

## **A Study of Blended Learning in Higher Learning Education: Implementation and Challenges in 21<sup>st</sup> Century**

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### **Abstract**

With the advent of the new millennium, the challenge for higher learning education is to meet the needs of students in the 21st century. Millennials are hailed as the most technically savvy students of this century, forcing educators to study new teaching methods that combine technology use. To meet these needs, new teaching approaches such as blended learning become a viable alternative to traditional teaching approach. In addition, we as educators urge to explore the new approach to improve our teaching and learning skills. Nevertheless, adopting a new teaching approach is always a dispiriting and challenge task in an early-adopted stage with limited resource circumstances. Even though many educational institutes favour blended learning over traditional approach, but yet some academicians are still apprehensive about teaching in blended learning. Hence, a study has been conducted to investigate the various challenges in the implementation of blended learning in delivering technical modules in higher learning institutions. A pilot test of blended learning is carry out in this study. Data are collected from instructors via questionnaire survey. Data collected are analysed using both descriptive statistics and statistical tests to determine the major challenges. Thus, based on this premise, it convinced us that these crucial information can be right guidance and assistance to unlock frontiers for preparing educators in 21<sup>st</sup> century in tertiary university.

### **Keywords**

Blended learning, Higher learning education.

### **Introduction**

Blended learning is not precisely defined by Graham (2006). In fact, blended learning is claimed as a new traditional model or new normal in higher learning education course delivery (Sam *et al.*, 2002, Graham *et al.*, 2013, Khan *et al.*, 2015). In specific, other form of blended learning have been introduced since 1970s in Singapore (Sam, *et al* 2002). It is obvious can be seen in correspondence courses leading to the UK-City and Guilds technical awards in

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‘Structural Engineering’ and ‘Quantity Surveying’ via Stamford College. Other instance can be seen in the UK’s external Professional Examinations of The society of Engineers and the Council of Engineering Institutions (CEI) via the British Institute of Engineering Technology (BIET). These two overseas universities have offered their degree programmes externally with great success. One program is MBA by the Heriot-Watt University from Scotland, United Kingdom and other program is Engineering programmes (Bachelors & Masters ) by the University of Southern Queensland, Australia.

While in Malaysia, the Universiti Teknologi Malaysia (UTM) via the UTM Space offers ‘International Degree Programmes’ in 26 courses including ‘Engineering, Science, Built Environment and Management’. Courses such as Civil, Chemical, Petroleum, Mechanical, Biomechanical, Electrical and Electronics Engineering are accredited by the Board of Engineers, Malaysia. BEM is a signatory of the ‘Washington Accord’.

While, other form of blended learning is defined as the mixing of traditional face-to-face classroom experience plus online learning experience (Sam & Soong, 2016). Yet, this form of blended learning is not a new teaching approach in higher learning education around the world. The initial intention using the blended learning is to rise students understanding, engagement and interactivity in their larger-sized classes. It is evidence by Jane and Ellen (2011) that blended learning solved the scenario in larger-sized classes, whereby more students were attending the class but yet less prepared and less willing to participate.

Thus, the benefits of blended learning has been sparked our interest to undertake the problem of blended learning as our focus study. This paper aims to determine the critical challenges in implementing Blended Learning in Higher Educational Institutions (HEIs). Objectives of this study as below:

- I. To identify the challenges of implementing Blended Learning in HEIs;
- II. To investigate the challenges in implementing Blended Learning in HEIs
- III. To propose possible ways to the successful implementation of BL in HEIs.

Hence, toward achieving these objectives, this paper is organized as follows. Background studies presented in the next section, followed by methodology. Analysis and findings are illustrated in the section 4. Conclusions remarks are drawn in the last section.

The transform of face-to face teaching to blended learning in Higher Educational Institutions (HEIs) has started more than 30 years ago in Singapore (Sam, *et al*, 2002) and Malaysia (Amrien and Mohamed, 2016). It can be seen in Singapore Polytechnic, the idea of ‘Virtual College’ was introduced to teach ‘Construction Materials’ and later replaced by ‘Blackboard (BB)’ whereby lecture notes and tutorials (MCQs) were ‘uploaded’ to increase efficiency in course delivery. Tests were partially assessed by BB online to cut down the ‘marking time’. Later there was an initiative to replace ‘hand-on’ laboratory/practical classes with ‘Virtual Lab’ whereby ‘Videos and Simulation’ were developed using software. (Sam, *et al*, 2002).

With the wide utilization of information technology and the transform from the elite higher education (HE) paradigm to mass HE, especially in China (Zhang, 2010), there is a need to identify the dilemmas and challenges in Blended Learning (BL) or Blended online Learning.

Other studies on blended Learning is illustrated in the Table 1. Challenges in implementation and online inquiry of blended learning in Higher Learning Institutions is shown in Table 2. Challenges of online inquiry in blended learning (BL) is presented in Table 3.

Table 1. Blended learning by other researchers

BL	Observation(s)	Researcher
1	Loss of classroom community feelings.	Graham (2004)
2	Reduced number of face-to-face meetings.	Allen and Seaman (2013)
3	Blended component is not suitable for all courses.	Sabri, et al (2010)
4	BL that includes online discussion will enhance the competency in learner's writing skills.	Meyer (200#0)
5	Blended learning is not a replacement of the face-to-face class education.	Zhang (2010)
6	BL is a good platform to facilitate in independent and collaborative learning experience for higher education students.	Garrison and Kanuka (2004)
7	BL is effective; Learning Management System (LMS) helps BL.	Olushola and Chan (2009)
8	BL may not be functioning well for low achievers students.	Nawmah, et al (2016)
9	Combining a formal classroom element with the web-based learning environment is capable in offering a more comprehensive collaborative learning and problem solving skills that are almost similar to an informal workplace learning environment.	Sivakumar, et al (2013)
10	Students feel dull and disconnected with traditional teaching methods.	Okaz (2015)

Table 2. Challenges in implementation and online inquiry of blended learning in higher learning institutions

No	Challenge	Source
B1	Increased workload for Instructors	Alebaikan and Troudi (2010)
B2	Increased Time devotion for instructors in regular preparation time in the online environment	Lotrecchiano, <i>et al</i> (2013)
B3	Lack of pedagogical and technical skills for instructors.	Alebaikan, <i>et al</i> (2010)
B4	Difficulty in finding the right blend between face-to-face and online learning for instructors.	Korr, <i>et al</i> (2012)
B5	Instructors are Reluctant to think and rework their practices to meet students' needs	Ramos, <i>et al</i> (2011)
B6	Instructors lack of willingness to be trained or counselled.	Ramos, <i>et al</i> (2011)
B7	Lack of interaction among instructors.	Korr, <i>et al</i> (2012)
B8	Student's Participation: BL require high level of student discipline and responsiveness.	Alebaikan, <i>et al</i> (2010)

B9	Lack of technological skills of students.	Alebaikan, <i>et al</i> (2010)
B10	Increased time devotion of students to participate in the discussion on a regular basis.	Lotrecchiano, <i>et al</i> (2013)
B11	Technologies: Internet connections.	Levin, <i>et al</i> (2013)
B12	Technologies: Limited bandwidth access.	Alebaikan, <i>et al</i> (2010)
B13	Institutions: Adaptation of BL in the traditional University Culture.	Alebaikan, <i>et al</i> (2010)
B14	Institutions: Lack of support concerning logistics including technical support and management of the learning environment.	Gedik, <i>et al</i> (2013)

Table 3. Challenges of online inquiry in blended learning (BL).

No	Challenge
C1	Students have the motivation to learn subjects/modules taught in school/class.
C2	Students know how to learn.
C3	Students have the knowledge and Know-hows.

### Methodology

Survey method is the individual sampling from a population and the association survey data collection techniques in improving the number and accuracy of responses to surveys. The survey method was adopted in this present study. Survey method is selected due to respondents' willingness to participate, flexibility of asking questions and coverage of the target populations. Thus, a questionnaire survey form consists of 17 close-ended questions was developed.

These survey forms were distributed to selected instructors teaching engineering and quantity surveying degree students in an Engineering Faculty in one Higher Educational Institution (HEI) in April/May 2019. A total responses of 13 were returned. (Response rate :  $13/24 \times 100\% = 54\%$ ). The Survey form consists of three main parts which are part A, part B and part C. Part A is the profile responder, part B is the Questions on selected Challenges in implementation in BL (B1 – B14 as indicated in Table 2) using Likert Scale (1 – Strongly Disagree; 2 – Disagree; 3 – Neutral; 4 – Agree; 5 – Strongly Agree). Part C is the questions of online inquiry in BL (C1-C3 as indicated in Table 2) using Likert Scale (1 – Strongly Disagree; 2 – Disagree; 3 – Neutral; 4 – Agree; 5 – Strongly Agree).

### Results and Discussion

In this present study, quantitative descriptive statistics included mean and standard deviation is shown in Table 3 and Table 4.

Table 3: Quantitative descriptive statistics part B -Challenges in implementation of blended learning (BL) in higher learning institutions (Instructors' Perspective)

No	Challenge	Mean	SD	Ranking (Based on Mean)
		B1	Instructors - Increased workload.	4.615385
B2	Instructors - Increased Time devotion in regular preparation time in the online environment.	4.615385	0.650444	1.5
B3	Instructors - Lack of pedagogical and technical skills	3.461538	1.126601	9
B4	Instructors - Difficulty in finding the right blend between face-to-face and online learning.	3.384615	1.043908	10
B5	Instructors - Reluctant to think and rework their practices to meet students' needs.	2.769231	0.926809	13
B6	Instructors - lack of willingness to be trained or counselled.	2.461538	0.967418	14
B7	Instructors - Lack of interaction among instructors.	3.692308	0.947331	5.5
B8	Students - Participation: BL require high level of student discipline and responsiveness.	4.307692	0.854850	3
B9	Students - Lack of technological skills of students.	3.000000	0.912871	12
B10	Students - Increased time devotion to participate in the discussion on a regular basis.	4.076923	0.640513	4
B11	Technologies: Internet connections.	3.538462	1.126601	7.5
B12	Technologies: Limited bandwidth access.	3.076923	0.954074	11
B13	Institutions: Adaptation of BL in the traditional University Culture.	3.692308	0.854850	5.5
B14	Institutions: Lack of support concerning logistics including technical support and management of the learning environment.	3.538462	1.126601	7.5

Table 4. Quantitative descriptive statistics part C- Challenges in Implementation of Blended Learning (BL) in Higher Learning Institutions (Instructors' Perspective)

No	Challenge	Mean	SD	Ranking (Based on Mean)
		C1	Students have the motivation to learn subjects/modules taught in school/class.	2.923077
C2	Students know how to learn.	2.615385	0.767948	2.5
C3	Students have the knowledge and Know-hows.	2.615385	0.69718	2.5

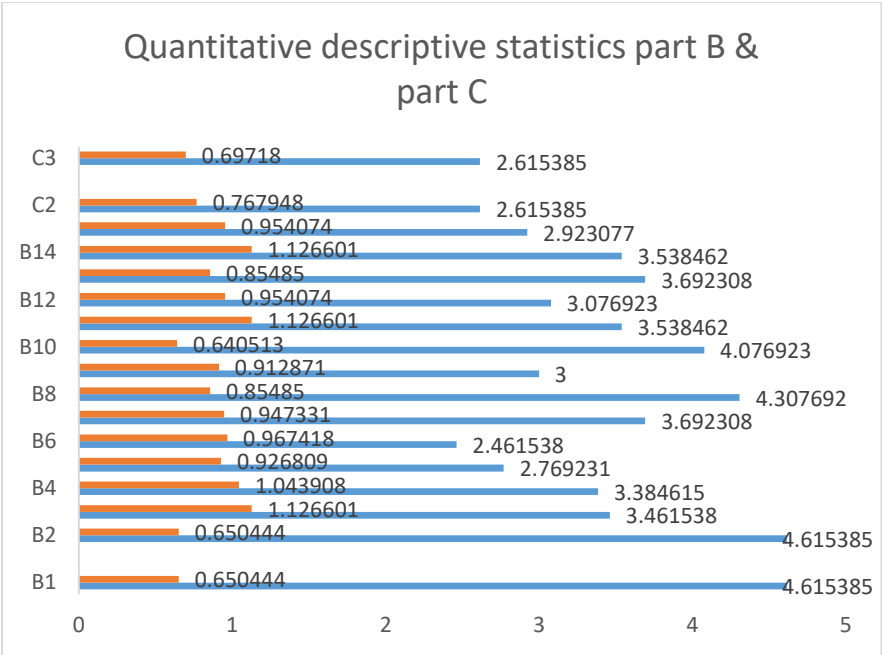


Figure 1. Quantitative descriptive statistics part B and part C.

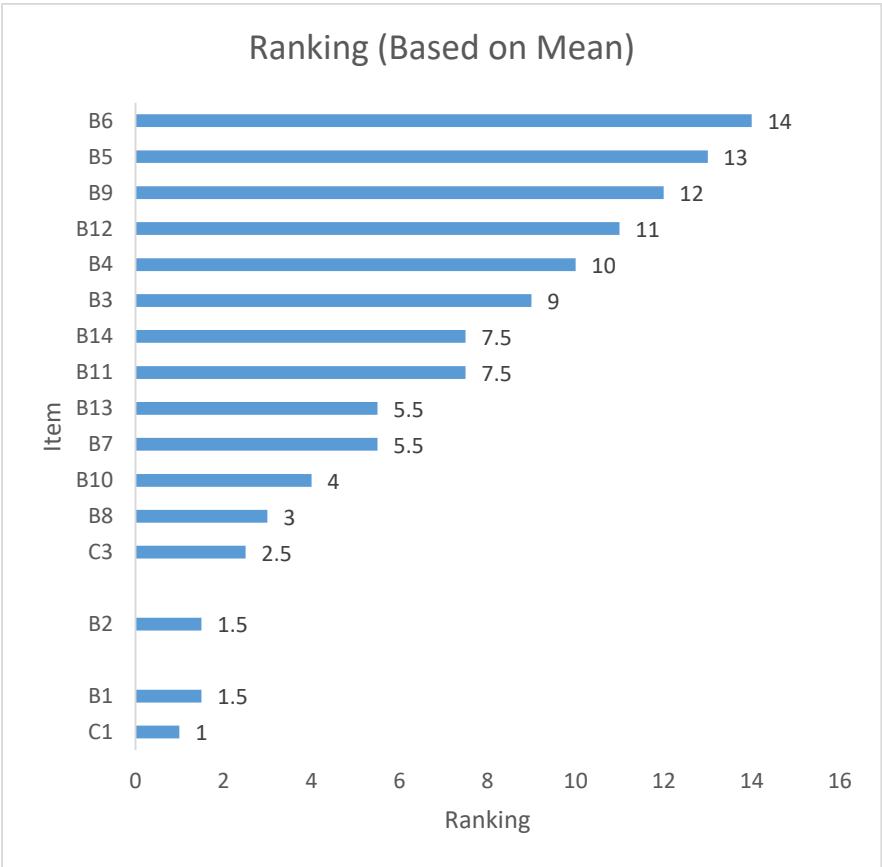


Figure 2. Ranking based on mean for part B and part C.

The results from the Table 5 and Table 6 shown the t-test (Single sample means) on Challenges in Implementation of Blended Learning (BL) in Higher Learning Institutions (Instructors' Perspective).

Table 5. T-test (Single sample means) part B - on Challenges in Implementation of Blended Learning (BL) in Higher Learning Institutions (Instructors' Perspective).

No	Challenge	Mean	SD	p-value	Remark@
		B1	Instructors - Increased workload.	4.615385	0.650444
B2	Instructors - Increased Time devotion in regular preparation time in the online environment.	4.615385	0.650444	0.0000	***
B3	Instructors - Lack of pedagogical and technical skills	3.461538	1.126601	0.0827	NS
B4	Instructors - Difficulty in finding the right blend between face-to-face and online learning.	3.384615	1.043908	0.1044	NS
B5	Instructors - Reluctant to think and rework their practices to meet students' needs.	2.769231	0.926809	0.8065	NS
B6	Instructors - lack of willingness to be trained or counselled.	2.461538	0.967418	0.9661	NS
B7	Instructors - Lack of interaction among instructors.	3.692308	0.947331	0.0109	*
B8	Students - Participation: BL require high level of student discipline and responsiveness.	4.307692	0.854850	0.0001	***
B9	Students - Lack of technological skills of students.	3.000000	0.912871	0.5000	NS
B10	Students - Increased time devotion to participate in the discussion on a regular basis.	4.076923	0.640513	0.0000	***
B11	Technologies: Internet connections.	3.538462	1.126601	0.0552	NS
B12	Technologies: Limited bandwidth access.	3.076923	0.954074	0.3881	NS
B13	Institutions: Adaptation of BL in the traditional University Culture.	3.692308	0.854850	0.0064	**
B14	Institutions: Lack of support concerning logistics including technical support and management of the learning environment.	3.538462	1.126601	0.0552	NS

Table 6. T-test (Single sample means) part C - on Challenges in Implementation of Blended Learning (BL) in Higher Learning Institutions (Instructors' Perspective).

No	Challenge
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		Mean	SD	p-value	Remark@
C1	Students have the motivation to learn subjects/modules taught in school/class.	2.923077	0.954074	0.6119	NS
C2	Students know how to learn.	2.615385	0.767948	0.9520	NS
C3	Students have the knowledge and Know-hows.	2.615385	0.69718	0.9316	NS

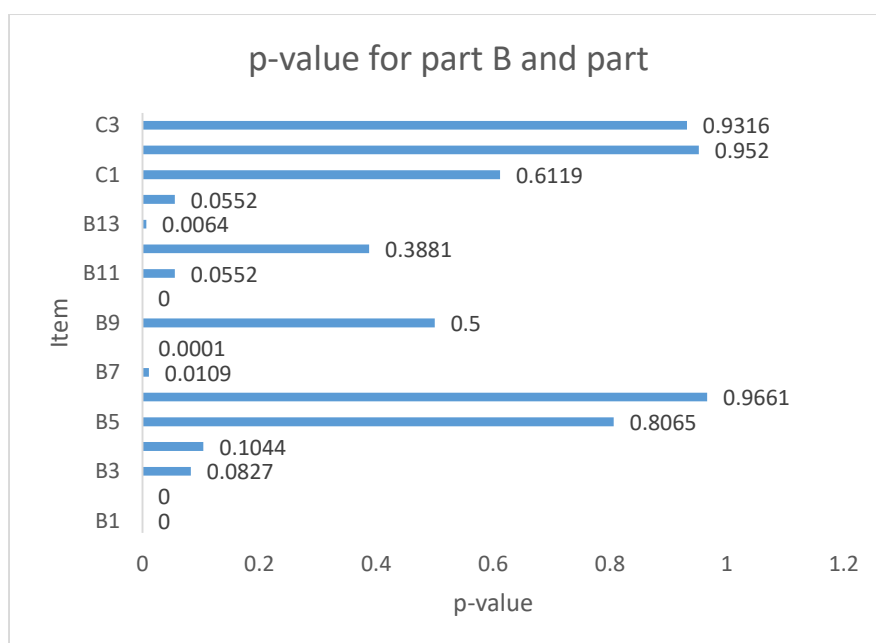


Figure 3: p-value for part B and part C.

Remarks:

p-Value	Remark
$\geq 0.05$	Not Significant (NS)
$< 0.05$	Significant (*)
$< 0.01$	Very Significant (**)
$< 0.001$	Extremely Significant (***)

Major findings from Table 3 and Table 4 (Instructors):

I. Highest 3 challenges by Ranking:

- a. B1 – Increased workload for instructors.
- b. B2- Increased time devotion by instructors in regular preparation time in the online environment.
- c. B8- BL require high level of student discipline and responsiveness.

II. Lowest 3 challenges by Ranking:

- a. B5 – Instructors are reluctant to think and rework their practices to meet students' needs.
- b. B6 – Students lack of willingness to be trained or counselled.
- c. B9 – Students lack of technological skills.

Major findings from Table 5 and Table 6 (Instructors):

- I. Four challenges are statistically extremely significant ( $p < 0.001$ )



- a. B1 – Increased workload for instructors.
  - b. B2- Increased time devotion by instructors in regular preparation time in the online environment.
  - c. B8- BL require high level of student discipline and responsiveness.
  - d. B10 – Students: Increased time devotion to participate in the discussion on a regular basis.
- II. The following challenges are not statistically significant ( $p > 0.05$ ): B3; B4; B6; B9; B11; B12; B14.

The findings supported the claims by Alebaikan and Troudi (2010), i.e. (a) increased workload for instructors (B1) and (b) BL require high level of student discipline and responsiveness (B8). On top of that, findings evidenced the claims by Lotrecchiano et al. (2013), i.e. (a) Increased time devotion for instructors in regular preparation time in the online environment (B2) and (b) increased time devotion of students to participate in a discussion on a regular bases (B10).

All the mean scores of challenges of online inquiry in BL are less than 3.0. In other words, the instructors' perception on the readiness of students is rather negative, i.e. students do not have the motivation to learn subjects / modules taught in school/ class, students do not know how to learn; and students do not have the knowledge and know hows. Our students in Malaysia need more time to accept online inquiry in BL.

### Conclusions

In conclusion, the biggest challenges to instructors are: (1) increased time devotion in regular preparation time in the online environment (B1), followed by (2) Lack of pedagogical and technical skills (B2) and lastly (3) student discipline & responsiveness (B8). Thus, based on this premise, it convinced and concluded us that such crucial information can be right guidance and assistance to unlock frontiers for preparing educators in 21<sup>st</sup> century in tertiary university.

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