

**Editor's Note:** Blending learning combines relevant aspects of face-to-face instruction and e-Learning to achieve educational objectives. It is accepted favorably by teachers and students as a way to improve teaching and learning.

## **Faculty-Staff Attitudes towards using Blended Learning in Architectural Design Courses in Bahrain**

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### **Abstract**

Architectural Design is a core course in the study plan for the architecture degree. The aim of this study is to determine faculty attitudes towards using blended learning in architectural design courses including the use of drawings and presentation programs. An instrument (scale) was designed to evaluate faculty attitudes and 34 concepts. This scale was implemented to a sample of 21 faculty members in architecture departments that teach architectural design in different universities in Bahrain. The results show positive attitudes for faculty toward using blended learning in teaching architectural design courses. The mean rate was 77.5% and the results show that 80.9% of the sample use Auto CAD and Photo Shop. Results confirm no significant difference in the scale between the male and female faculty members.

**Keywords:** attitudes, blended learning, architectural, design courses

### **Introduction**

Teaching architectural design nowadays depends on technology such as computer programs to design a project easily and quickly. e-Learning can solve some of the course problems, but some aspects of the subject require physical contact between students and the instructor for project design and criticism; Therefore, blended learning is one of the learning ways for this course.

Blended learning appears to offer a great deal when used to enhance teacher education programmes. It can bring together students from all locations and a range of backgrounds and can provide a media-rich, collaborative, personalized and interactive learning environment. Its affordances remain possibilities until given substance within the confines of a particular programme (Simpson & Anderson, 2009)

### **Study Objectives**

The following objectives were developed in order to accomplish this study:

1. To determine which technology used by the faculty staff.
  - Electronic mail, Chat rooms
  - Searching the Internet
  - Architectural programs (Auto cad, 3Ds max ...etc)
  - Materials design, Web page design
  - Typing and maintaining lesson plans
  - Office work: student records
  - Assigning and checking reports (e.g., word, excel)
  - Homework via e-mail

2. To determine the using of any drawing programs and Architectural used programs (such us: Auto cad, 3Ds max ...etc)
3. To determine the teachers attitudes toward the used Blended Learning in Architectural design courses.
4. To determine the relationship between Male and Female attitude toward used Blended Learning in Architectural design courses.
5. To determine faculty staff need for blended learning concept.

## **Framework**

Blended learning means using more than one tool to reach learning goals, which blend traditional learning and the tools of e-learning.

The term blended learning is used to describe a solution that combines several different delivery methods, such as collaboration software, Web-based courses, EPSS, and knowledge management practices (Valiathan, 2002)

Blended learning is the most logical and natural evolution of our learning agenda. It suggests an elegant solution to the challenges of tailoring learning and development to the needs of individuals. It represents an opportunity to integrate the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning. It can be supported and enhanced by using the wisdom and one-to-one contact of personal coaches.(Thorne, 2003, p.2)

Some studies define blended learning programs as mixes of various event-based activities, including face-to-face classrooms, live e-learning, and self-paced learning. This often is a mix of traditional instructor-led training; synchronous online conferencing or training, asynchronous self-paced study, and structured on-the-job training from an experienced worker or mentor (Thorne, 2003).

## **Blended Learning Models**

There are three models of the blended learning (Valiathan, 2002):

- Skill-driven learning, which combines self-paced learning with instructor or facilitator support to develop specific knowledge and skills
- Attitude-driven learning, which mixes various events and delivery media to develop specific behaviors
- Competency- driven learning, which blends performance support tools with knowledge management resources and mentoring to develop workplace competencies.

Among the previous models the current study is interested in the second model, which explain the technology used in the Table 1.

**Table 1**  
***Attitude-Driven Blended Learning Plan***

	<b>Technology-based techniques</b>	<b>Non-technology based techniques</b>
<b>Announcement</b>	LMS or email push	flyer, email, or phone
<b>Overview session</b>	email , Webinar	traditional classroom and studios
<b>Self-paced learning</b>	Web-based tutorial ,e-books simulations	articles, magazines, books, workbooks with decision tables
<b>Query resolution</b>	email ,instant messenger	face-to-face meeting with expert
<b>Assessment</b>	simulations	print test
<b>Collaborative session</b>	Webinar ,chat	role-playing with peers
<b>Practice</b>	simulations	role-playing with peers
<b>Feedback and closing session</b>	Email, Webinar	traditional classroom

The architectural design courses are the most important practical courses in the department of architecture and architectural engineering, and if we can use this type of learning in these courses, that means we solve the most important node in the using of this type of learning in such courses and departments.

#### ***Types of blended learning levels***

There are many types of blended learning levels which start from the simplest level to the best one; these levels can be shown as (Singh, 2003):

1. Blending Offline and online Learning:
2. Blending Self-Paced and Live, Collaborative Learning:
3. Blending Structured and Unstructured Learning:
4. Blending Custom Content with Off-the-Shelf Content
5. Blending Learning, Practice, and Performance Support

Using of the blended learning is not depend one of the previous levels; it can mix between more than one level; that will be depended on the course objectives, students' needs, scientific approach and the learning environments.

## Dimensions of Blended Learning Environments

There are seven dimensions of blended learning environments found across the six cases: the teacher, online, face-to-face and self-study dimensions, the resource-based learning dimension, the institutional support dimension and the organizational context dimension. (Oliver, 2002, p.246)

Latchem and Jung (2010) explain the benefits that can be reached by blended learning according to the learning purpose, as shown in Table 2.

**Table 2**  
***Purposes and benefits of various blended learning approaches:***

<b>Purposes</b>	<b>Benefits</b>
Providing multimedia content and learning resources	Students use the computer software wherever and whatever. They can submit further requirements, information and links Students develop their skills and understandings in uses of ICT
Providing asynchronous or Synchronous online interaction	Tutors and students alike can debate issues and share ideas, drawing on their own experience, viewpoints and readings Students with each other and their tutors
Providing opportunities for face-to-face teaching and interaction	Students can develop understandings, gain confidence and form bonds with their classmates and tutors Students can better identify with the providing institution or organization Students can engage in 'real-world' learning activities
Providing tutoring and mentoring	Support can be one-on one or group-focused Students feel encouraged and supported in their learning Students are shown that their teachers are interested in them and ready to help them in their learning
Assessing student progress and learning outcomes	Combining these different modalities achieves efficiency and effectiveness in delivering and receiving student assignments and tracking and assessing patterns in students' learning, performance and attitudes Students receive timely Feedback `124-125

**Khine and Lourdasamy (2003).** On the whole the attempt to combine face-to-face instruction, multimedia viewing and online discussion to deliver a module in the teacher education programme received positive feedback from the trainee teachers. It was found that this approach is beneficial when:

- Face-to-face tutorials are activity-based.
- Materials given in the CD-ROM are authentic and contextually relevant; and
- Marks are allocated to encourage optimum online participation.

## Previous Studies

According to the previous studies which approved the effective of the blended learning to achieve the different learning outputs:

1. Charlier's & Platteaux, (2005) reach to many results; first result. All the students adopt a deep learning approach. They focus on understanding and on relations with their own practices and projects. The second main result is that the students developed their teaching competencies. This research shows the effectiveness of certain choices that are characteristic of the hybrid environments for the training of the teachers. It allows the establishment of precise relations between a whole of conditions of formation, the individual characteristics of the teachers and some effects on the learning.
2. The study of Yushau (2006) examines the influence of blended e-learning on students' attitude towards mathematics and computers. The result indicates that the subjects have positive attitude towards mathematics and computer (Yushau, 2006).
3. Adriadurai & Manohanthan (2008) recommendations are given to improve the overall effectiveness of the engineering courses. It is anticipated the adoption of these recommendations will result in greater student competency and lower drop-out rates.

## **Architecture and Learning**

In architecture, as in other applied disciplines (engineering, medicine, chemistry, experimental physics, etc.) the learning process mainly focuses on continues interaction between theoretical knowledge, notions that are acquired through example, through advice of the most capable ones and, above all, practice in the discipline itself. In consequence we have lower possibilities of a collective use and difficult sedimentation of the experience acquired through the design process (Spigai., 2004).

Learning as an interactive process is an important issue in architectural design education; so some studies found that there were statistically significant differences between the performance scores of students having diverse learning styles at various stages of design process. Also, it was found that performance scores of all students having different learning styles had increased at the end of the design process where the progress of assimilating learners were the highest and accommodating learners the lowest (Demirbaş and Demirkan,2003)

## **Architectural Design Studio**

Many studies described design studios as places where real cities, buildings etc., are designed, improved and transformed. The architectural design studio should function both as a learning centre and a complex social organization like other learning environments.

Design studio process is quite important in design education and all the courses taught in design education are related to the design studio. It is concerned with the definition of design education, its' problems, relations and contents at sociological level and its relation to other disciplines at epistemological level (Demirbaş and Demirkan,2003).

The concept of integrating the teaching of design computing into the design studio is not new, this research studying the mixing of teaching ways; it's between computing and traditional (face to face) design studios.

Teaching methods must also be taken into consideration. An increasing emphasis has been placed on design-oriented teaching approaches in the last twenty years. By this we mean teaching methods aiming the application area in which computers are to be used, rather than the systems. The results are mostly courses within programmes adopting design-oriented teaching methods.

However, the growing interest in using of computer skills in the learning approach has rarely affected CAAD teaching programs as a whole. Some studies describe a post-graduate programme that has been structured under a design-oriented approach through a set of courses in which the

emphasis falls on the application in the architectural design process rather than on the software paradigms or categories (Silva, 2000).

### ***Learning the principles of architectural design process***

There are all kinds of definitions on offer in architecture field, from the formal French model of Jean- Nicolas Durand to the interdisciplinary model of the Bauhaus by Gropius, and Tschumi's 'paperless studio' at Columbia.

According to the National Architectural Accrediting Board (NAAB) of the US, architectural education is at its best when it demonstrates 'a positive and respectful learning environment, structured around the values of optimism, respect, sharing, engagement, and innovation'.

At The University of Newcastle the School of Architecture and Built Environment strongly believe in the potential of the studio model. They regard design as the central activity of architectural education, and the students' experience of the design studio is essential. The studio is a 24/7 educational community, an 'intellectual hot house', with an atmosphere of dialogue, mutual critique, events, inspiration, self-directed peer learning, creative energy, coffee drinking, and much more (Lehmann, 2007).

## **Design Studio Teaching Practices**

### ***Between traditional, revolutionary, and virtual models***

Literature on architectural education corroborates that there are some fundamental disagreements over what is meant by architecture and design. This in essence conveys that teaching architectural design means different things to different people; each educator teaches according to his/her own set of ideologies and beliefs and in a manner that is distinct from others. Concomitantly, there is a tremendous diversity of contents, areas of emphasis, and methods of teaching in different schools and even within one school.

The virtual design studio represents the recent advances in CAD and visualization, combined with technologies to communicate images, data, and simulated live actions. Interestingly, none of the models has replaced another; the three models coexist now in most schools of architecture around the world either as distinct unique models or integrated to form new models (Salama, 2006).

### ***The computer and architecture design studio***

The computer-supported communication and collaboration among partners in the building design and construction process are no longer mere possibilities, but, given the know-how of the participants, a reality.

There is a research documents an experimental approach to design collaboration, tested in an intensive, one week long Virtual Design Studio (VDS) exercise, World Wide Web, and video-conferencing (Branko, 1999).

Some studies analyze the pedagogical use of high-end computer graphics and low-and high-bandwidth Internet technology for international architectural education among numerous universities in the Americas. The research applied to any discipline that involves a large number of participants within a design setting. The experiments have allowed design studios from seven schools of architecture in the U.S. and South America to work in a semester long design studio. Most of the collaboration was accomplished by using low bandwidth Internet communication such as web publishing, chat, computer assisted design software and other technologies such as ISDN broadcasting (Andia, 2002).

***Procedures for the preparation of a trend towards using blended learning in the teaching of architectural design decisions:***

Target scale identification of trends for faculty use blended learning in the teaching of architectural design, and the researchers had access to the literature on integrated learning and measurement trends, this scale has been prepared using "Likert, identified a number of alternatives as Quintet, before every phrase group responses : strongly agree, agree undecided, disagree, disagree strongly, and the faculty member must respond to every phrase of words mark indicating a preference for an alternative, to reach the final image of the scale was done the following.

***Review some educational literature on measuring trends.***

The number of benchmarks trends towards themes related to e-learning technology, with a view to identifying major themes underlying those metrics.

- Having taken formulating expressions scale simplicity and clarity in construction terms and do not use vague words, unusual or scientific terminology for non-specialists, and the phrase can be interpreted in more ways, excluding the phrase that everyone is expected to approve or reject them, and use the phrase denied exile.
- The primary scale contains (37) term, distributed on three axes head are:
  - Axis I: enjoy using the blended learning.
  - Axis II: the sense of the importance of using blended learning.
  - Axis III: ensure use blended learning.
- To check the veracity of content scale, the primary scale was viewed by the number of arbitrators on technology education and the teaching of architectural design decisions to ensure clarity of language standard, and how each is to link from, and add or delete what they consider appropriate and necessary.
- Arbitrators have shown a series of observations as delete some repeated and unclear words, taking into account the observations of others recommended by arbitrators in areas that they sincerely, became standard.
- A hierarchy of five degrees in this scale assessed, positive words for the response (agree strongly, agree, undecided, disagree, disagree strongly) ratings (5, 4, 3, 2, 1) respectively, for negative phrases were given to the same previous responses (1, 2, 3, 4, 5) Respectively, according to the degree estimation system calculates the average of each measure's words, as a whole, if the average is greater than (3) the trend is positive, while averaging less than (3) the negative trend.

***Calculation of reliability scale***

By applying equivalent (Cronbach's Alpha (@) using statistical software package (SPSS) the reliability coefficient for scale reached (0.81), this indicator of the scale is an acceptable degree of consistency.

Preparation of the final image to scale: in the light of the above steps, the scale is applicable, where included (34) terms for a standard distribution of faculty members, and sent via email to another group, and were retrieving (21) which analyzed as follows:

## Results

### *Characteristics of the study sample*

Table 3 demonstrates the characteristics of the sample:

**Table 3**  
***Characteristics of the participants***

Characteristics	F	P
<i>Gender</i>		
Male	11	47.6%
Female	10	52.4%
<i>Ages:</i>		
20-25	1	4.5%
26-30	2	9.5%
31-35	4	19%
36-40	5	23.8%
41-45	4	19%
45and above	5	23.8%
<i>Years of teaching experience:</i>		
Less than 1 yea	1	4.5%
1-5	2	9.5%
6-10	7	33.3%
11-15	5	23.8%
16-20	3	14.3%
21 or more	3	14.3%
<i>Currently teaching at:</i>		
Under graduate level	14	66.7 %
Post graduate level	0	0%
Under and Post graduate	7	33.3%
<i>Times of computer use:</i>		
less than once a week	0	0 %
1-2 times a week	0	0 %
3-4 times a week	0	0 %
5 or more times a week	21	100 %
<i>using any drawing programs:</i>		
yes	17	80.9 %
No	4	19.1%
Auto CAD	17	80.9 %
Archi-CAD	7	33.3%
3Ds MAX	15	71.4 %
Photo Shop	17	80.9 %
Revit	8	38%
<i>completed any training courses:</i>		
yes	8	38%
No	13	61.9%
a- E-learning:	6	28.6%
b- Blended learning	2	9.5%

The table indicates that all respondents teach undergraduate students and graduate students, and use the computer more than five times a week, and 80.9% of them use drawing program Such as:



Auto CAD, Photo Shop, and some have suggested using other software like ... a 3d rendering, paint and Rhino 3D.

Table 4 shows; at any stage allows your students to use the computer programs in architectural design course?

**Table 4**  
*the using of computer programs in architectural design courses*

First stage		Second stage		Third stage		Fourth stage		Fifth stage		Post graduate	
F	P	F	P	F	P	F	P	F	P	F	P
9	42.9%	15	71.4%	12	57.4%	8	38%	5	23.8%	7	33.3%

## Section Two

### *General Attitudes*

This section is to find out about your general attitudes towards Blended learning in general, and towards using computer technology in language instruction. As shown in Table 5 A and B.

**Table 5**  
*the purpose do you use computers*

items	rarely		Some times		often	
	F	P	F	P	F	P
1. Electronic mail	2	9.5%	1	4.5	18	86%
2. Chat rooms	8	38%	9	42.9%	4	19%
3. surfing the Internet	2	9.5%	8	38%	11	52.4%
4. Architectural programs (Auto cad, 3Ds max ...etc)	2	9.5%	6	28.6%	13	61.9%
5. Materials design	6	28.6%	11	52.4%	4	19%
6. Web page design	10	47.6%	8	38%	3	14.3%
7. Typing and maintaining lesson plans	4	19%	7	33.3%	10	47.6%
8. Office work: student records	3	14.3%	6	28.6%	12	57.4%
9. Assigning and checking reports (e.g., word, excel)	3	14.3%	5	23.8%	13	61.9%
10. Homework via e-mail	5	23.8%	9	42.9%	7	33.3%

According to the previous table; many of the instructors are using the followings: Electronic mail, Architectural programs, Assigning and checking reports (e.g., word, excel), Office work: student records, that's refer to the importance of these uses in the architectural design studios

**Table 6**  
***Faculty staff attitudes towards using of Blended Learning in Architectural design courses***

#	Items	Mean	Relative weights
1.	I like using e-learning technology in teaching architectural design	<b>3.80</b>	<b>75.0%</b>
2.	Using e-learning technology makes me more efficient in my life	<b>3.43</b>	<b>68.6%</b>
3.	Using e-learning technology with traditional learning makes me more efficient at my work	<b>3.95</b>	<b>79.0%</b>
4.	Using computers and internet generally makes completing tasks easier.	<b>4.43</b>	<b>88.5%</b>
5.	I like using computers and internet for teaching purposes in my classes.	<b>4.30</b>	<b>85.7%</b>
6.	I like searching the internet for teaching resources.	<b>4.10</b>	<b>81.9%</b>
7.	The use of the computer in architectural design will limited me on follow-up student.	<b>4.14</b>	<b>82.9%</b>
8.	I think that my use to architectural design software will grow up the creative design of students.	<b>4.33</b>	<b>86.6%</b>
9.	I Use the software of architectural design in the studio in front of students.	<b>4.20</b>	<b>83.8%</b>
10.	I encourage my students to use computers in completing the architectural projects	<b>4.30</b>	<b>85.7%</b>
11.	I feel that if my students are using the programs of architectural drawing; them architectural creativity will not be developed.	<b>4.47</b>	<b>89.5%</b>
12.	If I have time, I would like to try out instructional computer technology innovations in my teaching.	<b>3.86</b>	<b>77.0%</b>
13.	I believe I can take risks in teaching with computer technology	<b>2.71</b>	<b>54.5%</b>
14.	Computers can be a good supplement to support teaching and learning	<b>4.60</b>	<b>91.4%</b>
15.	I think that blended learning not develop the basic skills of architectural design students.	<b>4.15</b>	<b>81.0%</b>
16.	I think if my students use the blended learning provides them the time and effort.	<b>4.20</b>	<b>81.9%</b>
17.	I want constantly develop my skills in blended learning.	<b>4.15</b>	<b>81/0%</b>
18.	I am not benefit from the use of software architectural design in teaching.	<b>4.70</b>	<b>93.3%</b>