the student agentic engagement refers to when students are deliberate and proactive in personalizing and enriching both what they have learned and the conditions and circumstances in which it is learned.

Student engagement through learning activities is specifically measured in education through the integration of the academic achievement of students (Lawson & Lawson, 2013). Research shows that student engagement has a significant relationship to the variables of educational attainment, learning and motivation (Lawson & Lawson, 2013; Reeve & Tseng, 2011; Reeve, 2013). A study by Reeve & Tseng(2011), stated that student engagement in class can be used as a predictor and the starting point toward the path of student achievement (Yazzie-mintz, 2010). However, according to Totura, Karver & Gesten (2014), there will be negative influences on academic achievement if there are difficulties in student engagement in learning process. Therefore, to avoid the negative influences, lecturer needs to create an active learning environment to lead high student engagement towards better academic achievement (Gebre, Saroyan, & Bracewell, 2013)

3. Methodology

This study used quantitative methods and a case study conducted on students in the Department of Commerce at Polytechnic Tuanku Sultanah Bahiyah (PTSB). This descriptive type of study provides an accurate picture of the characteristics found in the population. The respondents were students of the Department of Commerce in December 2013. The respondent session is a group of students who have attended the OBE system. The study population, at 872, consisted solely of students of the Department of Commerce, while the respondents were about 286 students.

Practical and efficient use for a large population, this study used a questionnaire developed by Reeve (2013) and based on The Four Aspects of Student Engagement Questionnaire (FASEQ) and tested student engagement on the dimensions of behavioral, agentic, cognitive and emotional. Student achievement was measured by the average level of the Cumulative Grade Point Average (CGPA) obtained by the students. The respondents were asked to provide feedback on the questionnaire based on the Likert scale of five: 1-Strongly Disagree, 2-Disagree, 3-Not Sure, 4-Agree and 5-Strongly Agree. Furthermore, all data was analyzed quantitatively using the Statistical Package for Social Sciences version 20.0. The mean score is used to answer the first research question, determining the level of student engagement in the OBE system, and Pearson correlation analysis was used to look at relationships and answer the second and third questions.

The four aspects of student engagement shown in the measurement of the instrument used were assessed using the inter-item consistency reliability value. Subsequently, all items were adapted on the FASEQ to test its reliability in the Malaysian Polytechnic context. The Cronbach's alpha for the four aspects of student engagement is shown in Table 1. According to Nunnally (1978) (cited in Ogunkola & Archer-Bradshaw, 2013), ideally, the Cronbach's alpha coefficient of a scale should be above 0.7. Thus, it can be concluded that the instrument used in this survey is reliable.

Table 1: Cronbach's Alpha for Student Engagement

Aspect	Item	Alpha Value
Student engagement		
Behavioural	5	0.744
Agentic	7	0.721
Cognitive	4	0.693
Emotional	5	0.750
Total	21	0.781

4. Results and Findings

To answer research objective 1, the mean score analysis is performed to determine student engagement in selected aspects of the student through the OBE system. Based on Table 2, the mean score analysis performed on the four aspects of student engagement in the OBE system consist of 21 questions. The overall mean for the highest level of student engagement is behavioral engagement ($\bar{x} = 4.07, SD = 0.50$). A study done by Sanders (2013) shows that students prefer to sit in a row facing the front, because it's hard for them to listen to the lecturer while sitting in a group. Therefore, although student still need to listen to the lecture by sitting in a row facing the front, results shows that students listen carefully, pay attention, try hard to do well by working as hard as they can and participate in discussions while in a class with an active learning environment. By doing presentation in class, Reeve (2012) stated that students are engage when they actively listen to their peers, ask questions and give their opinions and ideas on the case study or issue given by the lecturer (Loeb, 2014).

Table 2: Mean and Standard Deviation of Student Engagement

Descriptive Statistic	Behavioral Engagement	Agentic Engagement	Cognitive Engagement	Emotional Engagement
Mean	4.07	3.90	3.93	4.05
Standard Deviation	0.50	0.52	0.52	0.53

The second level of student engagement is emotional engagement ($\bar{x} = 4.05, SD = 0.53$). In class, students who feel interested and good, get involved when they are working on something, because the class is fun and they enjoy learning new things in the class session. Thus, by using these active learning strategies, it could motivate lecturers and students, leading to emotional engagement (Loeb, 2014). On the other hand, classroom environment or design is also a factor that leads to student engagement in class (Sanders, 2013) that according to Gilbert et. al. (2013), what lecturers and students put and how they go into the learning process are controlled by their emotions to get the active learning experience in the environment occur.

Cognitive engagement ($\bar{x} = 3.93, SD = 0.52$) is the third level, this shows that in the class activities students try to connect with what they are learning through their own experiences, relating to what they already know with the help of the lecturer (Belland, Kim, & Hannafin, 2013). Student feel that they are not highly cognitively engage because they still could not relate their own experience in the learning process. Therefore lecturer needs to play their roles as a facilitator who fits together all the different ideas and makes sense of them with examples that help the students understand the important concepts of the subject matter (Butt, 2014).

Finally, agentic engagement ($\bar{x} = 3.90, SD = 0.52$) is the last level of student engagement. This shows that in class, students are not fully spell out what they are interested in, their needs and wants, and the need of lecturerpresence in learning process. Therefore, the lecturer needs to provide students with sufficient learning time, presenting the correct material (Mayer, 2014) and guide them with their learning material. By creating an active learning environment, students will feel free to express their preferences and opinions and ask questions that help them in their learning process (Reeve, 2012). Student also can learn as much as possible in class by adjusting whatever they are learning to make it as interesting as possible (Lee & Reeve, 2013).

Table 3: Pearson Correlation Analysis on Student Engagement and Achievement

Variable	Behavioral Engagemen t	Agentic Engagemen t	Cognitive Engagemen t	Emotional Engagement
CGPA Person Correlation	0.011	0.051	0.046	-0.030
Sig.	0.855	0.392	0.437	0.619
N	286	286	286	286
Behavioral Engagement Person Correlation		0.440 **	0.521 **	0.388 **
Sig.		0.000	0.000	0.000
N		286	286	286
Agentic Engagement Person Correlation			0.538 **	0.460 **
Sig.			0.000	0.000
N			286	286
Cognitive Engagement Person Correlation				0.480 **
Sig.				0.000
N				286

** Correlation is significant at the 0.01 level (2 tail)

Table 3 shows the correlation between the four aspect of student engagement and the results achieved (CGPA) by students. There is a positive significant relationship between student behavioral engagement, emotional engagement, cognitive engagement and agentic engagement. This shows that, in the learning process student are highly behavior engaged, their agentic engagement, cognitive engagement and emotional engagement will also be high; students that have high agentic engagement, their cognitive engagement and emotional engagement also high and high cognitive engagement will lead to high emotional engagement. This is supported by research conducted by Reeve (2012), Gilbert et al. (2013), Gan Kok Siew et al. (2014), and Loeb (2014) showing that when students are actively engage in making judgments, reflective practice, and learning through experience, optimal learning will result.

The study found that student engagement from the aspects of behavioral, agentic, cognitive and emotional does not have a significant relationship with student achievement. This is contrary to a study conducted by Reeve (2013), Sunday (2013), Souza, Venkatesaperumal, & Radhakrishnan (2013) who found that student engagement will produce positive academic achievement. This is because student's engagement internally drives one to be proactive, show passion and find ways to improve the learning experience by being more interesting and effective. However, a study by Suárez-orozco& Pimentel (2009) found that the roles of age, gender, country of origin, parental education, parental employment, family structure, and exposure to violent school environments can be the factors that affect student achievement. A study by Arifin, Ahmad Sabri, & Wan Hamiah(2013) shows that cognitive engagement and emotional engagement contribute to academic achievement, but not behavioral engagement. Therefore, this study found that student engagement is not a major factor in influencing student achievement.

5. Conclusion

In conclusion, the idea that high student engagement in teaching and learning is not a main factor to determine students academic achievement. This is clearly shown in this study and it is significant, that there is no relationship between student engagement and achievement. However this results due to the limitation of the study or other factors that occurs, such as the academic achievement selected in this study is based on CGPA, which not all the lecturers fully implemented active learning environment. This study also shows that students are more likely to engage in behaviors in teaching and learning followed by emotional engagement, cognitive engagement and agentic engagement. This shows that the active learning environment is not fully occur in the learning process, there is more lecture than class activities in the learning environment. However there was a strong, positive relationship between behavioral engagement, agentic engagement, cognitive engagement and emotional engagement. It shows that by using active learning strategies in teaching and learning, the behavioral engagement is high, the agentic engagement, cognitive engagement and emotional engagement also high. It is suggest that a study of other variables could be included to measure student engagement relationship with academic achievement in the OBE system. Variables that may be extended to the study include the dimension of motivation, learning styles, attitudes and infrastructure that can provide accurate answers to the relationship with academic achievement. This results that students' engagement in the implementation of the OBE system at Tuanku Sultanah Bahiyah Polytechnic, in particular, is satisfactory.

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