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Faculty Perception of the Value of Interactive Multimedia, Students' Engagement, and Acceptance of E-learning: A Saudi Arabian Study

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ABSTRACT: This study explores faculty perceptions of interactive multimedia and students' acceptance of e-learning environments in Saudi universities. With increased national investment in digital learning infrastructure, universities continue to face challenges related to pedagogical design, technological readiness, and cultural expectations. Guided by a qualitative design, the study draws on semi-structured interviews with 17 faculty members across diverse institutions. Findings indicate strong faculty support for multimedia—particularly video—as a tool to enhance engagement, comprehension, and interaction. However, challenges persist, including limited Arabic-language resources and varying levels of technological proficiency among faculty and students. Faculty generally perceived students as increasingly accepting of e-learning, especially those with greater digital experience or exposure to online courses. Social factors, generational differences, and the quality of online interaction also influenced students' attitudes. Overall, the study highlights the importance of multimedia integration, faculty training, and culturally responsive digital resources in improving e-learning effectiveness in Saudi higher education.

KEYWORDS: e-learning, higher education, multimedia, virtual environments, interactive media

I. INTRODUCTION

With E-learning increasing worldwide (Downes, 2005), questions about implementing E-learning models effectively have been of concern to educators and administrators. Because learners come from different backgrounds with varying skills and competencies, the accessibility of those courses must be simple enough for learners to follow yet robust enough to achieve the learning outcomes set forth. Almalki (2011) identified several issues that hinder the successful implementation of e-learning in Saudi universities. One of them was due to a lack of skills in pedagogical and e-learning instructional designs. Another issue was the inability of websites' designs to increase students' interaction with course content and interaction among students.

According to Lebel, Olshtain, and Weiss (2005), ease of use of technology and practical accessibility of e-learning courses determine students' completion rates. Additionally, students who are not used to taking ownership of their learning are more prone to a lack of motivation for e-learning courses. Advocates of the multimedia social sciences curriculum at Medgar Evers College convey that "multimedia courseware holds students' interest better than typical college course materials do. Students who were interviewed said they enjoyed the feeling of being proactively involved in the material" (Fitzgerald & Olsen, 1993, p. 41). However, most online learning courses for higher education in Saudi universities tend to be very text-based rather than incorporating multimedia tools. Instructors assume that a text-heavy environment is the best way for higher education learners (Alsadhan, Alhomod, & Shafi, 2014), ignoring that visualization is a powerful tool for comprehension. Blackboard is the most dominant Learning Management System (LMS) in Saudi higher education (Alebaikan & Troudi, 2010). However, many faculty members consider it a complex system. They view the producing and posting of instructional materials, recording lectures, and uploading multimedia presentations as challenging tasks (Bayaga & Alghamdi, 2016). Further studies need to explore how faculty value the use of interactive multimedia and how they perceive students' readiness and acceptance of these media.

1.1 Purpose of the Study

The purpose of this study was to explore university faculty members' perceptions in the Kingdom of Saudi Arabia regarding students' acceptance of e-learning environments and the use of interactive media. To that end, the following research questions guided this qualitative study.

1. How do faculty members perceive the value of using interactive multimedia in instruction?
2. In what ways do faculty perceive students' engagement and acceptance within e-learning environments?

1.2 Conceptual Framework

The framework incorporated in this study are Community of Inquiry (CoI), Constructivism, and Connectivism. CoI provides a lens into the complexity of technology within a learning environment and helps us create a learning environment for students that is engaging and results in increased learning (Shea, Richardson & Swan, 2022; Stewart, 2019). The main features of this framework are Social Presence, Cognitive Presence, Teaching Presence. *Social Presence* refers to a participant's ability to recognize the community, communicate purposefully in a believing environment, and form interpersonal relationships that reflect their personalities. *Cognitive Presence* refers to the degree to which students confirm and develop meaning via discourse in a critical Community of Inquiry and sustained reflection. *Teaching Presence* refers to the facilitation, direction, and design of social and cognitive processes to realize individually meaningful and worthwhile educational learning outcomes (Garrison, Anderson & Archer, 1999). These important features intersect to produce useful and instructive engagements among participants in the learning environment, with the content, and with the program's goal, creating an effective and cooperative online learning environment for knowledge construction (Cleveland-Innes, Garrison, and Vaughan, 2018).

Constructivism rests on two tenets rooted in cognitive and social theories. One, as learners interact with their environment, mentally, they are actively constructing their own understanding, and they create knowledge by going beyond what they are given. Two, social interactions are important in this knowledge construction process (Chi & Wylie, 2014; Schunk, 2016). The basic responsibility of teachers is to develop a problem-solving, collaborative environment in which students become actively involved in their learning. Considering this, teachers act as facilitators of learning rather than instructors (Bagnoli, 2022). They are required to understand students' current concepts and guide them accordingly to build new ones.

Connectivism is a theoretical framework that acknowledges major shifts in how knowledge and information flow, grow, and change due to vast data communication networks (Picciano, 2017). Connectivism Learning Theory acknowledges that massive data communication networks cause significant changes in how knowledge and information flow, develop, and change. Learning does not simply happen within an individual, but within and across the networks. Technology enables individuals to learn and exchange information in ways that were not conceivable before the advent of the Internet and the World Wide Web. Connectivism-based learning works best in e-learning, where students can collaborate virtually. E-learning builds on the ideas of the Connectivism Learning Theory—namely, social interaction, ongoing knowledge exchange, and seeking information through digital channels. Digital tools, such as LMSs, enable students to form deep connections and exchange knowledge. The CoI framework and Connectivism are related to Constructivism in that all three predict the effectiveness of online learning. Both the CoI framework and Connectivism are constructivist process models that presume effective online learning requires the development of a community. They view learning through internet technologies and in online environments as a function of the interactions of three elements: social presence, cognitive presence, and teaching presence.

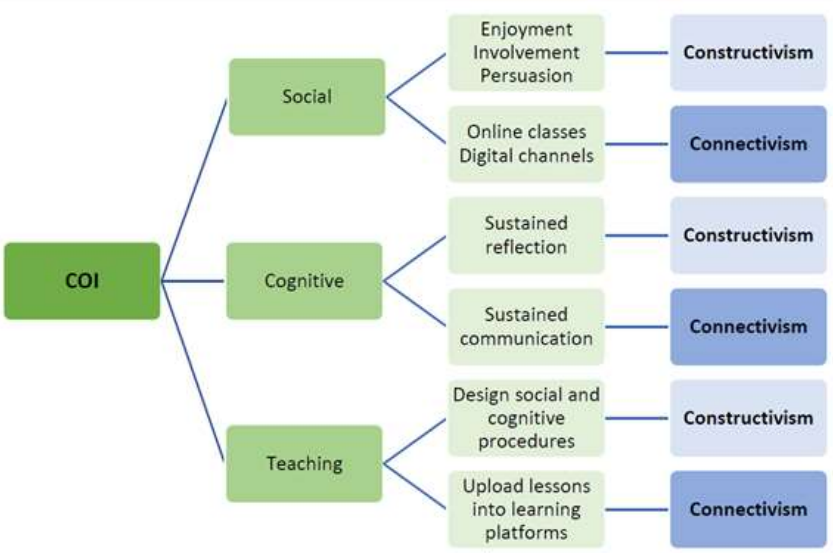


Figure 1: CoI & Connectivism Link to Constructivism

II. LITERATURE REVIEW

2.1 E-learning in Saudi Arabian Universities

The Kingdom of Saudi Arabia has recently given special attention to e-learning. The kingdom established a national headquarters to facilitate the expansion of e-learning across the kingdom. The center was established in Riyadh in 2005 and has been continuously updated and improved since then. The establishment of the National Center for e-learning and Distance

Learning (NELC) demonstrates the government's resolve to promote e-learning, and it began much earlier than other regional governments (NELC, n.d.). The site has manuals for e-learning controls, developing e-learning skills, and an online education plan in case of global emergencies, such as the recent coronavirus.

While efforts to ensure that there is awareness for e-learning in the country are commendable, a study conducted by Chanchary and Islam (2011) showed that about 73% of the total students interviewed across Saudi Arabia still preferred attending university classes to studying online. This shows that students in the kingdom are not willing to forgo the opportunity to attend the university, as it holds a special place in their cultures and societies. For students and teachers, their universities hold great sentimental value.

Not long ago, universities were open only to a select elite, and people felt honored to have attended a university like Harvard (Chatterton, 2000). Universities are now accessible to the masses, especially with the introduction of e-learning and distance learning. But cultural values still influence students' choices and preferences when deciding whether to attend a university or choose distance learning. To remedy this, most universities in the country have adopted a tertiary education model that combines elements of e-learning and traditional lecture systems, producing a blended model that is currently very popular among students (Aljaber, 2018).

2.2 Challenges in Saudi E-Learning Environment

For instructors to provide a fully functional and practical e-learning environment, courses must be appropriately tailored to a specific group and implemented and maintained continuously (Bendania, 2011). Tailored courses lead to learners' positive academic and social development and to a greater understanding of the material. Creating an e-learning environment may eliminate the hassle of conventional in-class lectures, but it comes with its own set of challenges. One of the biggest challenges of creating and maintaining an e-learning environment is the lack of time from universities and their employees to dedicate to e-learning courses. According to Ali and Magalhaes (2008), among the four significant barriers of e-learning—lack of management support, language barrier, information technology infrastructure, and lack of time— in non-English-speaking countries, information technology is the most common one (Ali & Magalhaes, 2008). In a conventional classroom lecture, most of the faculty's time outside the classroom is spent preparing the lecture. Given that the curriculum is already designed and lesson plans are in place, faculty members can rely on their teaching methods and classroom engagement.

On the other hand, in an e-learning environment, the content's design and delivery is essential, and continually ensuring that the learners are engaging and benefiting from the course is a challenge. Students' attitudes towards learning, and e-learning in particular, are another major influential factor for the success of an e-learning environment. Students come from diverse backgrounds with varying competencies and learning behaviors. A student's acceptance of an e-learning environment indicates whether they are willing to put in the effort, which ultimately determines academic achievement. Al-Harbi (2010) argued that when students choose to move from a conventional, less efficient lecture-based environment to an e-learning environment, they are more committed to it and succeed better.

Additionally, better implementation and applicability of the e-learning environment also depend on students' willingness to engage in the virtual learning process. Students' acceptance directly correlates with their active engagement in the courses. Al-Harbi (2010) characterized students' social, institutional, and demographic characteristics to predict their attitude towards e-learning. The author found that students' attitudes towards e-learning had a strong impact on the academic achievement of students engaged in virtual learning methods at Saudi universities. Moreover, fostering positive attitudes toward e-learning among universities and faculty members lays a strong foundation for how students perceive it. When potential users of the e-learning process are motivated by a goal, they are more likely to engage with it and use it to enhance their knowledge. In turn, these attitudes would lead to positive outcomes for both the e-learning process and learners' academic achievement.

III. METHODOLOGY

3.1 Research Design

This study used a generic qualitative design. Generic qualitative inquiry investigates people's attitudes, opinions, or beliefs about a particular issue or experience (Kennedy, 2016). It seeks to understand how people interpret, construct, or make meaning from their world and their experiences, and are epistemologically social constructivist, theoretically interpretive studies that focus on "(1) how people interpret their experiences, (2) how they construct their worlds, and (3) what meaning they attribute to their experiences" (Merriam, 2009, p. 23, Merriam, 2002)

3.2 Participants

A total of 17 uniquely qualified faculty members were obtained using purposive sampling. The sample included a mixture of women and men, teaching in a variety of Saudi universities in the capacity as professors, associate professors, assistant professors, and lecturers. All the participants were in either full-time or part-time employment and have been teaching for over 8 years.

3.3 Data Collection

Semi-structured interviews using closed-ended and open-ended questions were conducted. The initial questions were derived from the research questions and were followed up with more probing questions. The schedule was divided into three areas of inquiry, and the interviews lasted, on average, around 60 minutes. The interview questions were translated from English to Arabic because the study participants were native speakers of the Arabic language. Interviews were recorded and written notes were also taken during the interview. The recordings were then transcribed verbatim in preparation for analysis. To confirm the accuracy of the translation, the Arabic version of the interviews was reviewed by an expert at the Department of Linguistics and Translation Studies at King Saud University.

3.4 Data Analysis

Thematic Analysis was used to analyse the data. Thematic Analysis is described as "a search for themes that emerge as being important to the description of the phenomenon" (Fereday & Muir-Cochrane, 2006, p. 82). It is an approach of identifying and encoding patterns of meaning in primary qualitative research (Braun & Clarke, 2006). The data analysis took place in three stages 1) data reduction, 2) data display, and 3) conclusion drawing (Miles & Huberman, 1994). After the initial themes are predetermined from the research questions and the existing literature, patterns across the data were examined using the inductive approach. Table 1 outlines the 12-step process recommended by Percy, Kostere, and Kostere (2015) for analysing the data. The twelve step was divided into three stages.

Table 1: The Three Phases of Analysis

Stages	Process
Phase 1	1. Identify the categories for pre-defined code 2. Read and review data 3. Eliminate data that does not relate to the research question 4. Code each item of the data
Phase 2	1. Cluster items that are connected 2. Use the theme to describe the existing pattern 3. Put unrelated pattern in separate file 4. Look for overarching themes
Phase 3	1. Arrange themes to correspond with patterns 2. Revisit patterns that did not fit pre-existing categories 3. Write detailed analysis of each item 3. Describe and elucidate each pattern

IV. RESULTS

Research Question: How do faculty members perceive the value of using interactive multimedia in instruction? Two categories emerged from this question: 1) estimation of interactive multimedia in teaching instruction, and 2) challenges of adopting multimedia.

4.1 Estimation of Interactive Multimedia in Teaching Instructions

All participants agreed that courses and multimedia tools in e-learning are designed and selected individually, and the typology of activities and the use of multimedia were mainly individual. The cross-section of respondents gave diverse views about using and practicing e-learning in their classes. The availability of multimedia varies by college major. The majority of participants emphasized the importance of using multimedia tools to support and reinforce the information presented in the lecture. During the interviews, the use of videos, audio recordings, graphs, maps, articles, tweets, and images were repeatedly mentioned, but they mostly preferred using videos.

> *Students are extremely stimulated when absorbing graphics, video, and animations alongside text. Students become more focused and retain more information as a result.* (Participant 10).

> *Teaching online needs us to make an extra effort to connect with our students. So, lecturing during the class will waste the time without any contact with students. I preferred to record the lesson, share it, and ask students to watch it before the class. Students came to class already knowing the basics, so I use the class time in in-depth discussions, practical application, answering questions.* (Participant 13).

> *Videos or any multimedia tools during the lecture encourage the student to interact and they help students to receive the information through auditory and visual channels simultaneously.* (Participant 16).

A participant from the School of Engineering at King Khaled University mentioned:

> *Using YouTube channels for educational videos to enhance engineering education in the Arab world, where I usually use Professor Lutfi Al-Sharif's YouTube channel, very widely accessed channel, for this activity.* (Participant 9).

One of the respondents, in contrast, commented that they use multimedia tools that they are more confident with. Most respondents mentioned YouTube videos as the most efficient, clear, and wide-ranging tool for teaching.

> *I asked my students to use YouTube for posting their videos where it is easy to use and enable their peers to comment and interact with each other.* (Participant 7).

Three participants mentioned Google Sites, a website-building platform that allows students to create sites and publish them at no cost. Participants found that students demonstrated high motivation, teamwork, and a deeper understanding of conducting projects on Google Sites, and they encouraged the use of technology-based classrooms. Participant 12 mentioned,

> *I always remind myself and other faculty members of a website called Roung, a non-profit massive open online course portal, in the Arabic language. It also provides free academic study materials in various fields and disciplines. It is provided by distinguished academics from all over the Arab world, who are eager to expand the circle of beneficiaries of their specialized scientific and knowledge stock, where they seek to deliver it to those outside the walls of universities.*

4.2 Challenges of Adopting Multimedia

Regarding the challenge of finding qualified multimedia for the content, nine participants were dissatisfied with many of the provided multimedia. Four opined that most available multimedia supports the English language, and this presents a challenge for students who don't speak or understand English. Several participants stated that the language is not a problem for some majors that are taught in English. In one interview, the faculty stated,

> *I usually use YouTube videos the most because I can add captions and subtitles in Arabic to the selected videos on YouTube.* (Participant 4).

Another said,

> *... It was hard to find programs that support the Arabic language for my Digital Graphic class ....* (Participant 1).

Overall, participants concluded that students were more attentive and interactive in class due to the use of multimedia. Universities, in turn, are still trying to enrich educational websites with Arabic resources. Participant 15 mentioned,

> *Each university has sporadic efforts of publishing and collecting educational content materials on one platform under its name and then introducing it to its users, but there is no public general platform to achieve high usability for all users.*

Faculty, in some ways, try to enrich platforms with educational materials, and students are rewarded by faculty when they publish any educational and innovative materials that enrich the Saudi Digital Library (SDL).

> *We encouraged students to publish at SDL, but most of the students' work still does not provide quality content that meets users' aspirations.* (Participant 6). " Some faculty also *post many PowerPoint slides at the university's library to add real value at various levels, whether entertainment, educational, or cultural.* (Participant 11).

Research Question: In what ways do faculty perceive students' engagement and acceptance within e-learning environments? One category emerged regarding the fourth research question: students' interactions with technologies and digital tools.

4.3 Students' Interaction with Technologies and Digital Tools

Most participants responded positively to students' acceptance of e-learning and the technology explored in this study:

> *Some students think that e-learning is valuable and easy, and few have negative attitudes toward e-learning.* (Participant 7).

> *I can say that 76% of students found it easy to understand course materials, and 60% of students found it easy to understand assignments and could deal with them comfortably.* (Participant 15)

> *Students are so enthusiastic that they were expecting the following online classes .....* (Participant 2).

The responses showed that students who spend longer sessions working in the e-learning environment experience greater benefits and find it easier to explain these benefits to other students.

> *Students who use the e-learning environment often find it easier to use and are more confident in computer use.* (Participant 12)

Some respondents perceived that younger students with technology skills tend to adopt e-learning more than older students, while some perceived the opposite.

> *I am teaching students who are in their senior year. I found them not interested in using technology tools a lot. That might be because they took fewer online classes than freshmen students.* (Participant 5)

> *Students who are in their first years in college tend to be more successful in using technology than senior students.* (Participant 11)

One interesting finding was the acceptance of e-learning is related to one's social status. Participant 11 stated:

> *A few years ago, deciding to study in an e-learning program within Saudi culture was something difficult because that affects one's image (or social status). Some new generation individuals still have this concept and are unwilling to study in online programs.*

Conversely, some participants did not think their students were excited and motivated to learn in online classes.

> *The first online learning conducted was during the COVID pandemic, and it was the only practical solution in teaching delivery. Many students negatively responded to online learning during that period and could not do better in the next year.* (Participant 9)

Another participant has another concern about the reason beyond students' negative responses.

> *The lack of students' digital performance relies on the poor communication between the lecturer and the students.* (Participant 4).

Other respondents reported that students' engagement in online classes was high and concluded that most students accepted online learning.

V. DISCUSSION AND CONCLUSION

Interaction is significant and integral to e-learning, yet it poses a challenge for maintaining students' interest in the course content. Integrating multimedia into online courses would improve interactive individual and group activities. Participants' instructors used audio recordings, graphs, maps, articles, tweets, and images in their classes, but videos were the most popular learning tool. This comes as a surprise, as previous literature indicates that multimedia resources are increasingly embraced in elementary and secondary education, but higher education in Saudi Arabia has not shown the same enthusiasm (Alshehry, 2016).

The fact that instructors received training in interactive online learning from educational institutions during and after the COVID-19 pandemic may explain this result. This conclusion aligns with Chatta's (2022) findings, which show that faculty at higher education institutions made significant efforts to learn about best practices in online education between 2019 and 2021. Faculty invested extra effort to learn about various technologies and prepare themselves to confront the challenges of a newly converted online higher education program (Chatta, 2022).

Effective educational video platforms make abstract topics that once seemed challenging to teach and learn more understandable and teachable. Connectivism accepts technology as a significant factor in the learning process. It focuses on the role of internet tools in creating new learning opportunities (Picciano, 2017). Technology, including watching and creating videos, enables individuals to learn and exchange information in ways that were not conceivable before the advent of the internet and the World Wide Web (Siemens, 2004).

Mayer (2017) emphasizes the design of e-learning multimedia instructional materials that can promote academic and interactive learning. Mayer's study reveals that learners in online courses that integrate text and graphics have a better understanding of the content than learners in text-only courses. Bleed's (2005) article on visual literacy in higher education clarifies its usefulness and explains how visual materials can better explain concepts and facts than reading alone. Bleed found that visual multimedia in online courses holds students' interest more than typical college course materials. Connectivism posits that learning does not simply happen within an individual but within and across networks. Technology enables individuals to learn and exchange information in ways previously inconceivable, and virtual environments can provide a wide range of learning materials in various media formats.

Faculty who participated in this study perceived that students at Saudi universities are gradually accepting online courses and becoming more comfortable with the technologies used to make learning more interactive and engaging in this environment. This is consistent with a recent study by Alkhawajah, Alham, Alshammari, and Alnumay (2021). They examined factors affecting students' satisfaction with distance learning at King Saud University and found that 72% of students were satisfied with the e-learning arrangement, faculty preparation, learning objectives, and assessment plans. While Alkhawajah and associates examined students' perspectives, this study focused on faculty perspectives, and it is obvious that faculty are seeing evidence, reflected by the quality of students' work and interactions, that are consistent with students being more comfortable with learning in an online environment. Students come from different backgrounds with different competencies and behaviors. Learners' acceptance directly correlates with their experiences with e-learning methods (Al-Harbi, 2010). A student's acceptance of an e-learning environment indicates whether they are ultimately willing to put in the effort for academic success. The present results indicate that faculty think students who spend longer sessions working in an e-learning environment experience greater benefits. In addition, students with strong computer knowledge tend to view the e-learning environment as advantageous and easy to use.

The author's interpretation of the increasing acceptance of e-learning environments among students likely relates to students' preference for the flexibility that online classes offer. Also, a digital environment is the preferred learning method for Generation Z, where they enjoy digital tools well ahead of lectures, in-person collaboration with classmates, learning applications, and books. This does not overlook, according to Ascione and associates (2019), the fact that some students exhibit reluctance to accept e-learning environments. It is conceivable that lower acceptance among students is due to a lack of knowledge and experience with online education, as many students lack adequate training or familiarity with the platforms in use. In addition, when students are in that environment, a lack of interaction between students may be demotivating and affects their acceptance of e-learning methods. Examining a student's educational experience from the perspective of Connectivism theory is informative for both researchers and educators, as it helps them understand the personal and situational factors that promote students' deep engagement in learning. Students' attitude towards e-learning is a major influential factor for the success of e-learning programs.

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