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## **EVALUATION OF BLENDED LEARNING IN HIGHER EDUCATION: A CASE STUDY**

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### **Abstract**

*Higher education institutions have been challenged by major changes in their environments and new trends in technology-supported teaching and new approaches in designing their curriculum. Blended e-learning is a combination of traditional classroom learning and online learning that includes some of the conveniences of online courses without losing face to face contact. This paper presents the point of view of instructors implementing Blended learning at the college of Engineering and Petroleum at Kuwait University using a Moodle-based platform called Online Course System OCS. Technology Acceptance Module (TAM) was used as a framework to generate questions for the survey.*

### **Keywords**

Blended Learning, E-learning, LMS, Case Study, Engineering, TAM.

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### **1. Introduction**

Today, there is an awakening for higher education into using modern technologies in education. The education transfers from the face to face learning to the online learning. Blended

learning comes in between, it is a transitional stage between the face to face learning and the online learning.

Instructors differ in their point of view in this kind of learning (Gawande, 2016). Some instructors believe that blended learning is only a transitional stage to reach full online learning. Others think blended learning is the best practice provided you implement the proper blend. And some instructors are rejecting any learning methods other than face to face traditional learning (McCullough & Micklewright, 2011).

In this study, we measure the acceptance level of instructors. using OCS as a blended learning tool to teach at the college of Engineering and Petroleum at Kuwait University. OCS is implemented using Moodle (Moodle, 2017) Learning Management System (LMS).

This paper is organized as follow: first, we will define blended learning as described in the literature as well as its advantages, disadvantages, and its impact on students. Next, we will discuss the methodology of this study followed by data analysis and finally the conclusion and future work.

## **2. Background**

Blended learning is a philosophy to blend traditional face to face learning with e-Learning so that students will have more than one source of instructions along with the face to face in the classroom will also be able to get instructions online at anytime from anywhere not necessary during classroom (Hilliard, 2012).

Blended learning is not considered to be a new concept but many failed to properly implement it due to the lack of some instructors to properly implement these tools.

Blended learning excels over online learning in the sense that it enables students to benefit from all the e-learning tools at the same time been exposed to face to face social interactions in the classroom.

Higher education institutions have more space to implement blended learning into their curriculum either by introducing new activities (Barik et al., 2013; Ishikawa, Akahane-Yamada, Kondo, Hatakeda, & Wada, 2012) or into the programming courses (Djenic, Krneta, & Mitic, 2011) (Gecer & Dag, 2012) as an implementation, or general online activity (Gecer & Dag, 2012).

## **2.1 Obstacles and challenges faced when implementing blended learning.**

Blended learning as viewed by many instructors comes in three categories depends on the amount and intensity of the blend. Alammary (Alammary, Sheard, & Carbone, 2014) viewed Blended learning as low-impact, medium-impact or high-impact blend depends on the factors that influence the selection of blended learning design approaches. Other researchers address the “Blended” course model based on the various skills required by teachers and experience as prerequisites to teaching a hybrid course (Stern, 2009).

Time and change of habit are two major challenges facing teachers using blended courses. Instructors need more time to spend on online interaction and class assistance might extend even after working hours. Interest and motivate students by the change of habit due to the rapid change in the way teacher used to teach using different technologies and methods that are more suited for today’s student (Gecer & Dag, 2012). Teachers also need time to learn basic computer and internet skills, experience with the course management system, experience with, or at least exposure to, a course website, support from mentor instructors, and sufficient time to invest in a blended course development, and a commitment to participation in the online community once a course is created.

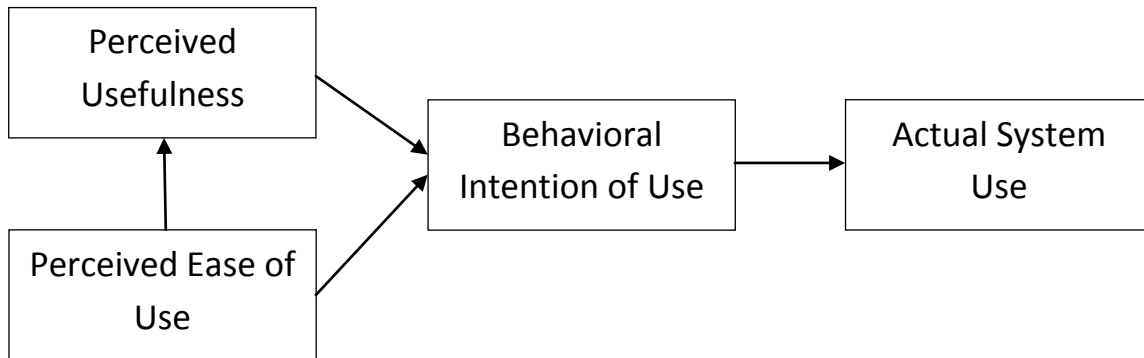
For an instructor to be successfully in their blended courses they must learn new skills, they must help students to become more independent and self-reliant learners. Student’s challenges can be low abilities with technology, time management and study skills (Kaleta, Garnham, & Aycock, 2003).

Finding the proper blend depends on the topic given, students’ background of technology as well as instructors’ readiness. The technology and tools differ from time to time, and what was available and sound 10 year ago, might not be valid now. Hence, the proper blend is an ever-changing process that will keep changing if new technology emerges and student’s expectation grows.

## **3. Methodology**

This is an empirical study using a quantitative approach to measuring the acceptance of instructors to using blended learning tools into their teaching at the college of Engineering and Petroleum.

I have used the technology acceptance module (TAM) as was proposed by (Davis, 1989), (Tselios, Daskalakis, & Papadopoulou, 2011) and (Venkatesh, Morris, Davis, & Davis, 2003) as in Figure 1. I have proposed the following hypothesis and questions to better describe my problem at hand as shown in Table 1.



**Figure 1:** *Technology Acceptance Model (TAM) Source: Davis et. al (1989), Venkatesh et. al (2003).*

**Table 1:** *Hypothesis constructs and questions.*

Constructs	Question	Reference
<b>Perceived Usefulness (PU)</b> PU1 PU2 PU3	Using OCS gives me control over knowing who is using the course material I am uploading. OCS makes it easier to do my job (announcing to students, distribute HW, ...etc) I find OCS useful in supporting my teaching.	PU2, (Davis, 1989) PU 13 (Davis, 1989) PU14 (Davis, 1989)
<b>Perceived Ease of Use (PEOU)</b> PEOU1 PEOU2	I find it easy to add new materials on OCS Overall I find OCS system easy to use.	New construct PU14 (Davis, 1989)
<b>Attitude Towards</b>		

Use (ATT)		
ATT1	The idea of using OCS in my class is very wise.	ATT2,(Tselios 2011)
ATT2	Using OCS would be very pleasant.	ATT3(Tselios, 2011)
<b>Behavioral Intention (BI)</b>		
BI1	I intend to use OCS as a tool in my future classes	BI3(Tselios, 2011)

And finally, the demographic information collected was the following:

- Rank: Assistant, Associate, or Professor.
- Gender: M/F
- How many years you've been using OCS: 1 or less, 2-3, 4-5, 6 or more
- Department: select one of eight different departments.
- Did you take a workshop course before using OCS (Yes/No)

#### 4. Results

The study was conducted by designing and implementing an online survey (Mutawa, 2017) and distributed to all doctors currently teaching using OCS at Fall semester 2016/2017 at the college of Engineering and Petroleum. A *bit.ly* link was provided to check on a number of hits collected. Only 23 instructors opened the link using their emails or social network communication, and among them, 20 responded by filling the survey (86% interaction rate), Table 2 shows participating doctors from different departments.

**Table 2:** Participating doctors from each department with percentage

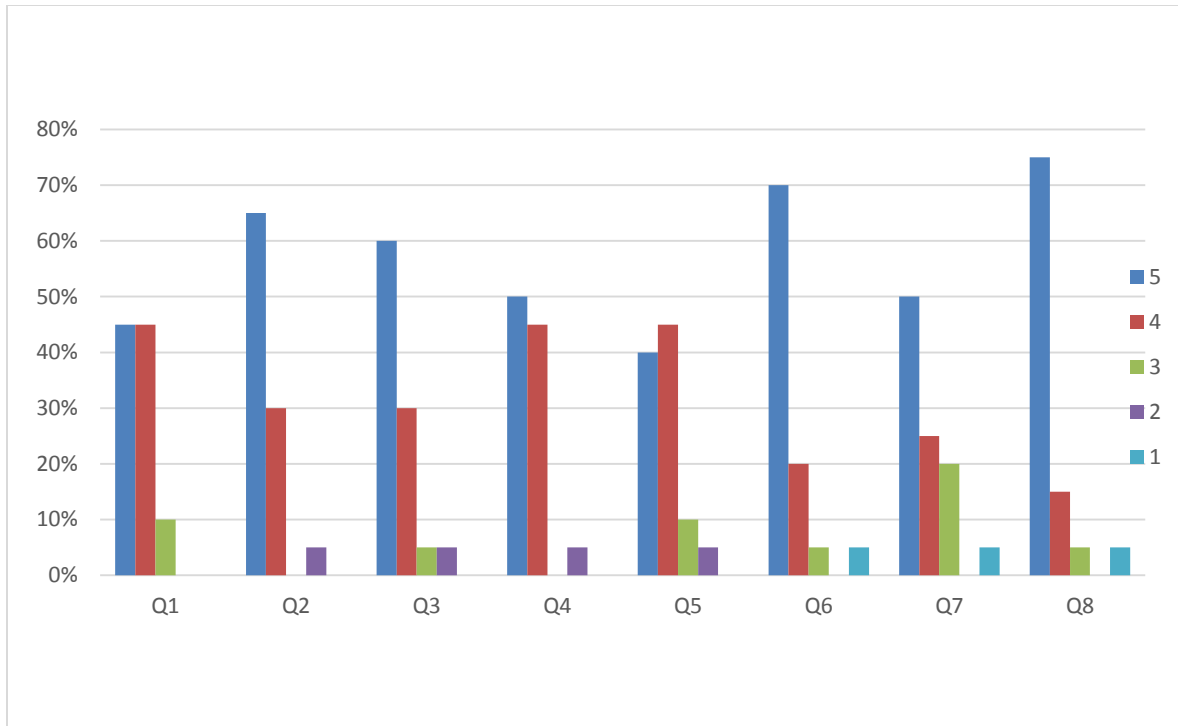
Department	Participants	%
Chemical Engineering	1	5%
Civil Engineering	2	10%
Computer Engineering	7	35%
Electrical Engineering	3	15%
Industrial and Management System Engineering	1	5%
Mechanical Engineering	4	20%
Petroleum Engineering	1	5%

Most participating instructors were an assistant (65%) then associate professor (25%) and the remaining were a professor (10%), most of which were males (85%). Most of the instructors used OCS for 6 or more years (55%), 25% of them used it 4 to 5 years, 15% used it 2 to 3 years and only 5% used it for less than a year.

Most instructors (70%) took a workshop course on how to use OCS, Table 3 below shows the collected results for the 8 constructs based on the online survey Figure 2 below summarize the results in a graphical format.

**Table 3:** Survey questions with the percentage of answers to each question.

<b>Question</b>	<b>Totally Agree (5)</b>	<b>Agree (4)</b>	<b>Don't Know (3)</b>	<b>Disagree (2)</b>	<b>Totally Disagree (1)</b>
Q1) Using OCS gives me control over knowing who is using the course material I am uploading.	45%	45%	10%	0%	0%
Q2) OCS makes it easier to do my job (announcing to students, distribute HW, ...etc)	65%	30%	0%	5%	0%
Q3) I find OCS useful in supporting my teaching.	60%	30%	5%	5%	0%
Q4) I find it easy to add new materials on OCS	50%	45%	0%	5%	0%
Q5) Overall I find OCS system easy to use.	40%	45%	10%	5%	0%
Q6) The idea of using OCS in my class is very wise	70%	20%	5%	0%	5%
Q7) Using OCS would be very pleasant	50%	25%	20%	0%	5%
Q8) I intend to use OCS as a tool in my future classes	75%	15%	5%	0%	5%



**Figure 2** Survey results on the 8 constructs with values (5) totally agree and (1) totally disagree.

## 5. Analysis and Conclusion

Despite the low participation rate by the faculty instructors, the collected results are promising and would promote further investigation. Although 35.3% of instructors who participated in this survey are using OCS did not take any prior workshop or training, most of the constructs in Table 3 had either totally agreed or agree on answers. Hence are positively supporting the original hypothesis of the acceptance level of instructors using the OCS system at the college of engineering and petroleum at Kuwait University.

Given the current data, the author recommends future investigation and expanding the scale of the collected data to apply PLS analysis based on TAM model.

The author would also recommend investigating the student point of view of the blended learning experience as well in future work.

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