Faculty members' attitudes towards the use of the Blackboard System

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Abstract

This research was conducted to explore the attitudes of faculty members in the Colleges of Applied Sciences in the Sultanate of Oman towards the Blackboard System. A questionnaire was distributed to all faculty members in these colleges eliciting their perceptions about Blackboard and its uses in teaching. Factor Analysis using SPSS was used for data reduction and for identifying the constituents of faculty members' perceptions. Five attitudinal constructs were identified: Perceived Usefulness (PU), Perceived Ease of Use (PEU), Self-Efficacy (SEF), Enjoyment (ENJ), and Behavioral Intention (BI). Further analysis revealed that, in general terms, faculty members perceived the Blackboard System as being useful in teaching and easy to learn to use; they had high self-perceptions about their ability in using it and had a quite reasonable level of intention of using it in their teaching. However, faculty members still perceive the system as difficult to use and their level of enjoyment in using it is low. Further research was recommended to explore the interaction between these constructs and, in particular, the effect of PU, PEU, SEF, and ENJ on BI and on the actual use of the Blackboard system.

Keywords: Colleges of Applied Sciences; Faculty members; Perceptions; Blackboard

Introduction

This paper is a part of wider and on-going research efforts that aim to explore the implementation of Blackboard in the Colleges of Applied Sciences in the Sultanate of Oman. The Colleges of Applied Sciences is a network of six colleges under the supervision of the Ministry of Higher Education in Oman. They offer degree programs in Communication Studies, Design, International Business Administration, Information Technology, Biotechnology, Engineering and Education. A previous paper published in the research series mentioned above investigated the actual use of Blackboard by faculty members in these Colleges and the factors that affect such usage. Despite the fact that Blackboard was implemented in these colleges as far back as 2007, it has consistently been underutilized by faculty members; the afore-mentioned paper found that Blackboard was mainly used for low-order functions such as for posting materials and making announcements. Higher-order functions which support interactive teaching and learning, such as the use of blogs, discussion boards and virtual classrooms are still underutilized.

Technology constraints, including limited access to Blackboard due to a limited and slow internet connection and frequent malfunctioning of the system are major factors affecting Blackboard usage. Moreover, limited experience and unfamiliarity with the different functions of Blackboard on the part of faculty members, attributed to insufficient support and training, are also great barriers to effective utilization of the system. Together, all these factors seem to have created states of frustration and negative feelings among faculty members about the system thus leading to their unwillingness to use it in their teaching (Al Naibi et al, 2015).

It has been argued that the attitude and mindset of faculty members in any given academic institution are among the characteristics that affect their uptake of information and communications technology (ICT) and their embracement of e-learning, as well as their competency in ICT and their teaching style (Webster and Hackley 1997). Thus, faculty members who do not recognize the benefits and values of ICT and those with limited confidence in using it are not expected to make use of it in their teaching and may even avoid using it altogether (Ertmer, 1999, Snoeyink and Ertmer, 2001, Becta, 2004, Al-Senaidi, et al, 2008).

Research on attitudes has suggested that instructors' attitudes towards computer and internet technology consist of three dimensions: affective, cognitive and behavioral. The affective dimension resembles the perceived enjoyment towards using technology, while the cognitive dimension encompasses instructors' perceived usefulness of technology and their self-perceptions about their ability to use it. The behavioral facet simply refers to instructors' intention to use technology (Liaw, 2002, Liaw& Huang, 2003). Research has also attested that the behavioral dimension is influenced by the other two dimensions - meaning that positive attitudes toward technology lead to greater behavioral intention towards using it, which in turn affects subsequent actual use (Davis, 1989, Davis et al, 1989, Yi and Hwang, 200, Liaw and Huang, 2003, Vrielink, 2006, Ahmed et al, 2010, Vrielink, 2013).

This paper aims to probe into the feelings of faculty members in the Colleges of Applied Sciences about Blackboard and the main constituents of these feelings. The identification of these feelings is an important step towards helping faculty members to utilize the system in their teaching (Al Naibi, et al, 2015) and in facilitating the creation of appropriate e-learning environments for teaching and learning (Liaw et al, 2007).

Having stated this, the current research is guided by the following research question:

What are the perceptions of faculty members in the Colleges of Applied Sciences in Oman about Blackboard and its uses in teaching?

Research Instrument

A questionnaire was designed to collect data for this research. Besides the first section which elicited demographic information about the participants (i.e. gender, age, academic rank, teaching experience, specialisations and the specific College where they were appointed), the questionnaire contained 24 attitudinal statements eliciting from faculty members their perceptions and feelings about Blackboard and its uses for teaching and learning. Participants were instructed to express their opinions about each statement using a five-point Likert-scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree).

Research Population and Research Sample

The questionnaire was posted online through the Blackboard system to 597 faculty members in the first semester of the Academic Year 2014/2015. However, the actual sample consisted of 257 (43.05%), after removing the incomplete questionnaires and those which were detected as outliers - these modifications being effected in order to avoid misleading inferences about the population.

Data Analysis

To answer the research question, Explanatory Factor Analysis (EFA) using SPSS was utilised. EFA was used to clean the data and to club the variables into their distinct factors (constructs) based on the interrelationship or correlations among the variables (Hair, et al., 2010). All the underlying assumptions for factor analysis were considered as means of checking the suitability of data for factor analysis. This resulted in the refining of the variables so as to exclude all variables that caused violation of these assumptions like highly correlated variables (above 0.8) and variables that fell outside the range of normal distribution. With regard to the adequacy of sample, the research sample of 257 participants was regarded as being sufficient for factor analysis as the recommended ratio was 5:1 (i.e. 5 respondents or observation to one variable, Hair, et al, 2010). Yet, although sample adequacy is assumed by this number of participants, the adequacy principle was nevertheless tested by Kaiser-Meyer-Olkin (KMO) in SPSS and found that KMO value for determining sample adequacy was 0.87 which is greater than the recommended value of 0.50, thus indicating the adequacy of the current research sample for EFA.

Results

Table1presents the final results of EFA after excluding variables that cross-loaded on more than one factor and those variables with loading value of less than 0.5. The final scale consisted of 20 items yielding .89 Cronbach's Alpha. Five factors were extracted using Principal Component Analysis of extraction and Verimax rotation. The extracted factors explain 65.6% of the total variance in the data. Cronbach's Alpha for each extracted factor is within the acceptable value.

Table 1. Item Loadings and Factor Reliability

	Factors	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
	Reliability	.898	.742	.797	870	.634
.1	Item 24. Using the Blackboard system enhances my effectiveness in teaching.	.840				
.2	Item 22. Using the Blackboard system would improve my performance in teaching.	.833				
.3	Item 25. I find the Blackboard system to be useful in teaching.	.792				

.4	Item 26. The Blackboard system complements and enhances my face to face classes.	.776				
.5	Item 19. Learning to use the Blackboard system is easy for me.		.679			
.6	Item 35. All features provided in the Blackboard system are user friendly.		.656			
.7	Item 33. I tried to learn how to use the Blackboard system but found it too difficult.		.633			
.8	Item 20. I find it easy to get the Blackboard system to do what I want to do.		.627			
.9	Item 34. I need to attend more workshops on the Blackboard system before I can use it with my students.		.607			
.10	Item 36. I feel I have the ability to upload and download documents and files.			.747		
.11	Item 39. I feel I have the ability to create and post announcements.			.714		
.12	Item 37. I feel I have the ability to set up a discussion board.			.656		
.13	Item 32. I think I have the ability to use the Blackboard system.			.645		
.14	Item 38. I feel I have the ability to use the Blackboard system to set up quizzes and exams.			.535		
.15	Item 17. Using the Blackboard system is pleasant.				.705	
.16	Item 16. I have fun using the Blackboard system.				.702	
.17	Item 18. I find using the Blackboard system to be enjoyable.				.679	
.18	Item 30. I intend to use the Blackboard system to set up quizzes and exams for my students.					.816
.19	Item 31. I intend to set up a Forum, Discussion Board and a Chat Room.					.703
.20	Item 29. I intend to use the SafeAssign function in the Blackboard system.					.597

Attitudes' constructs

By looking at Table1above, it can be said that faculty members' perceptions fall into five categories: (1) perceived usefulness (PU) of Blackboard, (2) perceived ease of use of Blackboard (PEU), (3) perceived ability to use Blackboard (Self-Efficacy- SEF), (4) level of enjoyment in using Blackboard (ENJ), and (5) behavioral intention (BI) to use Blackboard for teaching. The following paragraphs discuss these five attitudinal constructs.

It should be mentioned here that the mean scores of participants' responses to each item are used to understand their level of agreement to each statement. Since the scale consisted of 5 points (i.e. SD, D, N, A and SA), a mean score of 3.5 and above would be regarded as indication of an overall agreement, as statistically it rounds to 4; i.e. it is closer to Agree than to Neutral.

1. Perceived Usefulness

Table 2. Mean scores and Standard Deviations of participants' responses to items related to Perceived Usefulness

	N	Mean	Std. Deviation
Item 25. I find the Blackboard system to be useful in teaching.	252	3.68	.929
Item 22. Using the Blackboard system would improve my performance in teaching.	252	3.45	.933
Item 24. Using the Blackboard system enhances my effectiveness in teaching.	253	3.38	.959
Item 26. The Blackboard system complements and enhances my face to face classes.	254	3.30	.939
Overall mean	***3.44***		

When looking at the overall mean score of the four items in this category (3.44), it is clear that faculty members still have a low perception about the usefulness of Blackboard. However, by looking at the mean score of each individual statement, the result tends to be more appealing because in general, faculty members do believe that Blackboard is useful in teaching (mean score 3.68). It is quite reasonable to argue that faculty members at this stage of limited use of Blackboard, as discussed in the previous research (Al Naibi et al, 2015), may not be able to give a valid opinion about the power of Blackboard in enhancing their performance and the effectiveness of their teaching. This leads to the proposition that when those factors hindering the use of Blackboard in the Colleges of Applied Sciences are addressed and that faculty members are enabled to a more sophisticated use of Blackboard, their perception about the usefulness of Blackboard would hopefully be elevated.

2. Perceived Ease of Use

Table 3. Mean scores and Standard Deviations of participants' responses to items related to Perceived Ease of Use

	N	Mean	Std. Deviation
Item 19. Learning to use the Blackboard system is easy for me.	252	3.82	.835
Item 20. I find it easy to get the Blackboard system to do what I want it to do.	254	3.42	.928
Item 35. All features provided in the Blackboard system are user friendly.	252	3.19	.967
Item 34. I need to attend more workshops on the Blackboard system before I can use it with my students.	252	3.18	1.14
Item 33. I tried to learn how to use the Blackboard system but found it too difficult.	254	2.17	.916
Overall Mean	***3.16***		

Apart from the first and last items, it can be seen from Table 3 that the mean scores of the participants' responses are below 3.5. This indicates that faculty members do not perceive Blackboard as an easy tool to use. Moreover, in the questionnaire there is a straightforward statement eliciting from faculty their opinion about the ease of using Blackboard (*I find the Blackboard system easy to use*). Although this statement was among the statements that did not satisfy the assumptions of factor analysis and was thus removed, when considered in isolation it did nevertheless reveal the same result, as the mean score of this item is 3.13.

However, the BB system seems not to be that difficult for faculty members to learn how to use. This is depicted in the mean score of the first item in Table.3 above which elicited from participants their opinion about the ease of learning how to use Blackboard (mean 3.82) and in the mean score of the last item (2.17) which resembles disagreement to the statement indicating that faculty members do not regard learning to use Blackboard as being a difficult task. This highlights the importance of training for faculty members in the use of Blackboard, which is still limited - as has been shown in previous research (Al Naibi et al, 2015). These feelings should be utilized because they show indirectly the readiness of faculty members to learn to use the system.

3. Perceived ability to use Blackboard (Self-Efficacy)

Table 4. Mean scores and Standard Deviations of participants' responses to items related to Self-Efficacy

	N	Mean	Std. Deviation
Item 39. I feel I have the ability to create and post announcements.	253	4.28	.788
Item 36. I feel I have the ability to upload and download documents and files.	251	4.23	.748

Item 32. I think I have the ability to use the Blackboard system.	251	4.18	.794
Item 38. I feel I have the ability to use the Blackboard system to set up quizzes and exams.	251	3.49	.993
Item 37. I feel I have the ability to set up a discussion board.	254	3.46	.988
Overall Mean	**3.93**		

Table 4 shows that the mean score of participants' responses to the items in this category is above 4 (between Agree and Strongly Agree), indicating the faculty members in the Colleges of Applied Sciences have high self-perception about their ability to use Blackboard in general and some of its applications in particular - the exceptions to the latter being in the areas of the functions involved in the setting up of quizzes and exams (mean 3.49), and in the setting up of discussion boards (3.46). This result is in agreement with the results of previous research (Al Naibi et al, 2015) where it was found that Blackboard was underutilized by faculty members especially in those features related to using Blackboard for virtual communication and virtual classrooms. Again an overall mean score of 3.93 is a positive indication of faculty members' readiness to use Blackboard provided that the issues relating to resources, technology and support and training are resolved. This clearly suggests that limited use of Blackboard is not only due to inability on the part of the faculty members but to there being other contributory factors hindering the effective utilization of the system.

4. Perceived Enjoyment

Table 5. Mean scores and Standard Deviations of participants' responses to items related to Perceived Usefulness

	N	Mean	Std. Deviation
Item 17. Using the Blackboard system is pleasant.	253	3.41	1.018
Item 18. I find using the Blackboard system to be enjoyable.	252	3.29	1.025
Item 16. I have fun using the Blackboard system.	254	3.04	1.127
Overall Mean	3.25		

Table 5 shows that the mean scores of participants' responses to the statements in this category, as well as the overall mean score, are slightly above 3 (Neutral) indicating that Blackboard still does not appeal to faculty members (however, this feeling may not be the case for all of them as is indicated by the high Standard Deviations). This can be explained by the fact that there are, at this stage, many factors affecting the use of Blackboard in the Colleges of Applied Sciences in Oman, especially those factors related to technology infrastructure and support and training, all of which may create some frustration among faculty members when using Blackboard (Al Naibi et al, 2015).

5. Intention to Use Blackboard

Table 6. Mean scores and Standard Deviations of participants' responses to items related to Perceived Usefulness

	N	Mean	Std. Deviation
Item 29. I intend to use the SafeAssign function in the Blackboard system.	251	4.02	.881
Item 30. I intend to use the Blackboard system to set up quizzes and exams for my students.	252	3.34	.970
Item 31. I intend to set up Forums, Discussion Boards and Chat Rooms.	254	3.13	.991
Overall Mean	3.50		

By looking at the overall mean score of these three items in this category (Table 6), it can be said that in general faculty members have the intention to use Blackboard (mean 3.50). This is supported by the mean score of a more direct statement in the questionnaire (*I intend to use the Blackboard system in my teaching.*); although the statement was among the statements that did not satisfy the assumptions of factor analysis and was thus removed from the data set, when it is considered in isolation it reveals an encouraging result about faculty's intention to use Blackboard (mean 3.74).

While they have reasonable intentions to use Blackboard, faculty members' intentions to use specific functions of Blackboard, such as using Blackboard for setting up quizzes and exams (mean 3.34), and using the system for setting up Forums, Discussion Boards and Chat Rooms (mean 3.13) seem to be unsatisfactory. The mean score of these two items affected the overall mean score of this category. Contrariwise, the mean score for the item related to the intention to use SafeAssign was the highest (4.02). This indicates the popularity of SafeAssign among faculty members in relation to the other functions of Blackboard, a finding which goes in line with the results of a previous paper in which it was found that Blackboard higher-order functions which support interactive teaching and learning, such as the use of blogs, discussion boards and virtual classrooms are not utilized (Al Naibi, et al, 2015).

Conclusion and discussion

The results of this research reveal that faculty members' attitudes towards the Blackboard system are of five constructs: (1) Perceived Usefulness, (2) Perceived Ease of Use, (3) Self-Efficacy, (4) Enjoyment, and (5) Behavioral Intention. Results show that faculty members still do not possess those positive feelings about Blackboard as the overall mean score of all constructs is below 3.45, as shown in Table 7 below:

Table 7. Mean scores of individual attitudes' constructs and overall mean scores of all constructs

	PU	**PEU**	**S-EFF**	**ENJ**	**BI**	**OVARALL**
Mean	3.44	3.16	3.93	3.25	3.50	3.45

However, when each construct is considered individually results tend to be more promising. With reference to Perceived Usefulness - although faculty members do not have full perception about the usefulness and power of Blackboard in improving their performance and enhancing the effectiveness of their teaching, they tend to have a reasonable perception, in general terms, about the usefulness of Blackboard in teaching. On this particular point, it can be argued that while faculty members subscribe to the concept of technology as having proved itself as being useful in all aspects and functions of life, they would thus consider it as going without saying that there would consequently be, from such technological endeavours, a beneficial spill-over effect into the teaching and learning processes.

As regards PEU, faculty members perceived that, at this stage, Blackboard was a difficult tool to use in teaching. This would be expected due to insufficient training and support, as well as to other constraining factors identified by previous research (Naibi et al, 2015). The situation would hopefully improve when these factors are addressed and resolved as faculty members do not believe that Blackboard is difficult to learn about – a positive attitude that needs to be harnessed and built upon.

In terms of Self-Efficacy, faculty members have reasonable self-perceptions about their ability to use Blackboard. This positive perception needs to be utilized because when having high self-perception of a given system, users would be expected to have more determination to adopt it and put more effort and attempts into using it (Salomon, 1984). On top of this, faculty members, as mentioned above, do not believe that Blackboard is difficult to learn about. All this means that faculty members in the Colleges of Applied Sciences need to have real opportunities to practice using Blackboard and be provided with the required support and training. All these constraining factors seem to have an effect on Enjoyment; due to these factors, faculty members have a low perception of enjoyment toward using Blackboard due to the frustration caused by these factors, as mentioned above.

In terms of faculty members' intention to use Blackboard, this seems to be acceptable in general, but when different functions of Blackboard are considered individually, they tend to have low intentions. Again, this might be justified by faculty's limited knowledge about and competence in using different functions of Blackboard.

In short, faculty members' perception about the use of Blackboard is reasonably positive. This would hopefully improve when they are given more hands-on-experience in the use of the tool in their actual classrooms, and when other hindering factors (resources and technology constraints) are resolved. This would provide opportunity for faculty members to identify and recognize the benefits of Blackboard and to develop the required skills and competencies. Also, this would hopefully lead to the elevation of faculty perceived enjoyment, and consequently, their intention to use Blackboard. Further research is required to test the interaction between these constructs and, in particular, the effects of these constructs on Behavioral intention and actual use of the Blackboard system.

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