

THE EFFECTIVENESS OF USING WIZIQ INTERACTION PLATFORM ON STUDENTS' ACHIEVEMENT, MOTIVATION AND ATTITUDES

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ABSTRACT

The purpose of this study was to assess the effects of using WiziQ platform as a virtual classroom on students' achievement, motivation and attitudes. The sample of this study consists of 42 students enrolled in the course of "Educational and Information technology" at the college of education, Sultan Qaboos University. The participating students were assigned randomly to a control and experimental group (17 and 25 students respectively). Data collection tools included: an academic achievement test, motivation scale and attitude scale. The results of the study showed that there is a significant difference in the mean scores of the post-test between the control group and experimental group in favor of experimental group. The results also indicated that students in the experimental group developed positive attitude towards using WiziQ virtual classroom in their learning. In addition, the findings showed that students in the experimental group were more engaged and motivated to learn compared to their counterparts in the control group.

Keywords: Academic achievement, WiziQ platform, e-learning, motivation, attitude.

INTRODUCTION

The emerging digital media and internet technologies are impacting the instructional and learning systems more than ever before. There is a plethora of research indicating that these technologies have added value to traditional classroom environments, and consequently changed the students' learning needs, and the approaches of teaching and learning (Gedera, 2014; Bonk & Graham, 2006; Keller, 2008). Learning Management Systems (LMS), for example, have various attributes and tools that can be used to broaden teaching and learning experiences. These LMSs are used to create online learning environments for campus-based students and also to offer mixed mode and fully online courses (Dilani, John & Wright, 2013). Currently many universities integrate Learning Management Systems in their teaching processes and utilize blended learning to some of their courses in response to the diverse needs of today's learners. There is a growing body of literature that highlights pedagogical innovations that foster higher-order thinking and enhance opportunities for active learning (Arum & Roska, 2010; Taylor, 2010). These innovations represent an ongoing paradigm shift from a teacher-centred to learner-centred learning environments (Barr & Tagg, 1995).

Recent developments in distance learning technologies and associated pedagogical innovations have shown promising potential for synchronous instruction and live classroom interaction to remote students via live virtual classrooms (Falloon, 2011). These technologies, for example, can provide access to suites of interactive tools such as 'virtual whiteboards' and concurrent file sharing streamed video and audio attributes, and at the same time allow students to interact in real-time through text-based chat (Hrastinski, 2008). However, research on the attributes of virtual classrooms in e-learning is limited and inconclusive. This study aims to examine the effects of WiZiQ as a virtual classroom on students' achievement, motivation and attitudes toward using virtual learning environments.

LITERATURE REVIEW

Although distance education is increasingly becoming a viable alternative in higher education institutions, it is noted that most of the global initiatives have been asynchronous in nature Hrastinski (2008). However, with recent developments in hardware, software, and relevant communications tools, there exists a great potential for synchronous instruction and classroom interaction via live virtual learning environments. According to Falloon (2011), synchronous components have been present in many online courses for a number of years through text-based chat functionality. Research has shown that the integration of Learning Management Systems (LMS) in Higher Educational settings can often enhance teaching and learning experiences. According to Coates, James & Baldwin (2005), E-learning platforms such as Moodle, WIZIQ, Blackboard and Docebo offer powerful tools that provide course administration and pedagogical functions such as synchronous and asynchronous communication tools; content development and delivery; assessment and management of students' activities. Smirnova & Deutsch, (2014) state that online learning through course management systems provides learners with opportunities to become self-directed lifelong learners. According to Dilani, John & Wright (2013), the available tools and features of e-platforms, improve learners' engagement and consequently enhance their achievement and motivation.

The following section highlights and synthesizes current literature that of particular relevance to e-platforms and their associated theoretical ground.

E-learning Platforms (WIZIQ & MOODLE)

Research has shown that the effectiveness of the e-platforms, however, depends largely on their accessible tools and attributes (Coates, James & Baldwin, 2005; Dilani, John & Wright, 2013; Smirnova & Deutsch, 2014). For example; the Moodle e-Learning platform (Modular Object-Oriented Dynamic Learning Environment) is a free open-source learning management system or e-Learning platform, which serves to help educators create online courses with a focus on interaction and collaborative construction of content. It is the most widely used LMS in the world and currently has over 68 million users world-wide (MOODLE.org, 2018). It has been used in Sultan Qaboos University (SQU) since 2006 as an e-platform for a large number of courses at both undergraduate and postgraduate levels. WiZiQ, on the other hand, is a Web 2.0 platform (Figure 1), which can change the way that teachers and learners collaborate in either synchronous or asynchronous mode (Bosatn, 2011). This platform allows the participants to interact through text, audio, and video in a semi-live virtual classroom environment (Davis, 2005; Stevens, 2007). Course instructors, for example, can conduct online live classes and make use of the various tools and features such as: whiteboard, online PowerPoint, Word presentation, PDF, audio and video conferencing, text chatting, and can also record their classes for a later reference.

The image shows a screenshot of the WIZIQ website. The header includes the WIZIQ logo, navigation links for Support, Blog, and phone number, and a 'SIGN UP' button. Below the header is a blue banner with the text 'Virtual Classroom Software for live online classes' and a sub-headline 'Teaching in the Virtual Classroom becomes as engaging and easy as the traditional classroom.' The main content area is divided into two columns. The left column lists five features with icons: 1. Increase student engagement with real-time audio-video communication, text chats, and advanced, interactive whiteboards. 2. Integrate smoothly with your existing website or LMS (e.g., Moodle, Blackboard, Sakai) using our APIs & plugins. 3. Deliver live classes on-the-go from any mobile device using WIZIQ Android and IOS apps. 4. Manage your classes and students easily with handy features like Attendance Reporting, Recording, and Notifications. 5. Reuse lectures recorded by using WIZIQ's recording and secure content facility. The right column features a 'Start your 30-day free trial today' section with a 'Sign In' link for existing users. Below this is a sign-up form with fields for Name, Your Email, Password, Country (set to Oman), Phone (+968), and Choose account type (with a dropdown menu). A 'START FREE TRIAL >>' button is at the bottom of the form.

Figure 1. Virtual classroom

With the evolution of emergent technologies, the synchrony of LMS and Web 2.0 environments have become a powerful combination (Smirnova & Deutsch, 2014). LMS such as Moodle and WiziQ seem to offer new opportunities for more collaborative learning where students can take control of their learning. These e-platforms provide many services to both teachers and students. Examples of these services include, but not limited to: customizable course design and layout, collaborative activities, learners' engagement, convenient file management, notifications and automatic alerts, multiple progress tracking options, online assessments and feedback, automatic session recording, and cloud-based content library etc. The WiziQ platform, for instance facilitates students' engagement and interaction in a common virtual space (Stevens, 2007). This space contains a whiteboard with powerful drawing tools, which can be turned into multiple whiteboards for users to upload and share their multimedia presentations.

Research has shown that Web 2.0 technologies, in general could be used to enhance learner engagement and motivation in a more participatory and personalized learning environment (Bostan, 2011). According to Fisher and Baird (2005), Web 2.0 technologies such as WiziQ platform lead learners from Web content consumers to Web content developers. They further argued that learners are usually more engaged in their learning when provided with collaborative learning environments. However, these participatory environments require a deeper level of social interaction that engages learners in active knowledge acquisition and knowledge construction. Fisher (2012) emphasizes the essential value of e-learning platforms in encouraging collaboration and expanding learning opportunities. Hampel and Pleines (2013) **noted that online forums and self assessment** activities attracted high participation rates which, in turn, improve learners' engagement in their learning processes.

Designing online blended environments, however, requires a careful balance of engagement activities and motivational strategies. Integrated motivational strategies in this study was guided by Keller's ARCS model which has four conceptual components: Attention, Relevance, Confidence, and Satisfaction. The model was developed as an instructional design model to enhance learner's motivation (Suzuki, Nishibuchi, Yamamoto, and Keller, 2004).

In addition to the overwhelmingly positive impact on learners' engagement, a number of studies have demonstrated that virtual classroom environments can enhance students' motivation for learning (Capshew, 2005; Chircu and Neacsu, 2015; Colakoglu and Akdemir, 2010; Dikmenli and Unaldi, 2013; Keller, 2008). Durmus and Karakirik (2006) claim that the use of an interactive web-based visual representation of dynamic objects increases not only students' conceptual understanding and problem-solving skills but also promotes positive attitudes towards mathematics, and improves students' motivation. Similarly, previous research has provided strong evidence for the impact of e-platforms on students' attitudes towards virtual classrooms (Penjor and Zander, 2016; Serrano and Sanchez, 2011; Testa (2011). There seems to be a general consensus among researchers that transforming virtual spaces turn the Web into a new area of socialization which consequently promoted students' positive attitudes towards these learning environments.

Previous research, however, has not been conclusive with regard to the impact of virtual classrooms on students' academic achievement. On one hand, for instance, research has shown that virtual classrooms provide conducive learning environments for improved academic achievement (Agrawal, Kumar, Balasubramaniam, Bhargava, Sinha, Bakshi & Sood, 2016; Barker & Gossman, 2013; Kaosaiyaporn, Atisabda, Plodkaew, & Promrak's, 2015; Yilmaz, 2015). Tatli and Ayas, (2013), for example, point out that that virtual laboratories are at least as effective as real laboratories in terms of acquainting students with the experiment processes, and at the same time providing them with a safe experimental environment. While, on the other hand, a number of studies reported no significant differences in students' learning and satisfaction (see for example, Hortos, Sefcik, Wilson, McDaniel & Zemper, 2013; LeShea, 2013).

In the light of the reported literature, this study aimed to explore the impact of WiziQ as an interactive Web 2.0 platform on students' achievement, motivation and attitudes towards virtual learning environments in a college-level course in educational technology (TECH5001) at Sultan Qaboos University. More specifically, the study aimed to answer the following research questions.

Research Questions

1. Is there any significant difference in the mean scores of students' achievement between the experimental and control group?
2. What is the effect of WIZIQ interactive virtual classroom on student attitude towards online learning?
3. Is there any significant difference in the mean scores of students' Motivation between the experimental and control group?

METHOD

Research Design

A quasi-experimental design with pre-post control group design was used in this study to investigate the effect of Wiziq as an interactive virtual classroom on students' achievement, motivation, and their attitudes towards online learning.

Study Sample of the Study

The sample consisted of all students enrolled in the Educational and Information technology course (TECH 5001) at the Department of Instructional and Learning Technologies with a total number of 42 (N= 42) students assigned randomly into two groups. The experimental group consisted of 25 students, while the rest of the class (17 students) were assigned to the control group.

Research Instruments

Achievement test (pre-post test)

Given the nature of this study, three instruments were used for the data collection: An achievement test, a motivation inventory, and an attitude survey. The achievement test consisted initially of 30 questions (13 multiple-choice questions, 15 true/false questions, and two open-ended questions, with one mark for each). However, the test was validated and modified in light of the referees' comments to include 28 objective questions in its final format. The reliability coefficient of the test was 0.87.

Motivation Survey (ARCS)

The study adapted the Instructional Materials Motivation Survey (IMMS) by Keller for assessing students' motivation towards e-learning platform. The survey consists of 36 items: twelve of which for attention, nine for relevance, nine for confidence and six for satisfaction. The (IMMS) administered at the end of the course for the two groups. Alpha Cronach reliability for total survey was 0.91, and for each dimension of the survey was 0.81 for attention, 0.81 for relevance, 0.67 for confidence and 0.64 for satisfaction. The response scale ranges from 1 to 5, with a minimum score 36, and a maximum score of 180, and a midpoint score of 108. However, it should be noted that the minimum, maximum, and midpoint scores for each subscale vary depending on the number of items in the subscale.

Attitude Questionnaire

The students' attitudes towards Wiziq online virtual classroom was measured by an attitude questionnaire which consisted of 16 items containing positive and negative statements. The Alpha Cronbach reliability coefficient for the total survey was 0.83.

Procedures

All the students enrolled in the "Educational and Information technology" course was randomly assigned to the treatment groups with 25 students in the experimental group studied the course through WIZIQ

e-learning platform (synchronous engagement). While the other 17 students assigned to the control group who studied through the normal MOODLE e-learning platform (asynchronous collaborative engagement). The duration for experiment in this study was 8 weeks. The two classes had a 4-hour class period every week where both groups were taught the same content by the same instructor.

The WizIQ's virtual classroom used in this study was a collaborative web conferencing environment which enables the instructor to communicate synchronously using audio, video or text chat, interactive whiteboard and content sharing. Figure 2 illustrates a typical classroom layout, with the video/audio, participants' text-based chat, and presenter notes pods being visible. Other pods such as shared whiteboard, polling, desktop, and file sharing were revealed and used, as needed. Figure 3 shows the students' comments on the virtual lecture.



Figure 2. A typical virtual classroom layout

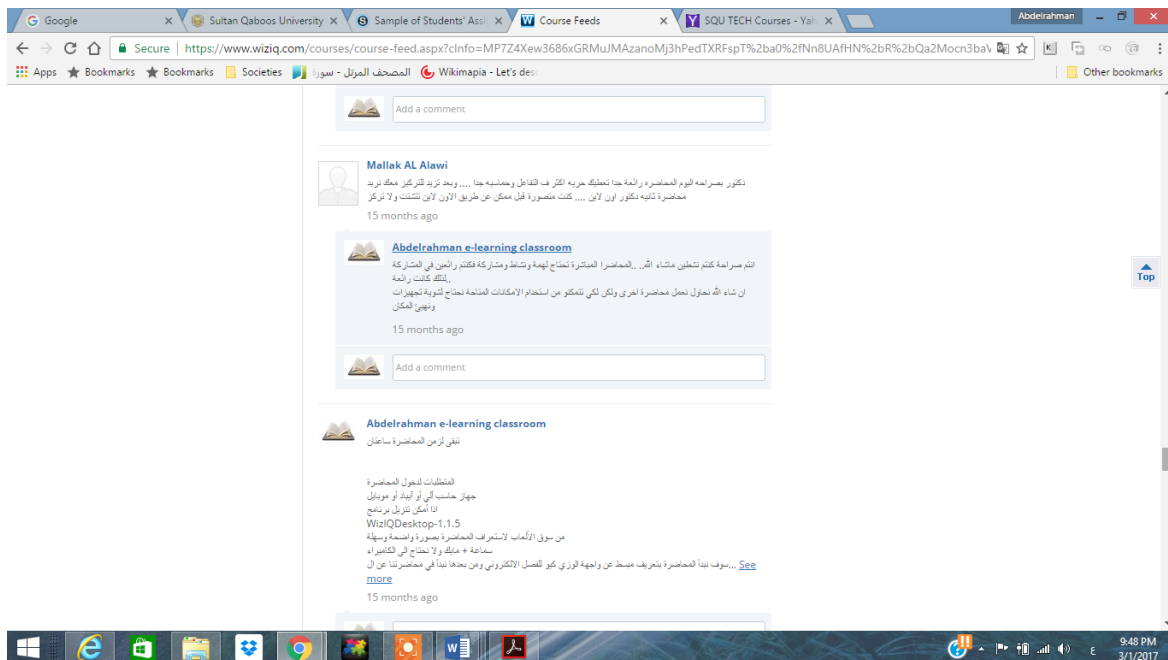


Figure 3. Students' comments on the virtual lecture

At the end of the experimental treatment, a post-test was administered for both groups to test for students' academic achievement. In addition, an attitude and motivation instruments were also administered at the end of the experiment.

RESULTS

Academic Achievement

Before the experiment, the researchers administered a pre-test to ensure the equivalency of the two groups. The mean and standard deviation of the scores were 16.26 and 2.333 for the experimental group, and 17.00 and 1.03 for the control group, respectively. An independent sample t-test was used for testing the mean differences in students' achievement of the two groups.

Table 1. Independent sample t-test scores for differences in the mean scores of the pre-test

Group	N	df	Mean	SD	t	Sig.
Control	17	40	17.00	1.03	1.226.	.228
Experimental	25		16.26	2.33		

As indicated in Table 1, no significant difference was observed in students' mean scores between the control and experimental group ($t = 1.226, .228, p > 0.05$). Accordingly, the two groups were considered to be equivalent before the treatment.

Post-Test Achievement

students' achievement, an independent sample t-test was used to compare means scores of the achievement test for the two groups. Table 2 below shows the mean differences of students' scores in the post test.

Table 2. Independent sample t-test scores for differences in the mean scores of the post-test

Group	N	df	Mean	SD	t	Sig.
Control	17	40	34.11	1.10	3.003	.005
Experimental	25		35.84	1.70		

Table 2 indicates that there is a significant difference in the means scores of the post test between the control group and experimental group ($t = 3.003, 0.005, p < 0.05$) in favor of the experimental group. This result could be attributed to the online enrichment activities provided to students in the experiential group, such as students' engagement in real-time learning sessions; practicing online communication skills; using WiziQ online whiteboard; involvement in an online discussion using course feedback; and quizzes. Taken collectively, these interactive activities seem to have a significant impact on students' performance in the post test.

In addition, the collaborative nature of WiziQ tools provided opportunities for students to interact with each other and share their acquire knowledge. This finding is supported by Barker & Gossman (2013) who used Virtual Learning Environment (VLEs) with similar tools and activities and concluded that VLEs were found to be very effective in improving students' learning. Also, this result is in alignment with that of Agrawal et al., (2016). They reported that virtual classroom was found to be effective in improving students' knowledge and skills. However, this finding contradicts the findings of LeShea (2013) which showed that incorporating live, synchronous class sessions into an online course did not increase students' levels of achievement. It also contradicts Hortos et al's (2013) findings which showed that there were no significant differences between medical students who received their lectures through virtual classroom and those who attended live lectures in medical student preparedness or academic achievement. Nevertheless, the impact of VLEs on students' performance depends largely on the attributes of VLEs and the nature of interactive tools being utilized.

What is the Effect of WiziQ Interactive Platform on Student Attitude towards Online Learning?

In order to answer the research question related to students' attitudes, a questionnaire was used to assess their attitudes towards online learning. The descriptive statistics for each of the 16 items assessed using a five-point Likert scale of the students' attitudes towards WiziQ online learning virtual classroom are presented in Table 3. The overall result indicates that students had a positive attitude towards online learning using WiziQ virtual classroom (mean=3.75).

Table 3. Mean scores of students' attitudes towards online learning using WiziQ virtual classroom?

Statement	N	Mean	SD
WiziQ learning platform is worthwhile.	18	4.61	.50
I have a desire to learn a lot about e-learning platform WiziQ.	18	4.56	.51
I feel that WiziQ learning platform encourage me to participate in the classroom discussion.	18	4.44	.62
I think it is important for me to learn to use different learning platforms.	18	4.39	.61
I think that WiziQ learning platform help to motivate students for learning.	18	4.33	.59
I feel that I am a competent WiziQ learning platform user.	18	4.3	.78
WiziQ learning platform do not scare me at all.	18	4.22	.94
I do not feel intimidated by a learning platform.	18	4.22	.43
I feel that there is a definite need for WiziQ learning platform in the classroom.	18	4.06	.73
I feel confident using different learning platforms.	18	3.94	.54
My training on WiziQ learning platform is adequate.	18	3.89	1.08
I think that WiziQ learning platform help students to collaborate with each other.	18	3.78	.81
The challenges of learning about new ways of engaging students by using technology are exciting to me.	18	3.56	.98
I am not the type that does well with WiziQ learning platform.	18	1.89	.68
I avoid using WiziQ learning platform as much as possible.	18	1.89	.32
Working with WiziQ learning platform makes me very nervous.	18	1.83	.62
Total	18	3.75	.24

Table 4. Students' attitudes towards online learning using WiziQ platform One-sample test

Students' attitudes score	N	df	Mean	SD	t	Sig. (2-tailed)
	18	17	3.75	.28	66.918	.001

More specifically, table 3 shows that 9 out of 16 statements had high mean scores ranging between (4.06 – 4.61). The top six statements of the positive attitudes towards using WiziQ online learning platform as viewed by the students in the experimental group as follows: (a) WiziQ learning platform is worthwhile (mean score 4.61); (b) I have a desire to learn a lot about e-learning platform WiziQ (4.56); (c)) I feel that WiziQ learning platform encourage me to participate in the classroom discussion (4.44); (d) I think it is important for me to learn to use different learning platforms (4.39); (e) I think that WiziQ learning platform help to motivate students for learning(4.33); and, (f) I feel that I am a competent WiziQ learning platform user (4.3). The results also showed only three statements have a mean score of less than two. These are: I am not the type that does well with WiziQ learning platform (1.89); I avoid using WiziQ learning platform as much as possible (1.89); and Working with WiziQ learning platform make me very nervous (1.83). These results indicated that, students in the experimental group had positive attitude towards using WiziQ online learning platform in their learning. The student's positive attitudes towards online learning could be attributed to the fact that the WiziQ online learning platform allows the learner to interact via text, audio, and video with other participants in a virtual classroom environment (Stevens, 2007). In such environment, instructors can conduct online live classes and make use of various features like: whiteboard, online PowerPoint, Word presentation, PDF, audio and video conferencing, text chat, class recordings for later reference.

Moreover, as illustrated in table 4 students who use the WIZIQ platform appeared to be more engaged in their learning when provided with collaborative learning environments. They seemed to have developed apposite attitudes towards online learning ($t = 66.918, .001, p < 0.05$). These findings are in congruence with a number of studies (e.g., Fisher, 2012; Bostan, 2011; Hampel and Pleines, 2013). These studies in general indicate that WiziQ platform seems to encourage collaboration among students and consequently expand learning opportunities. They reported that students had a positive attitude towards the use of online activities as an integral part of a distance language course. It can be concluded that WiziQ learning platform provides a collaborative and enjoyable learning environment for the students which might have positively influenced their attitudes towards the teaching and learning processes.

Students' Motivation

Is There any Significant Difference in The Mean Scores Of Students' Motivation Between The Experimental And Control Group?

With regard to the effect of WIZIQ virtual classroom on student motivation, an independent sample t-test was used to compare the mean scores of students' motivation in the two groups. 17 student from the control group completed the motivation scale, while only 24 students from the experimental group filled the motivation scale.

Table 5. Independent sample t-test scores for differences in means of the students' motivation

Group	N	Mean	SD	df	t	Sig. (2-tailed)
Control	17	3.41	.22097	39	3.886	.001
Experimental	24	3.63	.14217			

Table 5 shows that there is significant difference in the mean scores of students' motivation between the control group and experimental group ($t = 3.886, .001, p < 0.05$) in favour of experimental group. This result could be attributed to the role of WiziQ's teaching tools in providing opportunities for students to collaborate and socialize in an online learning environment. In addition, WiziQ allows for recording entire class sessions for later reference. The recordings can be viewed online or downloaded and distributed offline to the students. Perhaps, it is these dynamic attributes of WiziQ that helped in increasing students' motivation level. This finding is supported by Barker & Gossman (2013) who reported that the students using Virtual classroom exhibit greater motivation than their counter partners in traditional learning environments.

However, the level of students' motivation varies according to the different dimensions of the ARCS inventory. The following tables (6, 7, 8, and 9) illustrate the mean differences of students' scores in the four dimensions in the ARCS inventory (i.e, Attention, Relevance, Confidence, and Satisfaction, respectively).

Table 6. Independent sample t-test scores for differences in means of the attention dimension of ARCS motivation

Dimension	Group	N	Mean	SD	df	t	Sig. (2-tailed)
Attention	Control	17	3.50	.32	39	2.23	.03
	Experimental	24	3.69	.22			

Table 6 indicates that there is significant difference in the mean scores of students' attention between the control group and experimental group ($t = 2.23, .03, p < 0.05$) in favour of experimental group. WiziQ virtual classroom provides students with opportunities to interact with other participants in a common virtual space. This space contains a whiteboard with powerful drawing tools, which users can turn into multiple whiteboards, and upload PowerPoint presentations. According to Velagapudi (2013) providing students with opportunities to collaborate in sustained active engagement helps in raising students' motivation in general and attention in particular.

Table 7. Independent sample t-test scores for differences in means of the relevance dimension of ARCS motivation

Dimension	Group	N	Mean	SD	df	t	Sig. (2-tailed)
Relevance	Control	17	3.37	.28312	39	3.89	.001
	Experimental	24	3.73	.28933			

With regards to Relevance dimension of students' motivation table7 shows that there is significant difference in the mean scores of this dimension between the control group and experimental group

($t= 3.897$, $.001$, $p < 0.05$) in favour of experimental group. This means that the group taught by using WiziQ virtual classroom shows high motivation level regarding relevance than their counter partners using the traditional method. This result could be justified by the fact that this learning environment offers opportunities for learners to take more control of their learning processes and engaged in contextually relevant activities.

Table 8. Independent sample t-test scores for differences in means of confidence dimension of ARCS motivation

Dimension	Group	N	Mean	SD	df	t	Sig. (2-tailed)
Confidence	Control	17	3.31	.24699	39	3.018	.004
	Experimental	24	3.53	.22695			

Table 8 indicates that there is significant difference in the mean score of the confidence dimension in the motivation inventory between the control group and experimental group ($t= 3.018$, $.004$, $p < 0.05$) in favour of experimental group. This means that the group taught by using WiziQ virtual classroom shows high motivation level in terms of confidence than their counter partners using the traditional method. This result could be attributed to the fact that the students in experimental group using WiziQ virtual classroom were more able to collaborate in real-time with tools like real-time virtual classrooms with multi-way audio, live video streams, integrated chat, online whiteboard, application sharing, and file transfer which help them build up their confidence level and expectancy towards success in this course.

However, with regards to the Satisfaction dimension in table 9, the result showed that there is no significant difference in the mean scores of students' satisfaction between the two groups ($t= .918$, $.364$, $p > 0.05$).

Table 9. Independent sample t-test scores for differences in means of the satisfaction dimension of ARCS motivation

Dimension	Group	N	Mean	SD	df	t	Sig. (2-tailed)
Satisfaction	Control	17	3.44	.20362	39	.918	.364
	Experimental	24	3.51	.27766			

Although students in general were satisfied with the course content, they appeared to be less satisfied with the type of corrective feedback they received on their performance in the course activities. Perhaps this may have impacted their overall level of satisfaction. This finding seems to be supported by several studies in massive open online courses "MOOCs" (e.g., Huang & Hew, 2016; LeShea, 2013) who also concluded that students usually were found to be less satisfied with the feedback they received in live synchronous learning environments compared to asynchronous learning environments.

CONCLUSION

The purpose of this study was to examine the effects of the virtual classroom by using WiziQ platform on students' achievement, motivation and attitudes. The findings of this study are in congruence with a large body of relevant literature. The results in general, indicated that WIZIQ can improve not only the students' academic achievement, but also promote their motivation and attitudes towards online learning environments. Furthermore, with regard to the four conceptual components of the ARCS model, the study showed that, there is a significant difference in the mean scores of the attention, relevance and confidence dimension of motivation between the control group and experimental group in favor of experimental group. In addition, the study showed that, students in the experimental group who used WiziQ as a virtual classroom had positive attitude towards online learning. Perhaps the social openness in virtual environments contribute significantly to the improvement of the students' engagement in the learning process, which consequently improve their academic achievement and motivation levels. However, future research might be needed to further explore the effectiveness of the various tools and attributes of WIZIQ as an interactive web-based environment in expanding the learning landscape for the students in different learning settings.

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