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عنوان البحث

Impact of digital technology on education and learning achievements of university students in Saudi

أثر التكنولوجيا الرقمية على التحصيل التعليمي والتعلمي لطلاب الجامعات في المملكة العربية السعودية

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Introduction

The development and spread of computer technology, which is still going strong today, set off the digital technology revolution in the latter half of the 20th century. Many things that were thought to be impossible in the past can now be completed in a matter of minutes or seconds. The education sector has been impacted by the swift expansion of information and communication technology, which has an impact on all professions. Learning and teaching procedures are already changing as a result of the introduction of digital technology into the educational system. Digital technology adoption in higher education institutions has been affected by social and pedagogical factors such improved communication, cost-effectiveness, increased collaboration and cooperation, and information access. Trainers and students alike can now select programs that are flexible, affordable, goal-oriented, and customized to fit their needs (Alabdulkareem, 2015).

Depending on the situation, there are numerous ways to define technology. Technology, it is said, is a term that refers to a body of knowledge that is utilized to produce tools, develop skills, and choose materials for use by humans. Utilizing methods, instruments, supplies, and energy sources to improve quality of life and productivity is known as technology (Basahel and Yamin, 2017).

In this context, education, in its broadest sense, refers to a method of learning wherein a group of people's information, abilities, and habits are transmitted from one generation to the next through instruction, training, and study. In this way, the twenty-first century might be described as a technological era. As a result, technology influences many aspects of our daily lives. It is seen to be essential to the expansion of an economy. In general, a low-tech economy would find it difficult to thrive in the high-tech world of today. The effects of technology are clear to perceive and evident in many spheres of life, including education (Basahel et al, 2016).

The more technology is used in the classroom, the more students will understand the material and acquire abilities in analytical reasoning, problem solving, information evaluation, and creative thinking. There is a severe lack of knowledge about how technology use affects academic performance in Saudi Arabia. Instead, research done in the Kingdom of Saudi Arabia has revealed that students are accustomed to a somewhat more conventional style of instruction (Hakami et al, 2023). On the other hand, widespread usage

of technology would foster a positive learning environment. This method would enable students pursue a true grasp of the fundamental ideas, topics, and applications of any given field of study. It would replace the traditional approach to education, which has not valued students' quest of understanding (Handayani, 2015). Technology use would encourage students to participate actively in their education in a setting intended to help them acquire relevant content. This might lead to improvements in learning outcomes that are progressive and positive over time (Alqarni, 2015).

The assumption that the use of instructional technology improves student motivation and involvement in the classroom overall has received substantial support from research. To be more precise, technology stimulates pupils' emotions and behaviors. Whether technology is used in the classroom or after school, it gives kids more chances to communicate with teachers, work together with classmates, and participate in the educational process. Examples of specific technology that have been demonstrated to increase student involvement include digital games, blogs, wikis, social networking sites, and web conferencing software (Kunasekaran et al, 2015).

Students are able to participate in higher-order thinking, improve communication, take part in group discussions and problem-solving exercises, critically reflect on the material, and develop their digital abilities when many technology applications are used. Research has examined the variations in academic performance between students who received instruction using technological enhancements, such as podcasts and lecture recordings, and those who did not (Lea et al, 2021). The findings showed that pupils who studied academic material in a classroom with technology enhancements performed better than those who did not. In all objectively assessed tests, including papers, midterm/final exam scores, and individual tasks, the intervention group performed better. According to other studies, integrating technology into the classroom increases students' motivation to comprehend and finish assignments (Viorica-Torii and Carmen 2013).

This study focuses on the value of digital tools and technology in education and how well Saudi Arabian university students succeed in their coursework (Yamin, 2015).

Education technology is often used and comprehended indirectly through the lens of the restricted description, which is the mix of visual and auditory aids employed in instructional activities. This does not always help to improve how learners practice what

they are learning. Even if teachers use these contemporary tools to educate efficiently, students' impacts are still relatively modest, which does not guarantee that they will perform well while engaging in high-level learning (Yamin and Matar 2016).

Even the way that education is conducted reflects this theoretical meaning. As a result, within the existing framework, educational institutions face a dual problem that explains how much advanced technological innovation might enhance students' educational experiences and the need to assess changes in pedagogical approaches. Studies reveal that installing state-of-the-art technology in colleges and universities does not ensure that students' learning habits will improve. Instead, because the learner experience is similar to previous generations' despite these physical adjustments, digital technology makes people more productive (Yamin and Al Harbi 2016).

Significance of the study

A significant player in both the Middle East and North Africa (MENA) and the Gulf Cooperation Council (GCC) is the Kingdom of Saudi Arabia (KSA). Furthermore, the Kingdom of Saudi Arabia continues to be the world's top exporter of crude oil to other countries. You may find out more about the Kingdom of Saudi Arabia, its people, their way of life, and its culture here. Saudi Arabia has made significant investments in the educational sector. The Saudi Education Ministry has not reached all of its goals, despite the facility's quick expansion and significant monetary contribution (Al-Faleh 2012)

The KSA's second development plan has resulted in a significant expansion of the country's educational and training infrastructure. However, there are problems with facility placement and delivery. Furthermore, the facilities' upkeep and design are expensive and poorly incorporated into the educational framework (Yamin and Al Harbi 2016).

There are now a number of initiatives in the nation to improve educational technology, but they have only had patchy results. The current actions that need be taken to adopt education technology are defined in detail in the third National Development Plan. According to the strategy, the current state of affairs must demonstrate specific opportunities for growth in qualitative programs, particularly in the implementation of

major development projects such educational technology centers and multipurpose lecture halls.

The government of the Kingdom of Saudi Arabia has consistently prioritized the implementation of educational technology. The need of introducing new facilities for teaching and learning has been emphasized in both the second and third national plans. The emphasis of the fourth national plans is on improved outcomes and higher-quality education. Digital technology was introduced through a number of avenues into the Saudi Arabian educational system (Yamin and Al Harbi 2016).

Study problem

One of the most important adjustments mandated by the Saudi educational reform is the introduction of digital technology. One of the eight key abilities that companies are requesting in the job market is digital knowledge. In this instance, integrating digital technology into the curriculum must provide high-quality instruction and help students develop their abilities and learning preferences. Students who use digital technology efficiently achieve higher academic results and gain computing abilities that will benefit them in their future pursuits (Al-Hariri and Al-Hattami 2017). It has been suggested that students' everyday routines in basic scientific and clinical activities should embrace and even promote the use of digital technologies. The main factor facilitating the acceptance and use of digital technology in the educational sector is the internet. In this instance, e-learning has taken the lead in educational trends and provides an alternative to traditional teaching methods. According to studies, kids learn more efficiently when they are exposed to both words and images together than when they only hear words. With the help of digital technology, pupils can develop into autonomous thinkers, skilled workers, and researchers. Aside from that, the report will look at the difficulties facing digital learning in the nation's colleges and institutions (Alghamdi, 2017).

Objective s of the study

Thus, this research study seeks

- To identify the exact correlation between digital technology and student's performance.
- The study also aims at investigating students' attitudes towards digital technology.
- The challenges that affect digital learning.
- Prospects of digital learning.
- The attitude of students towards digital learning.
- The effect of digital learning on students' performance.

Research questions

In this research we shall deal with the following questions.

- Do students at KSA Community Colleges have a positive attitude towards digital technology?
- What are the challenges faced in digital learning in KSA Community Colleges?
- What are the effects of digital learning on student's performance?
- What are the prospects of digital technology in KSA education system?

Hypothesis of the research study

The research hypotheses were

- Students have positive attitudes towards digital technology.
- Digital technology has a significant impact on student performance and ICT skills.

Literature review

The impact of digital technology on Saudi students was the subject of a study presented by Alaboudi, and Alharbi, (2020), who came to the conclusion that a large percentage of students had a good attitude toward using digital technology apps. They stated that the use of digital technology has improved their performance as a whole and that they can now plan and utilize technology to its fullest potential for learning. The study also found that students are encouraged to be self-reliant when using digital technology. These results are consistent with those of Al-Fahad in (2017), who found that using digital technology to organize and direct learning can be beneficial. It was also found that insufficient digital technology equipment and facilities, including laptops, projectors, fax machines, displays, and compact disks, are available in universities and technical institutes.

An investigation on the efficiency of mobile learning with King Saud University B.A. and M.D. students was carried out by Al-Fahad in 2007. The outcome suggests that by boosting their teaching and learning, it might be an additional strategy for raising the retention of B.A. and M.D. students. The ability to use this technology at any time and any place to enhance communication and improve students' open and distance learning experiences is by far its greatest benefit. The Saudi Arabian government has formally announced the use of distance learning and, in order to accomplish this goal going forward, has started initiatives to establish six infrastructures for higher education and distance learning. E-learning and distance education are two of the most innovative and promising experiments in the Arab world. The national center for e-learning, a division of the ministries of higher education, has developed an e-learning management system that is in line with the demands of Saudi Arabian university education. It has also created a system for managing academic and administrative skills, created electronic curriculum content, and created digital and print forms for various university courses. Additionally, it has created an educational portal for e-learning and distance learning, as well as an awareness program for electronic education.

The use of modern technology in education has countless prospects, yet perceptions of its proper application are still far behind expectations. Due to this, Saudi Arabia has not been able to profit as much as it could have at all operational levels; yet, current usage levels are encouraging, and improvements and a better future seem possible (Al-Fahad, 2000)..

Using Blackboard technology as a component of the learning platform, Hakami et al., 2023 employed TAM to evaluate the learning outcome among the students. Their study revealed factors that affect online learning based on Blackboard in both positive and bad ways. Understanding online learning while employing blackboard technology are essential for closing the learning gaps between lecturers and students. For instance, self-efficacy, perceived convenience, computer fear, and technological complexity don't really affect online learning. On the other hand, prior research indicates that perceived utility and perceived simplicity of use significantly influence Blackboard learning. Additionally, a number of research have focused on and shown that student acceptance and ease of use of online technology led to an improvement in learning rates.

Research by Lea et al. (2021) demonstrates that there is a relationship between a learner's personality and the methods used in the classroom. This association should be viewed as both a beginning point and a component that forms the foundation for developing instructional activities in the future that will ultimately enhance students' performance. The modern healthcare system's shifting demands on physicians provide a strong incentive for the adoption of these ideas. However, the idea of using digital technology at colleges and universities is not one that is commonly practiced in Saudi Arabia .

The predominance of the conventional knowledge transfer system in Arab educational institutions, according to Handayani (2015), demonstrates a clear information technology divide between the Arab world and the developed world. Since technology has become an integral part of higher education, Saudi educational institutions must upgrade their technology to keep up with the rapid advancement of this field. The school system is becoming more responsive and flexible thanks to the internet and smartphone apps.

The use of digital technology improves learners' abilities and boosts their comprehension of content in areas including analytical reasoning, creative thinking, problem-solving, and information analysis, according to Al-Hariri and Al-Hattami (2017). Information about how the use of technology affects student performance is scarce and lacking in the Kingdom of Saudi Arabia. Research conducted around the nation shows that kids are accustomed to traditional teaching methods and have not adopted current technology. However, integrating digital technology into the educational system would provide a conducive learning atmosphere. This method would most likely replace the

traditional approach to education, which has not demonstrated to learners any understanding, with a deep-meaning method that helps students seek a true comprehension of the main ideas, topics, and applications in any field of study. People believe that technology has a good impact on their thought processes. The methods that technology allows for the processing, interpretation, and acquisition of information do, in fact, educate humans. Numerous studies have examined the ways in which technology affects our brains and how its use affects our behavior and cognitive processes .

Yamin M. (2015) claims that modern KSA instructors employ digital technologies in their lessons. For example, they commonly use PowerPoint presentations as a teaching model. Next, the presentations or the course materials are uploaded to the blackboard or the internet platform. Online courses, which are a source of information and papers as well as a forum for interactive conversation, are made possible by digital technology. Furthermore, recordings of instruments have become a common feature of laboratory instruction, which enhances the learning experience and makes it more interactive than more conventional teaching approaches.

Research methodologies

To accomplish the goal of the study and respond to our questions formulated in the last section, a questionnaire was formulated. This questionnaire was administered for that year (2024) to detected number of the study sample students of Midocean University during their lecturers with the help of the digital technology facilities employed in these institutions. The questionnaire consisted of relative sections that treat the study goals

To make work of the participant much easier, the questionnaire adopted multiple choice questions on a five scale namely, (Strongly agree, agree, disagree, and strongly disagree).

Validity and reliability of the study

The research questionnaire would be presented to lecturers from college where they could propose changes. The Cronbach's Alpha would be applied to test the dependability of the study questionnaire. If the resultant figure of the Cronbach's Alpha is between 0.6 and 0.8, then it is considered as an acceptable figure. However, the reliability of the study can be termed as poor if the figure is less than 0.6. If the figure is greater or equal to 0.8, then it is considered good.

Study sample size

The research study sample is randomly selected from Midocean Colleges. The study participants included students pursuing different courses. The questionnaires distributed, would be returned representing responses. Fully completed questionnaire would be subjected for the analysis indicating a response of the research study employed two approaches to analyze the data, that is descriptive technique and correlation analysis.

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Questionnaire

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The primary aim of this questionnaire is to assess the Technology-impact on the students' performance. The questionnaire shall be completed by a randomly selected stratified sample of learners in an institution. Use appropriate sample size determination and random number table for the survey. Protecting the privacy of the respondent is important all personal information will be kept confidential and used only in aggregate form.

Demographic information

- Name of the university/institution :
- Nationality :
- Gender: ☐ Female ☐ Male
- Your age group: ☐ Below 20 ☐ 21-25 ☐ 26-30 ☐ 31-35 ☐ 36-40 ☐ 41 and above
- Your level of study: ☐ Undergraduate ☐ Graduate or postgraduate ☐ Research
- Year of study: ☐ Year 1 ☐ Year 2 ☐ Year 3 ☐ Year
- Your faculty discipline:
 - ☐ Humanities ☐ Natural Sciences
 - ☐ Social Sciences ☐ Engineering and Technology
 - ☐ Commerce and Management ☐ Agriculture and natural resources
 - ☐ Health and Medical Sciences ☐ Fine and Performing Arts

Use scale from 1 to 5 as follow to response each question below:

Poor = 1

Fair = 2

Neutral = 3

Good = 4

Excellent = 5

Student digital learning facilities availability

- Classroom facilities (e.g. computers, projection systems, lecture capture systems,
- SMART boards.
- Computer labs (for practical and Internet access
- Email services (institutional)
- Learning Management System (e.g. Moodle,
- E Portfolio
- Network bandwidth/speed of Internet)download and upload)
- Wi-Fi access
- Online or virtual technologies (e.g. network or cloud-based file storage system, Web
- portals
- Access to software (e.g. MATLAB, GIS applications, statistical software, qualitative data analysis, graphics software, textual or image analysis program
- Download and use of free and open source software for teaching and learning
- Support for maintenance and repair of ICTs
- Access to data storage
- Data visualization software

- Citation/reference management software
- Plagiarism detection software
- Institutional repository for sharing of research
- e-Journals
- e-Books
- Citation databases
- Bibliographic databases
- e-Newspapers

Student's use of technology

- I get more actively involved in courses that use technology.
- I am more likely to skip classes when materials from course lectures are available online.
- When I entered college, I was adequately prepared to use the technology needed in my courses.
- Technology makes me feel connected to what's going on at the college/university.
- Technology makes me feel connected to other students.
- Technology makes me feel connected to teachers.
- Technology interferes with my ability to concentrate and think deeply about subjects I care about.
- I am concerned that technology advances may increasingly invade my privacy.
- I am concerned about cyber security (password protection and hacking).
- In-class use of mobile devices is distracting to me.
- In-class use of mobile devices is distracting to my teacher.

- Use of tablets/laptops in class improves my engagement with the content and class.
- Multitasking with my technology devices sometimes prevents me from concentrating on or doing the work that is most important.

Student's performance

- It will help me get better results in my subjects. It will help me understand the subject material more deeply.
- It makes completing work in my subjects more convenient.
- It motivates me to explore many topics I may not have seen before.
- It allows me to collaborate with others easily, both on and outside of the campus.
- It will improve my IT/information management skills in general.
- It will improve my career or employment prospects in the long term