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Students' Motivation and Instructors' Technology Use in Higher Education: A Case Study in the Gulf Region

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Abstract
The purpose of this study was to research a problem presented in Middle East countries: Students' boredom and lack of motivation to interact in their classrooms in higher education. The focus of the study was to find ways in which technology can be used as a means to motivate students to interact with each other and with the learning activities in classrooms. Keller's motivational theory and its components (*Attention, Relevance, Satisfaction, Confidence [ARCS]*) provided the theory to address the relationship between technology and student interest in the classroom. Keller posited that these four categories operated together to motivate students to interact in the classroom. The study was conducted in a public college in the Gulf nation. The participants were 600 students and 30 instructors. Four surveys were used in this study; three of them were given to the students and one was given to the instructors. The findings supported Keller's motivational theory and its components regarding using technology to motivate students to interact with their instructors, with the learning activities, and with each other. There was a significant correlation between using technology in classrooms and gaining students' attention. There was a significant correlation between using technology and the relevance of the material presented in classrooms and students' real life. There was a significant correlation between using technology and students' confidence in participating in classrooms using technology. There was a significant correlation between using technology and students' satisfaction with the material presented in classrooms. *ARCS* was significantly correlated with students' learning experiences, students' learning strategies, and computer use in course.
Keywords: Students' motivation, interaction, technology, ARCS model

1. Students' Motivation and Instructors' Technology Use in Higher Education

Educators have always worked hard to keep their students motivated (Mouza 2008). Over the past years, educators have seen a significant decrease in the motivation of their students, as well as in their abilities to pay attention, stay on task and complete assignments (Posner 2004). Researchers (Anthony 1996 Mitsoni 2006 Wiggins & McTighe, 2008 Yazzie-Mintz 2007) found that many students report being bored in classrooms. Students report that instructors do not show an understanding of students' needs to connect the outside world (the actual world they live in and interact with) to the learning environment. Students learn the rules and memorize facts but don't get around to learning how to apply this knowledge in a real world context (Bloom 2007).

In the 1990s a new word appeared in the lexicon of educators: disconnect. Disconnect denotes the insufficient connection between what is going on in classrooms and the actual world of students (Boyer, 1994; Coye, 1997). Researchers (Mitsoni 2006 Oblinger 2004 Wiggins & McTighe 2008 Yazzie-Mintz 2007) indicated that, not only do students need to feel interest, but also see the relevance between classroom activities and their actual world.

Students need to be motivated in order to engage and interact with a learning activity (Keller 2008 Rogers 2000 Schunk & Pajares 2002). Several studies (Rigby *et al.* 1992) have related motivation to interaction with learning activities which showed that the degree of engagement in a learning activity will affect the quality of one's learning. Motivation suggests being moved to do something that people see relevant and valuable to them (Ryan & Deci 2000 Lee *et al*. 2005 Reeve 1996 Surry & Land 2000). Motivation, as Keller (2008) points out, refers to the choices people make as to what experiences or goals they will approach or avoid, and the degree of effort they will exert in that respect (Means *et al.* 1997). According to Means *et al*. (1997) up to 38% of student learning and achievement is due to motivation (p. 5).

Technology has become an image of the 21st century in developed and developing countries alike (Lee *et al*. 2005 Oblinger 2004 Oblinger 2005). Technology is forcing rapid changes in higher education that cannot be ignored (Rogers 2000), and college students today clearly expect technology to be an important learning tool in their classrooms (Goffe & Sosin 2005 Metz 2003). Goffe and Sosin (2005) suggest the presence of computer technology is so accepted that students would like to interact with it in their classrooms because it enables professors and students to do new and exciting things (Falvo & Solloway 2004 Lee *et al.* 2005 Selwyn 2007). Students also indicate they need more connection between their everyday use of instructional and internet technology in classrooms (Oblinger 2005 Taylor 2006 Zinn & Zinn 2009). But while technology abounds in

the world that youth live in, classrooms do not seem to be taking advantage of this technology. Selwyn (2007) and Oblinger (2005) pointed out that students in the 21st century have incorporated technology into their daily lives and, because of their high degree of technology use, technology might be seen as an excellent medium for motivating students to interact with learning activities in classrooms (Lee *et al*. 2005).

2. Theoretical Framework

Keller's Motivational Theory (2008), the ARCS model (*Attention, Relevance, Confidence,* and *Satisfaction*), represents a model of motivation for learners' interaction. Keller's primary assumption is based on the interaction between instructional materials and students. With its components, this theory discusses the importance of preparing the surrounding environment, the instruction, and students' readiness for interaction in classrooms.

The ARCS model (Keller 1987 2001 2006 2008) provides a definition of motivation that includes sets of strategies to enhance the motivational appeal of instruction; process that is called motivational design (Keller 1987). This design includes four conceptual categories ([*A]ttention, [R]elevance, [C]onfidence, [S]atisfaction*) that characterize human motivation and can be used effectively in classrooms to motivate students to interact (Keller 2001 2008).

[A] ttention strategies arouse and sustain curiosity and interest, [R]elevance strategies link students' needs, interests, and motives; [C]onfidence strategies help students develop a positive expectation for successful achievement; and [S]atisfaction strategies provide intrinsic and extrinsic reinforcement for effort that have to be met for people to become and remain motivated.

According to Keller (2008), students usually will not be able to interact actively in their classrooms if these four aspects are missing (students' attention, relevant material, confidence in success, and satisfaction with the outcomes) (Zinn W. and J. Zinn 2009 Biggs 2006 Hirumi 2002 Keller 2008 Taylor 2006). Selwyn (2007) and Oblinger (2005) pointed out that students in the 21st century have incorporated technology into their daily lives and, because of their high degree of technology use, technology might be seen as an excellent medium for motivating students to interact with learning activities in classrooms (Lee *et al.* 2005). Bates and Poole (2003) defined instructional technology as learning tools that support the activities in the classrooms that enable students to interact with each other, with the instructor, and with the activities presented.

Keller (2008) and Oblinger (2005) mentioned that technology increases learners' curiosity, captures their attention, and build positive experiences with success because technology has changed the way people interact, work, entertain, and communicate (Oblinger 2005 Shaffer *et al.* 2005 Taylor 2006).

3. Middle Eastern Students, Technology, and Motivation

Today Middle East universities and students can easily use technology and navigate the internet and search for resources (Abouchedid & Eid 2004 Al Musawi & Abdelranheem 2004 Al-Senaidi *et al*. 2009 Sadik 2008 Tubaishat & Qaussmeh 2006). Researchers (Abouchedid & Eid 2004 Al Musawi & Abdelranheem 2004 Al-Senaidi *et al.* 2009 Sadik 2008 Tubaishat *et al.* 2006) found many students report being bored in classrooms. Students report that instructors do not show an understanding of students' needs to connect the outside world (the actual world they live in and interact with) to the learning environment.

Abouchedid and Eid (2004) indicated that universities and college students in the Middle East countries welcome technology as a method of making education more flexible, motivated, and immediate. They reported that students see technology as the building block that supports the structure of the classroom activities. They reported that technology enables student-centered teaching approaches.

Sadik (2008) found that using instructional technology increases students' engagement and interaction, organizes their ideas, and allows them to express these ideas. Al Musawi and Abdelraheem (2004) and Tubaishat and Qauasmeh (2006) also indicated, based on research evidence that technology can help create an atmosphere that increases students' motivation to interact in classrooms, improved the motivation and confidence of students, improved their communication skills, encouraged students to interact and collaborate.

4. Purpose of Study

The purpose of the study was to research elements that are related to aspects of the problem: Students' boredom and lack of motivation to interact in their classrooms in higher education. The variables in addressing the problem were the four aspects presented by Keller (2008) in his motivational theory (*Attention, Relevance, Satisfaction, Confidence*).The focus of the study was to find ways in which technology can be used as a means to motivate students to interact with each other and with the learning activities in classrooms. Through this study, the researcher wanted to explore students' perceptions about technology and the relationship of its use to their motivation to interact in their classrooms.

The following hypotheses were tested:

- Will there be a positive relationship between instructor use of technology and students' *attention* to what is going in the classrooms?
- Will there be a positive relationship between instructor use of technology and students' sense of *relevance* to their real world?
- Will there be a positive relationship between instructor use of technology and students' *confidence* to interact with the material presented in classrooms, with instructors, and with each other?
- Will there be a positive relationship between instructor use of technology and students' *satisfaction* with the material presented in classrooms, with instructors' styles of presenting the material, and their interaction with each other?

5. Methodology

This study used a quantitative design that addresses relationships between students' perceptions and the use of technology as motivational tools used in their classes at college. The intention of this study was to see how the four aspects of Keller's (2008) theory (*attention, relevance, satisfaction,* and *confidence*) relate to students' motivation to interact in their classrooms at the university.

5.1 Participants

The 630 participants in this study consisted of freshman and junior students (600) and the instructors (30) who taught freshman and junior required courses. All were students or instructors at a public college in a Gulf nation. The college consisted of 3908 students, 191 academic staff, and English was the medium of instruction.

5.1.1 Students

The researcher visited 35 sections (freshmen= 33 sections; junior= 2 sections). There were 798 freshman and 71 junior (869) students in those 35 sections. The return of the students' surveys was 600 (69%) out of 869 students (see Table 1 for the details).

Table 1. Student Demographics

Year in School	N	Gender		Age		Major		
		Male	Female	18-19	20+	Bus.	Eng.	IT
Freshmen	529	300	229	217	312	132	291	106
Junior	71	49	22	9	62	16	45	10

There were 251 female students and 349 male students in all freshman and junior required courses at the College. There were 529 freshmen and 71 juniors. Their ages ranged between 18 and 25 years (M=19.8). 148 were Business students, 336 were Engineering students, and 116 were IT students. All 600 students were full-time students.

5.1.2 Instructors

There were 28 instructors who taught freshmen and 2 instructors who taught junior required courses for a total of 30 instructors. Table two contains a summary of the instructor demographics.

Table 2. Instructor Demographics

Gender	N	Teaching Yrs	N	Computer Proficiency	N
Males	20	1-5	26	Adv.or Exp.	15
Females	10	6-7	3	Average	10
		8+	1	Beg. Or Unfam.	5

Two thirds (20) of the instructors were males and one third (10) were females. Their ages ranged between 25 and 65 years old (M=40.6). Almost one third (9) of the instructors perceived themselves as experts in computer proficiency, 6 perceived themselves as advanced, 10 of the instructors perceived themselves as average, and only five perceived themselves as either beginners or unfamiliar with using computers. All 30 instructors were lecturers with a full-time load.

5.2 Instruments

Four instruments were used to collect the data for this study from both students and instructors. These surveys were: Instructional Material Motivational Survey (IMMS), Student Technology Survey, Student Perceived Effectiveness of Computer Technology Use Survey, and the Instructor Perceived Effectiveness of Computer Technology Use Survey.

5.2.1 Student surveys

Three surveys were given for the students: Instructional Material Motivational survey (IMMS), Student Technology Survey, and Student Perceived Effectiveness of Computer TechnologyUse Survey.

5.2.1.1. Instructional material motivational survey (IMMS)

This survey was first developed by Keller in (1993)as a measuring instrument to serve as a data-collection tool to analyze motivational problems within instructional materials. Then Huang, Diefes-Dux, and Imbrie (2006)

used all the original IMMS (Instructional Material Motivational Survey) items in Keller's study (1993) with minor modification to accommodate the items to the setting of their study. The IMMS contains 43 survey items in which the first 7 items represent students' demographics. The remain 36 items corresponding to each component of the ARCS model, in which (a) 12 items measure *attention*,(b) 9 items measure *relevance*,(c) 9 items measure *confidence,* and (d) 6 items measure *satisfaction*.

The survey utilizes a (5-point-likert) scale for the 36 items with statements ranging from 1=not true to 6=very true. Scores for attention section can range from 12- 60; relevance section can range from 9- 54; confidence section can range from 9- 45; and satisfaction section can range from 6- 30.

Keller (2010) reported that the survey was first administered to a class of 45 university undergraduates, and the internal consistency estimates were satisfactorily high. A pretest version was prepared by rewriting items in the future tense and was administered to an undergraduate class of 65 students. The internal consistency estimates were high, but further revisions were made to improve the instrument. The standard version of the survey was then administered to 200 undergraduates and graduate students in the School of Education at a university in the Southeast. The internal consistency estimates, based on Cronbach's alpha, were satisfactory (Attention 0.84, Relevance 0.84, Confidence 0.81, Satisfaction 0.88, Total scale 0.95) (Keller, 2010). Keller (2008) reported construct validity studies by Naime-Diffenbach (1991) and Small and Gluck (1994) that indicated through experimental studies the relationship of instructional materials to the domains of Keller's motivational theory. There have been many studies over the past 20 years that substantiate the relationship between motivation and learning (e.g., Chang & Lehman, 2002; Winiecki, Fenner&Chyung, 1999).

5.2.1.2 Student technology survey

This survey was posted online and any one can access it and participate voluntarily ("Student technology survey," 2001). The survey contains 10 survey questions corresponding to students' experience with computers, in which (a) questions 1-8 measure students' access and use of computers, (b) question 9 measures how often students use computers regarding software programs or tools, and (c) question 10 measures how much help students need concerning applications that they have used.

The survey utilizes a different (Likert-type) scale for each question. The scales are either Yes-No (Questions 1 and 4), never to almost daily (Questions 2, 7, 8, 9), individually to in pairs (Question 5), or questions regarding students' use of computers (Questions 3 and 6)

The first question can range from 1-2, question two can range from 1-5, question three can range from 0-1, question four can range from1-2, question five can range from 1-4, question six can range from 0-1, question seven can range from 1- 5, question eight can range from1-5, question 9 can range from 15- 75, and question 10 can range from 13- 65. The survey was used online many times, however there were no reliability and validity results provided.

5.2.1.3 Student perceived effectiveness of computer technology use survey

This survey was designed, along with the instructors' survey mentioned before, by Lowerison, Sclater, Schmid and Abrami (2006) to examine what, if any, effect the use of computer technology has on student perceived effectiveness of a course. The researchers indicated that relevant studies (e.g., Shuell & S. Farber 2001) helped create an initial pool of the items in this survey. The final survey consisted of 63 items, in which (a) 7 items measure students' learning experiences in the course, (b) 6 items measure the learning strategies that they used within the class, (c) 9 items measure students' evaluation of the overall effectiveness of the instructional techniques used in the class, (d) 4 items measure students' evaluation of the overall effectiveness of the course in relation to instructors effectiveness, amount learned, increased interest in course content, etc, (e) 12 items measure the manner of technology use, (f) 12 items measure students' perceived effectiveness of computer use, (g) 11 items measure students' personal use of computer technology, and (h) the last item ask about students' comments.

The survey utilizes a (5-point-likert) scale for sections 1-5 and (6-point-likert) Scale for sections 6 and 7. Section one includes statements from Sections one and four 1= strongly disagree to 5= strongly agree. Section two, three, and five include statements from 1=never to 5=very often. Section six and seven includes statements from 1= not applicable to 6= very effective. In the first section, scores can range from 7-35, section two scores can range from 6-30, section three scores can range from 9-45, section four scores can range from 4-20, section five scores can range from 12-60, section six scores can range from 12-72, and section seven scores can range from 11-66.

Lowerison *et al*. (2006) used their survey again in another study (e.g., Gretchen *et al.* 2008), that investigated the relationship between computer technology's role and students' perceptions about course effectiveness in two different universities (e.g., one Canadian and one American). To test the validity of the instrument, the two universities conducted separate factor analyses with the data. Considering that large sample sizes adequately met criteria for factor analysis, the items related to the use of computer technology and the learner-centered approach were factor analyzed using varimax rotation with data from both samples. The factor analyses were highly similar, where the rotated factor matrix with the Canadian sample resulted in three factors (accounting for 46.22%

of the total variance) with eight values larger than 2.0 (ranging from 2.26 to 8.40). Similarly, the rotated factor matrix for the American sample revealed three factors (accounting for 48.94 % of the total variance) having eight values larger than 2.0 (ranging from 2.46 to 8.35). With both samples, factor loading higher than .40 on each of the three factors were examined, and they revealed a high level of similarity. In both cases, factor 1 included items addressing *computer-use*, factor 2 included items addressing *course-structure*, and factor 3 included items addressing *active-leaning and time-on-task.*

5.2.2. Instructor Survey

Instructors were given the same third survey that students took. This survey was: Instructor Perceived Effectiveness of Computer Technology Use Survey.

5.3 Data Collection Procedures

Data collection consisted of students' surveys which were given during class time and instructors' survey which was given during work time. The researcher asked the instructors to complete their survey first, and then the students were given the three surveys at the end of the semester.

At the beginning of each class, a constructed speech that presented a brief idea about the study was given to the students by the instructors or the researcher herself. Each student was given a packet that included the surveys and a consent form. Students were asked to sign the consent form showing that they were voluntarily participating in the study. The consent form gave more details about the study that students read before participating on the study. Students were informed that the survey would take 50 to 60 minutes (one class period). They were also informed that there were no right or wrong answers; we just wanted their opinions. The researcher agreed to stay in some classes to translate difficult words or phrases into Arabic since the surveys were written in English. The researcher also agreed to stay after the class to answer any questions students asked about the survey, and was willing to come back and present the results of the study. Students were asked to return the surveys and the consent form to the packet and the researcher or the instructors collected them.

The instructors were asked to participate in the study and were given a good explanation about it. They were informed that the survey would take 20 minutes to 30 minutes (during their work time at the college). All instructors were asked to take the survey at the same time. At the beginning, a constructed speech that presented a brief idea about the study was given to the instructors. The researcher asked the instructors who spoke Arabic to translate difficult words for their students while they were taking the surveys. Other instructors who did not speak Arabic were asked to approve the researcher visits to their classes to translate and explain any difficult words or phrases from the surveys.

Each instructor was given a packet that included the survey and the consent form. Instructors were asked to sign the consent form showing that they were voluntarily participating in the study. The consent form gave more details about the study that instructors read before participating on the study. They were also informed that there were no right or wrong answers; we just wanted their opinions. I agreed to stay after they finished answering the questions they asked about the survey, and was willing to come back and present the results of the study. Instructors were asked to return the survey and the consent form to the packet and the researcher collected them.

5.4 Results

The results were analyzed to determine the relationship of instructional technology with students' motivation and interaction in higher education. Before presenting the correlational analyses, the means and standard deviations are presented for each of the variables that were correlated: The four domains of motivation (attention, relevance, confidence, and satisfaction as well as the total ARCS) as well as variables of student personal use of computer, student frequency use of computer, and the amount of help a student needs with the computer. Last, the researcher also presented the variables of instructional techniques and instructor use of computer, from both the student's and instructor's perspective (see Table 3).

Table 3. Means and Standard Deviations for the Domains and Total ARCs, Student Learning Experiences, Student Learning Strategies, Student Use of Computer, and Perception of Instructor Use of Computers by Students (N=600) and by Instructors (N=30)

	Attention M (sd)	Relevance M (sd)	Confidence M (sd)	Satisfaction M (sd)	ARCS M (sd)
Students	40.21(5.2)	30.48(4.4)	28.73(4.7)	20.69(4.1)	120.11(4.1)
	Instructional Techniques	Instructor Use of Comp	Personal Use of Computer	Frequency Use of Computer	Student Need Help with Computer
Students	29.42(4.6)	37.55(6.2)	44.66(8.4)	42.08(7.2)	31.99(8.6)
Instructors	31.8(5.1)	35.2(12.9)			

The means and the standard deviations for students' personal use of computer, students' frequency use of computer, and students' need help with computers, in table 3 show that students in this public college often use the computers, they like to use computers, and they would like their instructors to use computers in their classrooms.

5.4.1 Zero Order Correlations

In this study, zero order correlations were created to respond to the four hypotheses. For that, Person r correlations were used because they enabled the researcher to describe the relationships between the variables used in the surveys.

5.4.2 The four hypotheses

Going back to Keller's Motivational Theory (2008), the ARCS model (*Attention, Relevance, Confidence,* and *Satisfaction*), represented a model of motivation for interaction. Keller's theory discussed the importance of preparing the surrounding environment, the instruction, and students' readiness for interaction in classrooms.

The researcher addressed each of these dimensions of motivation to determine if Keller's theory would be supported at that public college; she focused on the relationship of the instructors' use of technology with each of these four areas:(a) **"**Will there be a positive relationship between instructor use of technology and students' *attention* in classrooms*,(b)* students' sense of *relevance* to their real world*, (c)* students' *confidence* to interact with the material presented in classrooms, with instructors, and with each other*,* and (d) students' *satisfaction* with the material presented in classrooms, with instructors' styles of presenting the material, and their interaction with each other?

The Instructional Material Motivational Survey (IMMS) defined 12 items that measured attention. Thus the researcher totaled those 12 items from the IMMS as the measure for attention. The IMMS defined 9 items measuring relevance; those 9 items were totaled as the measure for relevance. The IMMS defined 9 items that measured confidence; those 9 items were totaled as the measurement for confidence; and, finally, the IMMS defined 6 items measuring satisfaction; those 6 items comprised the satisfaction score.

According to these hypotheses, the researcher addressed the *instructional techniques section* (which included 9 items) and *computer use in course* sections (which included 12 items) in "Student Perceived Effectiveness of Computer Technology Use Survey" to find support for these hypotheses. According to the researcher, these two sections defined instructors' use of technology in classrooms.

Table 4 presents the analysis of hypotheses one to four and indicates zero order correlations of attention, relevance, confidence, and satisfaction with instructional techniques and computer use in course.

Table 4. Zero Order Correlations of Attention, Relevance, Confidence, Satisfaction, Instructional Techniques, and Instructor Computer Use in Course, (N= 600)

	Attention r (p)	Relevance r (p)	Confidence r (p)	Satisfaction r (p)	Instructional Techniques r (p)	Inst. Comp . Use Course r (p)
Attention	1					
Relevance	.507** (<.001)	1				
Confidence	.424** (<.001)	.528** (<.001)	1			
Satisfaction	.398** (<.001)	.554** (<.001)	.488** (<.001)	1		
Instr. Tech	.307** (<.001)	.337** (<.001)	.327** (<.001)	.291** (<.001)	1	
Comp. Use Course	.283** (<.001)	.292** (<.001)	.321** (<.001)	.351** (<.001)	.464** (<.001)	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 4 presents the analysis of the four hypotheses, and it indicates the correlations of attention, relevance, confidence, and satisfaction presented in Keller's (2008) motivational theory. Table 4 also includes instructional techniques and computer use in course. As would be expected from Keller's theory, attention, relevance, confidence, and satisfaction are significantly correlated with each other. According to Keller's motivational theory (2008), all of the four dimensions (*Attention, Relevance, Confidence,* and *Satisfaction)* are related to each other and students usually will not be able to interact actively in their classrooms if these four aspects are missing (students' attention, relevant material, confidence in success, and satisfaction with the outcomes) (Zinn W. & J. Zinn 2009 Biggs 2006 Hirumi 2002 Keller 2008 Taylor 2006) (see Table 4).

As presented in the table, *attention* has significant correlations with instructional techniques (r=.307, $p<.001$) and computer use in course(r= .283, $p<.001$). *Relevance* has significant correlations with instructional techniques (r=.337, $p<.001$) and computer use in course (r= .292, $p<.001$). *Confidence* has significant correlations with instructional techniques (r= .327, $p<.001$) and total computer use in course (r= .321, p<.001). *Satisfaction* has significant correlations with instructional techniques (r= .291, $p<.001$) and computer use in course (r= .351, $p<.001$). The table shows that instructional techniques and computer use in course section have a significant correlation with each other (r= .464, $p<.001$).

5.4.3 Ancillary Analysis

Because there may have been a difference between the students' perspective of their instructors' use of technology and how their instructors perceived their own use of technology, the researcher measured the instructors in all the courses in which students participated. The instructors were given a similar instrument to the Perceived Effectiveness of Computer Technology Use. Three areas were addressed: Instructional techniques, instructor computer use, and perceived effective use of computer. In the Instructor Perceived Effectiveness of Computer Technology Use Survey, there were 9 items for instructional techniques, 12 items for computer use in course, and 12 items for perceived effectiveness of computer use.

5.4.4 Ttests

Independent sample t-tests were conducted to see if there were any significant differences between students' perspectives regarding using technology in their classrooms by their instructors and instructors' shared information regarding their use of technology in classrooms on those three areas: Instructional techniques, instructor computer use in course, and perceived effectiveness of computer use. A t -test was run for each of these three variables, comparing the instructor's perceptions to those of the students. Following are the results: Computer use in course, (t(df=29) = .99, $p>.05$); and perceived effectiveness of computer use ($t(df$=29) = -.265, $p>.05$). There were no significant differences between students' perspectives and instructors' perceptions in terms of computer use and perceived effectiveness of computer use in the course. However, there was a significant difference between students and instructors on instructional techniques (t (df=628) = -2.78, p<.006).

5.4.5 Correlational analysis

Finding a significant difference between students and instructors on instructional techniques, the researcher

conducted a correlational analysis of total ARCS (Attention, Relevance, Confidence, and Satisfaction) with the instructional techniques used by students' respective instructor in the classrooms. *Instructional techniques* has a significant correlation with ARCS (r= .012, p. = 050), indicating a positive relationship between instructors' use of technology and students motivation. This finding supports the hypothesis of the research in which technology can be used as a means to motivate students to interact with each other and with the learning activities in their classrooms.

6. Discussion

The focus of the study was to find ways in which technology can be used as a means to motivate students to interact with each other and with the learning activities in classrooms to counteract the boredom and disconnect students have felt in higher education. The researcher addressed the problem with the four aspects presented by Keller (2008) in his motivational theory (*Attention, Relevance, Satisfaction, Confidence*). Throughout this study, the researcher wanted to explore students' perceptions about technology and the way it can be used to increase their motivation to interact in their classrooms. Keller's motivational theory and the four components were analyzed throughout looking at students' perspectives presented in the surveys.

Keller's (2008) primary assumption in his motivational theory is based on the interaction between instructional materials and students. With its components, this theory discusses the importance of preparing the surrounding environment, the instruction, and students' readiness for interaction in classrooms. The proposed study addressed the phenomenon of student boredom and lack of motivation to interact in their classrooms in the Middle East where students feel a disconnect between their real world and their classrooms.

Hypotheses one to four dealt with the four components of Keller's (2008) motivational theory (*Attention, Relevance, Confidence, and Satisfaction*) and the researcher focused on the relationship of the instructors' use of technology with each of these four areas. The results indicated that there were significant relationships for all four of these domains. According to the survey analysis, technology gets students' *attention*. Students' responses indicated that when the instruction was eye-catching this stimulated their curiosity during classes. Thus, instructional technology increased students' interests in their classes and kept their attention and they learned things that were surprising and unexpected to be learned easily through using technology. Al Musawi and Abdelraheem (2004) concur with this, based on their research evidence, that technology can help create an atmosphere that gets students' attention and increases their motivation to interact in classrooms. Sadik (2008) reported in his study that instructors can use instructional technology as tools to get their students' attention and increase their interaction with the learning activities they provided. He added that instructional technology encourages students to construct their knowledge and ideas to present them and share them.

Students reported that when technology was used in their classes, it was *relevant* to their interests and had that link with their daily lives. Using technology helped students in how to connect the content of their classes to things they already knew, did,, or thought about in their own lives. Students reported that using technology in classes made the content worth knowing and useful to them. Tubaishat and Qauasmeh (2006) agree, and reported that students have access to technology and they are efficient in the use of it. Usually when students have access to the Internet, there are many free resources they can access from home. According to their study, 85% students from one of the Middle East universities reported that they did not have problems accessing the university web page from home. Students reported that they have their own laptops and can use the Internet from home. For that, students see that computers and technology increase their motivation by making learning relevant.

When students interacted with technology, they had *confidence* and they had that impression they could easily learn the content of the class and passed the tests. They added using technology helped organizing the content of the class which made them confident that they would learn the material presented. Tubaishat and Qauasmeh (2006) presented results of a case study based on surveys conducted in two universities in Middle East countries. Survey results showed that using technology in classrooms improved the motivation and confidence of students, improved their communication skills, encouraged students to interact and collaborate, and increased their motivation to interact with the learning activities presented in the classrooms. Many researchers from the Middle East (Abu-Malhim & Abdel-Rahman 2009 Al- Senaidi, *et al*. 2009 Sadik 2008 Tubaishat & Qauasmeh 2006 Abouchedid & Eid 2004) reported that students were confidence using technology in classrooms as in their daily lives. Furthermore, Students responded positively to learning forms which technology provided in classrooms.

When technology was used, students' *satisfaction* with what was going in classrooms led them to develop continuing motivation to interact and learn as found by Keller (2008). According to students' responses, using technology helped students to complete the exercises and gave them a satisfying feeling of accomplishment. Students were satisfied with the class and they enjoyed learning and knowing more about the topics presented. Students added that it was pleasure to work on such well-designed classes using technology and they felt

satisfied completing that course with enjoyment. Abouchedid and Eid (2004) reported that universities and college students in the Middle East countries were satisfied with using technology as a method of making education more flexible, motivated, and immediate. They reported that students see technology as the building block that supports the structure of the classrooms activities. Abu-Malhim and Abdel-Rahman (2009) suggested that most instructors realize that their students' satisfaction and interaction increases in their classrooms when they are positively motivated to interact with each other, with the instructors, and with the learning activities. Students reported that they were satisfied with the activities that facilitated student-to-student interaction as well as student-to- instructor interaction.

The researcher's findings substantiate those of other studies that technology can be used to ameliorate students' problems in the Middle East in higher education in which students are bored and feel the disconnect between their classrooms and their real world, and the importance of technology in their daily lives (Abouchedid & Eid 2004 Al Musawi & Abdelraheem 2004 Al-Senaidi *et al*. 2009 Sadik 2008 Tubaishat *et al*. 2006). Research in Middle East colleges and universities resulted in similar findings as that in the United States: that technology provides students with excellent connections to their actual world since students use technology much of the time in their daily lives. The researcher also found that instructors at the college would like to take advantage of students' interest in technology to improve their interaction with class activities hoping that instructional technology will increase students' motivation to interact with each other, with the instructors themselves, and with the learning activities in their classrooms.

According to the instructors' responses to the survey, instructors reported that using computers in classrooms made it easier to collaborate with students and get their attention sustained all the time. They agreed with Keller's motivational theory (ARCS) (2008) that students' motivation is promoted when their curiosity and attention are aroused when they feel the activities in classrooms require them to learn new knowledge in order to accomplish these activities (Blumenfeld et al. 2006 Keller 2008 Ryan & Deci 2000).The instructors at the college indicated also that their teaching experiences were facilitated using computers which helped keeping students' attention to interact with classroom learning activities in order to gain new knowledge and skills.

Instructors at the college agreed with Yazzie- Mintz (2007) and Mitsoni (2006) who suggested that relevance is very important to attract students' attention in classrooms or they will be busy in something that has meaning to them over interacting with learning activities. Instructors reported that using computer technology was necessary for them to do a good job relating the material presented in classes to students' personal goals and real lives. College Instructors indicated that when students perceive knowledge in classrooms related to their personal goals and actual lives, this will increase the opportunities to increase their interaction with learning activities (Keller, 2008).

The instructors noticed that computers helped them to teach the material in a meaningful way. When their students feel that they can succeed in learning a task, their motivation to interact and learn is promoted. It has variables related to the feelings that students can personally control the task and can succeed, which then motivates them to have a continuous interaction with classrooms activities. They added as student confidence in achieving their goals in classrooms increases, this would have a positive influence on their engagement and interaction (Blumenfeld *et al*. 2006 Rogers 2000 Schunk & Pajares 2002 Surry & Land 2000).

Instructors at the college indicated that the use of computers improved the quality of their works. They noticed that students were satisfied with their outcomes to the learning tasks which motivated them to interact with the learning activities provided by the instructors using technology. Many researchers (Fusani 1994 Hirumi 2002 Huitt 2007 Keller 2008) indicated this principle is necessary for students to have positive feelings about their interaction with learning experiences and to develop continuing motivation to interact with learning activities. Keller (2008) added students will have intrinsic feelings of satisfaction when they have opportunities to apply what they have learned to their personal experience.

In this study, the researcher noticed that college students are heavy users of the Internet; students' social life at the college has been changed by the Internet; the Internet has promoted their education. According to this information, technology can be used to motivate students to interact in their classrooms and seek learning. Universities and college students in the Middle East countries and, specifically, students in that public college welcome technology as a method of making education more flexible, motivated, and immediate. This study investigated the use of technology in classrooms and how did it affect students' motivation to interact with each other, with their instructors and with the learning activities. First, Students could be more motivated and not bored to come to the university. Second, using instructional technology could also motivate students to interact with the learning activities, with instructors, and with each other.

Students in the college saw technology as the building block that supported the structure of their classrooms activities. They believed that technology gives them opportunities to build positive experiences with success while interacting with technology. This feeling of accomplishments attributed to their abilities and efforts using technology increased their motivation to interact with classrooms activities (Oblinger 2005 Keller 2008). The

researcher found that the students felt that they can succeed in learning a task when interacting with technology. Their motivation to interact with classroom activities was increased because it was related to their beliefs that they can personally control the task and can succeed as they interact with technology outside their classrooms. This motivated them to have a continuous interaction with classrooms activities.

As the researcher has noted, technology can be one of the means that offers opportunities to integrate motivational support strategies to students' interaction with learning activities in novel ways. According to Keller's (2008) Motivational Theory with its components (*Attention, Relevance*, *Confidence,* and *satisfaction*), technology sustains students' curiosity, it is relevant to their actual world, students feel confidence using it, and students feel are satisfied using technology in classrooms as in their daily lives. Students reported that using technology in their classrooms will make that connection between their real world (using technology) and their artificial classrooms if their instructors used technology. They reported that technology made the material more interesting, appealing, and motivating to be discovered and learned. Technology helped students to connect their personal knowledge to the material presented in classes because they already knew most of it because of the implementation of technology.

Again, Keller's (2008) Motivational Theory with its components (*Attention, Relevance*, *Confidence,* and *satisfaction*) provided evidence that technology sustains students' curiosity, it is relevant to their actual world, students feel confidence using it, and students feel are satisfied using technology in classrooms as in their daily lives which helped students overcome their boredom and lack of motivation to interact in their classrooms.

Conclusion

The purpose of this study was to understand the phenomenon of student boredom and lack of motivation to interact in classrooms. The focus of the study was to find ways in which technology can be used as a means to motivate students to interact with each other and with the learning activities in classrooms. The researcher wanted to explore students' perceptions about technology and the way it can be used to increase their motivation to interact in their classrooms. The study addressed four hypotheses related back to Keller's theory, dimensions of preparing the surrounding environment, the instruction, and students' readiness for interaction in classrooms.

The researcher supported her assumption of using technology as a means to motivate students in the Middle East countries to interact in their classrooms through presented related material from researchers' conducted studies and from her own findings from analyzing her surveys took by students from the public college in the Gulf Nation. She found that students welcome technology to be used in their classrooms the same way they use it outside. Technology seems to motivate students to interact with each other, with the instructors, and with the class activities in higher education in the Middle East.

These findings from this public college in the Gulf nation can be generalized to Middle East countries, since the systems of education are similar in these countries. Students would not be able to interact actively in their classrooms if there is nothing to capture their attention and sustain it, if the material presented in classes is not related to their real world, if they lack the confidence in their success, and they do not have that satisfaction with the outcomes. Technology can help instructors in general and the researcher in particular to overcome all of these problems in a wanted interesting way to motivated students to overcome their boredom and increase their motivation to interact with the learning activities in their classrooms, with each other, and with their instructors.

The researcher believed in the motivational concepts not only in learning and teaching but also in accomplishing things which increase humans' confidence and satisfaction in what they are engaged themselves in. Keller's (2008) motivational theory indicated that learners need something arouses their curiosity and sustains it. They need to know what is the relationship between what they are learning the use of it in their lives. Learners need to feel the confidence in their abilities to accomplish things and they need to feel satisfied about themselves and what they are engaged with in order to sustain continues engagement.

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