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## ADAPTING TO CHANGE: A COMPREHENSIVE ANALYSIS OF EDUCATIONAL DIGITALIZATION IN SAUDI ARABIA POST-COVID-19- A CRUCIAL TOPIC IN TODAY'S EDUCATIONAL LANDSCAPE

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### Abstract

The world was different before the pandemic hit. Technology was used as a tool but not as a medium for education. The majority of universities and colleges preferred classroom teaching. However, due to COVID-19, educational institutions worldwide had to switch to digital methods. This meant that teachers had to adapt to a new way of teaching, which was online. Their resilience and adaptability in the face of such a drastic change are commendable. Before the pandemic, Blackboard was used in Saudi Arabia, but it was not considered a medium for online teaching. The presence of Blackboard made the transition from physical to remote teaching easier during the pandemic. The shift to online learning has highlighted the importance of technology in education. This study aims to emphasize the changes, problems, and current demands in the education system of Saudi Arabia, such as the integration of digital tools and online platforms in education, teachers' training, and a holistic approach. The paper provides an overview of the impact of digitalization on education in Saudi Arabia post-pandemic.

**Keywords:** Covid-19, Online Teaching-Learning, Technology, Classroom.

### Introduction

Education is a crucial aspect of human development, as it shapes a country's economic growth, institutional structure, and social cohesion. Traditionally, most countries preferred in-person schooling and college education, with distance learning receiving less emphasis. However, the COVID-19 pandemic has drastically affected the world's economy and education system, leading to widespread school and university closures. On March 16, 2020, 73 governments announced school closures, affecting more than 421 million learners globally. UNESCO reported that the pandemic has left one in five students out of school worldwide. The world had to shift from offline to online learning modes quickly, but this negatively impacted low-income families who couldn't afford laptops and had limited access to technology and the internet. It was a collective effort of all stakeholders to overcome these challenges.

Universities and colleges around the world had to take measures when they closed due to COVID-19. Direct communication between teachers and students was cut off, so online tools such as Zoom, Google Meet, and Telegram became highly sought after to facilitate remote learning. As Josep Borrell stated, "COVID-19 will reshape our world. We don't know when the crisis will end, but we can be certain that our world will look very different afterward. The extent of this difference will depend on the choices we make today." (EU HRVP Josep Borrell: The Coronavirus pandemic and the new world it is creating, 2020)

Saudi Arabia has 29 public universities and 14 private universities. (wes.org) Prior to the COVID-19 pandemic, several universities in Saudi Arabia employed Learning Management Systems (LMS) to assist with digital learning. However, the use of Blackboard was minimal before the outbreak. According to Bousbahi and Alrazgan (2015), Blackboard was utilized by many instructors primarily for sharing teaching materials, conducting discussions, and administering formative tests, but it was never used as a tool for

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online teaching. Saudi Arabia's Ministry of Education has recognized the shift from traditional to distance learning in response to the COVID-19 outbreak. As a part of a national plan to implement differentiated instruction, e-learning, and combined instructional delivery, e-learning was approved. Additionally, *Madarasati* is a distance learning open platform that was developed in 2020 and is designed specifically for schools across the country.

According to Khan et al. (2021), technology can create new knowledge, solve problems, and improve people's ability to work effectively. However, some educational scholars argue that there are limitations and flaws in the online mode of teaching and learning. The primary reason is the lack of direct interaction between students and teachers. Several other factors have also contributed to the dissatisfaction with online modes of teaching and learning.

Saudi Arabia's public universities have adopted Learning Management Systems (LMS) like Blackboard to enhance their teaching methods (Aldiab et al., 2019). LMS has always been integrated by the Ministries of Education in Saudi Arabia to improve academic performance (Alkinani & Alzahrani, 2021). Due to COVID-19, Blackboard learning was implemented as an alternative e-education method (Iffat Rahmatullah, 2021). Blackboard allowed for synchronous and asynchronous communication between student-teachers, lifting the time constraints in teaching and learning.

This paper presents the findings of a study that investigated the attitudes of teachers and students toward online teaching and learning during the pandemic. It also explores the advantages and challenges of online teaching and seeks to determine the preferences of students and teachers for teaching and learning after the pandemic. The study sheds light on the changes, problems, and current demands in the education system, as well as the teaching and learning methods employed. Data was gathered from students and faculty members of Prince Sattam bin Abdulaziz University Colleges in Wadi Al Dawasir, Saudi Arabia. The following research questions were addressed:

1. What is the opinion and perception of faculty and students towards the online platform used and teaching-learning experience during the pandemic?
2. What are the advantages of remote learning?
3. What are the challenges of online education during and after the pandemic?
4. What are the preferences of teachers and students about the education system post-pandemic?

## Literature Review

Andreas Schlicher's (2020) study on "The Impact of COVID-19 on Education" revealed that privileged students found alternative education opportunities despite closed schools. The crisis highlighted the need for remote learning through the internet, television, or radio. Teachers had to adapt to new teaching methods to maintain continuity of learning. Bozkurt and Sharma (2020), in their study "Emergency remote teaching in a time of global crisis due to the Corona Virus pandemic," talked about the need to have remote teaching during Corona to keep a safe distance. In their study, they described the difference between remote learning and distance learning. Tanveer M. et al.'s (2020) study examines the impact of virtual classrooms on students' learning outcomes. The paper uses SWOT analysis, student surveys, and telephone interviews. Over 67% of participants believe school closures will negatively affect them. Alsmadi et al. (2021) studied the common technologies used for online education and challenges faced during COVID-19. They surveyed 300 Saudi Arabian undergraduate students on their distance learning experience. Though students acquired the necessary knowledge, poor internet and lack of interaction made physics and math learning difficult. A 2021 study by Sut, H. and Oznacar, B. surveyed 50 students and teachers to analyse the impact of COVID-19 on education. The results indicated a negative impact on the educational system, including loss of human resources, investment in remote learning systems, and the use of technology to provide data and information. Zancajo A. et al. (2022) studied the long-term impact of the epidemic on education. They identified three key areas: teacher development, educational inequality, and digitization. Despite affecting everyone, the pandemic accelerated the slow digitalization process. Kerres and Buchner (2022) study the pandemic's effects on education and the impact of educational technologies on learning. It explores how pandemic experiences will shape the future of a country's education system. Bashir et al. (2021) studied the opinions of 151 Bioscience students at Aston University regarding the impact of lockdown on their quality of life and mental health. Results showed that most students liked taking online, open-book exams and would be happy to use this format again. Munir H (2022) studied the effect of

COVID-19 on student learning at Malmö University. Online learning has benefits like improved time management, increased lecture attendance, and flexibility. However, the lack of social interaction with peers can lead to depression, anxiety, and stress.

### **Sample and Research Method**

According to Kerlinger (1973), survey research is a form of social scientific research that focuses on people, their beliefs, opinions, attitudes, motivations, and behaviours. (Apuke, 2017)

The study used a quantitative method, collecting numerical data through a Likert Scale to measure attitudes, beliefs, or opinions. Qualitative research was used to understand the meaning behind the responses. A survey was conducted to investigate the perception and attitude of students and teachers towards online teaching. The survey data was collected for descriptive analysis. A digital Google survey to explore the perceptions of students and teachers towards online learning during and post-pandemic. The survey consisted of 20 closed-ended questions divided into four parts, with Likert scales for rating statements. The questionnaire was shared via a Google Form link and data analysis was conducted using Excel.

### **Participants of the Survey**

The study was conducted among the students and teachers of colleges belonging to Prince Sattam bin Abdulaziz University, Wadi Al Dawasir. The research sample comprised of 92 undergraduate students, including both male and female, from 1st year to 4th year, and 25 Faculty members, also including both male and female. The study involved two surveys, one for the students and the other for the teachers.

### **Students**

A total of 92 students completed the survey, 62 females and 30 males. Majority are 4th-year students (52), while others are from 3rd (14), 2nd (12), and 1st (14) year. Participants belong to different departments: English (52), Computer Science (20), Islamic Studies (8), Arabic (7), Physics (2), and Mathematics and Chemistry (1).

### **Faculty**

The survey was conducted among 25 faculty members, out of which 5 were male and 20 were female. The age range of respondents was 25-55 years. 14 respondents were from English Department, 4 from Arabic, 4 from Chemistry, 2 from Computer Sciences, and 1 from Mathematics. The faculty consisted of 1 Associate Professor, 15 Assistant Professors, 6 Lecturers, and 3 Teaching Assistants.

### **Data Analysis**

The first section (PART I) of the research questionnaire comprises demographic information about the respondents, including their gender, academic level, department, age group, and designation (for faculty members). Additionally, the questionnaire includes generic information relevant to the research, which is presented in Table 1. The following questions were asked to gather information about the process and preparation for online lectures:

1. Have you had any experience with online teaching-learning before the pandemic?
2. What devices did you use for online teaching-learning?
3. Which online platform did you use during the pandemic?

Table 1. Socio-Demographic Characteristics (students)

Variable	Items	Frequency	Percent
Gender	Male	30	32.6
	Female	62	67.4
Academic Level	1st Year	14	15.2
	2nd Year	12	13
	3rd Year	14	15.2
	4th Year	52	56.5
Department	English	52	56.5
	Computer Science	20	21.7
	Mathematics	1	1.1
	Chemistry	1	1.1
	Physics	2	2.2
	Arabic	7	7.6
	Islamic Studies	8	8.7
	Others	1	1.1
Do you have experience with Online Teaching-Learning before the pandemic?	No	31	33.7
	Yes	61	66.3
Which devices did you use during online Teaching-Learning during the Pandemic?	Mobile	46	50
	Tablet	27	29.3
	Laptop	37	40.2
	Desktop	14	15.2
Did you buy any devices, especially for Online Classes during the Pandemic?	No	27	29.3
	Yes	65	70.7
	Total	92	100

According to table (1), it was found that the majority of students are females, with a percentage of (67.4%), and the least of the respondents are males, with a share of (32.6%). It was also noted that most students were from the English department, with a percentage of (56.5%), and the least was in the mathematics and chemistry department, with a share of (1.1%). Also, the maximum number of student respondents is from the final year of graduation.

Table 2. Socio-Demographic Characteristics (faculty members)

Variable	Items	Freq.	%
Gender	Male	5	20
	Female	20	80
Age	25-35	5	20
	35-45	10	40
	45-55	10	40
Nationality	Saudi	3	12
	Non-Saudi	22	88
Department	English	14	56
	Computer Science	2	8
	Mathematics	1	4
	Chemistry	4	16
	Arabic	4	16
	Teaching Assistant	3	12
Designation	Assistant Professor	15	60
	Lecturer	6	24
	Associate Professor	1	4
	Do you have experience with Online Teaching-Learning before the pandemic?	No	13
	Yes	12	48
Which devices did you use during online Teaching-Learning during the Pandemic?	Mobile	5	20
	Laptop	23	92
	Tablet	2	8
	Desktop	6	24
Did you buy any devices, especially for Online Classes during the Pandemic?	No	15	60
	Yes	10	40
What online platform did you use for Online classes during the pandemic?	Blackboard	25	100
	Zoom	8	32

According to table (2), it was found that most of the faculty members are females, with a percentage of (80%), and that the least of the respondents are males, with a share of (20%). It was also noted that most faculty members were from the English department, with a percentage of (56%), and the least was in the mathematics department, with a share of (4%). Also, most of them were assistant professors, with a percentage that reached (60%), and the least were associate professors, with a rate of (4%).

The data shows that before the pandemic, most students had online learning experience, while faculty members mostly did not. During the pandemic, students had to buy devices for online learning, but most faculty members did not need to as they were already using laptops for teaching in face-to-face classes.

The research questionnaire's second section (PART II) is divided into four sections. Section 1 of the questionnaire investigates the perception of students and faculty members during the pandemic, section 2 illustrates the advantages of online learning, section 3 describes the shortcomings of online learning, and section 4 tries to find out the expectations of students and teachers post-pandemic.

## Findings of the Study

### Students vs. Teachers' attitudes toward online Teaching and Learning

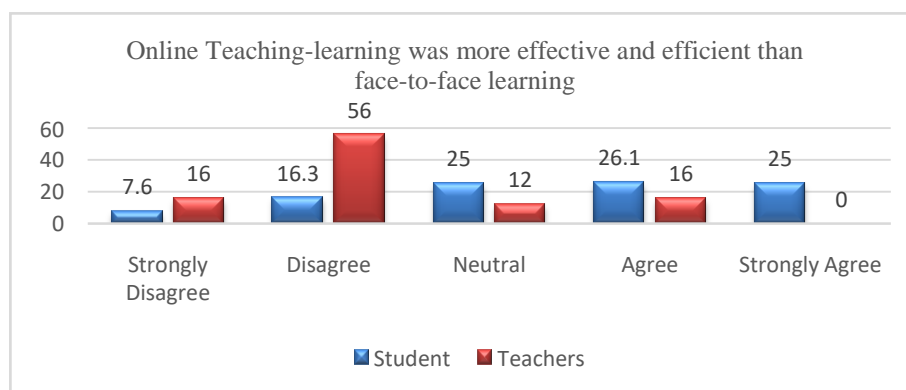


Figure 1: Attitude toward the efficiency of Online Teaching-learning

The data shows that while 51.5% of students believe online learning is more effective, 72% of teachers disagree. For students, benefits of online learning include comfort, flexibility, more time for assignments, and less exam pressure. However, teachers faced numerous challenges when shifting online, including unavailable video conferencing, technical glitches, unreliable methods of assessment, and difficulty monitoring students' attentiveness and receiving real-time feedback.

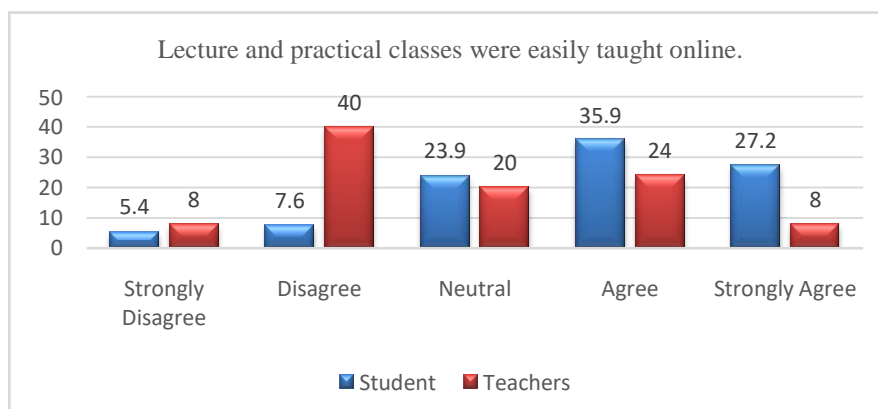


Figure 2: Attitude toward Lecture and Practical Classes

A majority of the student respondents belonged to the Department of English, where practical can be conducted in virtual laboratories. However, this data will differ for the scientific department, where laboratory experiments are essential. 63.1% of students found it easy to attend lectures and practical classes online. On the other hand, 48% of teachers disagreed that lecture and practical classes could be easily taught online. The teachers believe that laboratory work is necessary for science students to gain hands-on experience with scientific tools.

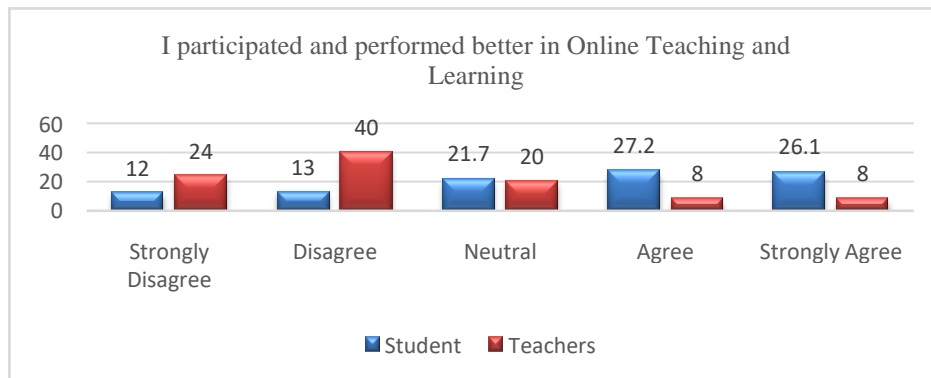


Figure 3: Students’ participation and performance in Online Teaching and Learning.

The chart shows that 66% of teachers disagreed with online lectures as students' performance and participation were affected due to the lack of face-to-face interaction. Teachers found it challenging to assess students' motivation and attentiveness during online lectures as they couldn't make eye contact. In contrast, in-person classes provide various ways to evaluate students' performance, whereas online learning mainly relies on assignments and quizzes. The lack of monitoring during exams also makes it difficult to determine students' actual performance. Contrary to this, 53.3% of students felt satisfied with their performance and participation in online learning. Their motivation for this opinion can be derived from the fact that exams were lenient. They could take help from other sources to enhance their performance.

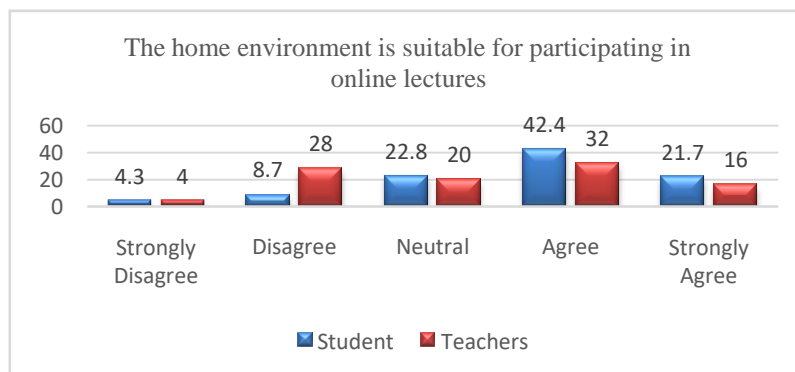


Figure 4: Attitude toward the comfort of the home environment during online lectures

Both students (64.1%) and teachers (48%) show agreement with the comfort of the home environment in teaching and learning. The above data imply that everyone felt comfortable and safe inside their home, especially during the pandemic. According to the above data, 28% of teachers still thought the home environment needed to be more suitable for academic purposes due to numerous distractions.

## Students and Teachers Attitude toward the Advantages of Online Teaching and Learning

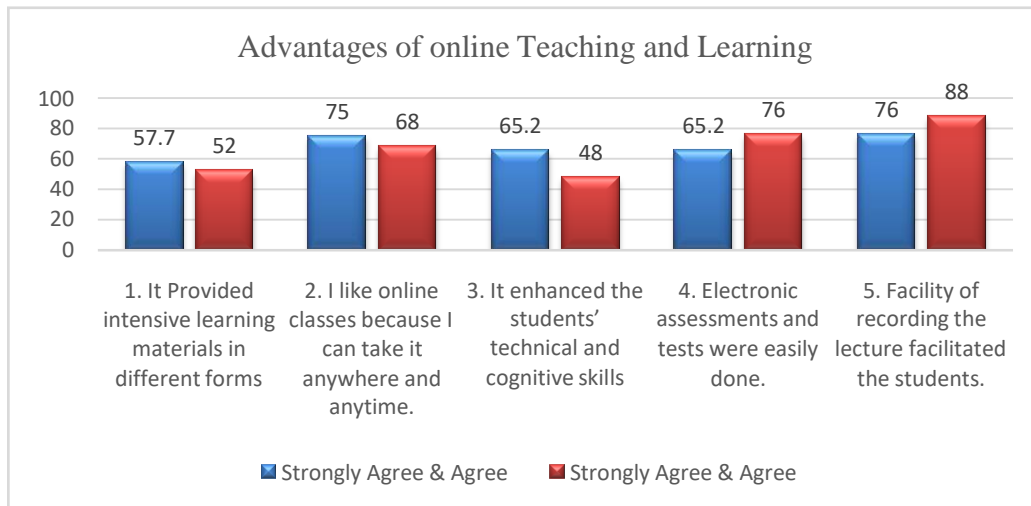


Figure 5: Attitude toward the benefits of online Teaching and Learning

Both students and teachers overwhelmingly and strongly agreed with the benefits of online teaching and learning. Online learning provides learning materials from different sources. Students can simultaneously assess the learning material and its sources provided by the teachers during the lectures. The ease of taking and attending classes by students and faculty members is one of the most significant advantages of online teaching-learning. Before the pandemic, many had no experience handling technology and needed to be made aware of online teaching and learning skills.

## Students and Teachers' Attitude toward Disadvantages of Online Teaching and Learning

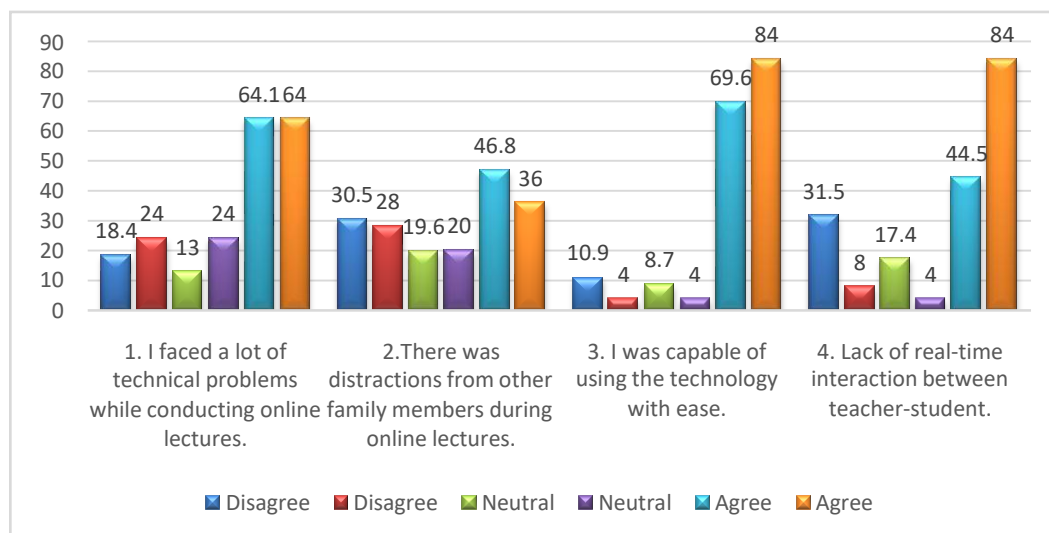


Figure 6: Attitude toward the disadvantages of online Teaching and Learning

A subsequent number of students and teachers agreed to all the questions related to the disadvantages of online learning. Online teaching and learning have disadvantages such as technology-related problems, isolation, and lack of interaction. It can also be challenging for students to stay engaged and motivated without a structured classroom setting.

# Preferences of students and teachers in teaching-learning in the post-pandemic era

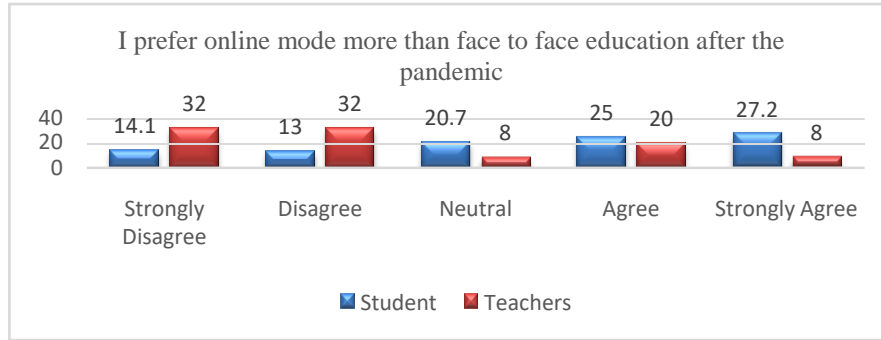


Figure 7: Preference for online over face-to-face after the pandemic (Student-Teacher)

According to the data above, 64% of teachers prefer face-to-face teaching and learning over online mode. This is because in-person learning offers interaction, hands-on experience, immediate feedback, structure, accountability, focus, and access to physical resources such as libraries and laboratories. However, over 50% of students prefer online learning after the pandemic as it offers a flexible schedule, eliminates transportation needs, and provides a wide range of courses. Additionally, online learning is customizable, cost-effective, and personalized to the student's learning style.

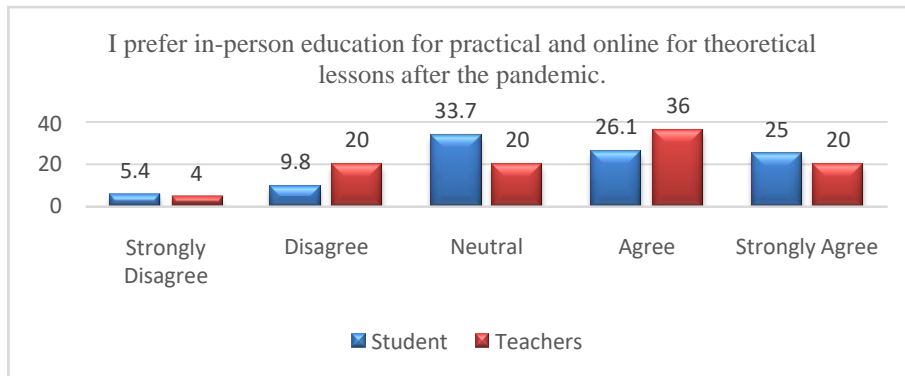


Figure 8: In-person vs online education preferences post-pandemic.

According to data in Figure 8, 56% of students prefer in-person teaching for practical sessions and online mode for theory lectures. In-person education is preferred for hands-on learning, while online education is suitable for theory-based courses. The choice depends on the specific course and individual student's learning needs and preferences. Some students may prefer a blend of both in-person and online education for courses that require both practical and theoretical learning.

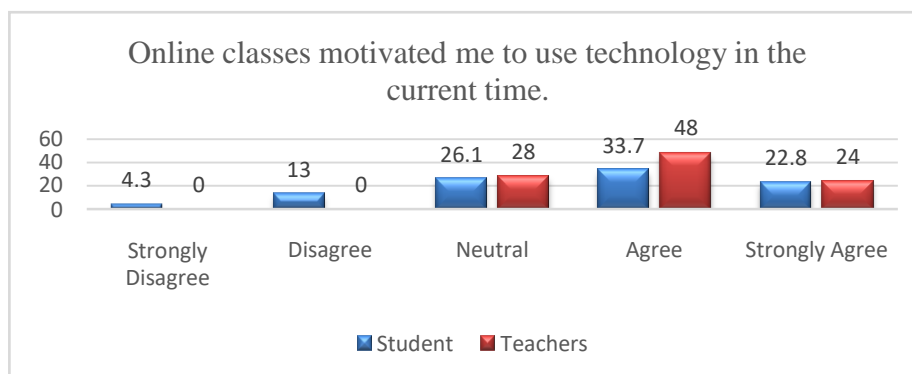


Figure 9: Motivation of students and teachers towards technology after the pandemic.



The pandemic accelerated technology adoption in education, especially remote learning. Teachers and students are more motivated to use technology after the pandemic. 70% of students bought new devices for online lectures during COVID, as per table (1). Access to education became more facilitated due to the importance of technology. The shift to remote learning spurred innovation and adaptation in education technology.

Most students and teachers agree that the lecture transition is smooth in the post-pandemic era. The transition of lectures from offline to online mode has become smoother in recent years, especially in the wake of the COVID-19 pandemic. With advancements in technology and increased investment in digital infrastructure, many institutions and educators have been able to transition their lectures quickly and effectively from offline to online in the event of an emergency.

The successful transition to online education during challenging times can be attributed to reliable and user-friendly online tools, widespread adoption of online learning, increased investment in digital infrastructure, and the inherent flexibility of online lectures. While there may still be challenges and limitations to the transition of lectures from offline to online, the overall trend is toward a smoother and more seamless transition in an emergency. Upon said this, it is essential to note that online learning may not be the best fit for everyone, and face-to-face teaching and learning still have unique benefits and advantages. Ultimately, the choice between online and face-to-face education will depend on an individual's learning style, personal circumstances, and educational goals.

## **Conclusion**

Post-pandemic, the impact of digitization on education in Saudi Arabia is unmistakable, ushering in transformative changes. Online learning platforms have emerged as vital conduits, ensuring the continuity of education amidst school and university closures. These platforms furnish students with a plethora of digital resources, including videos, lectures, and interactive activities, fostering a dynamic learning environment. The advent of virtual classrooms has further revolutionized education by enabling seamless teacher-student interaction, facilitating discussions, and supporting assignment completion, even in the absence of in-person classes. Significantly, digitization has bridged geographical gaps, granting increased access to education for students in remote or underserved areas. Online learning, as a result, has become a vehicle for delivering a quality education experience irrespective of location. Moreover, the shift towards digitization has empowered students with personalized learning opportunities, allowing them to access resources tailored to their individual needs and interests. This personalized approach enhances engagement and motivation, marking a notable evolution in the educational landscape of Saudi Arabia.

The pandemic has led to a more technology-driven education system. In response, Saudi Arabia shifted its K-12 education programs online and conducted a study to evaluate the quality of online learning. The study led to recommendations for improvement, which were followed up with an assessment of stakeholder satisfaction and potential for future investment. (K-12 Online Learning in Saudi Arabia, 2020) The ability to be innovative and resilient was also displayed by teachers, who created novel teaching methods and swiftly changed them to meet the requirements of their students. Building a productive environment will be challenging if administrators, decision-makers, and communities don't believe teachers should be valued and supported for their extraordinary endeavours. The three priority areas that educationists and administrators should focus on at the current time are:

1. All kids and young people are back in school and getting the specialized help they need for their academic, physical, and psychological needs, among other things.
2. Every child receives aide to make up for missed learning.
3. All teachers are equipped and encouraged to solve student learning gaps and use digital technology in their instruction.

In conclusion, digitization has positively impacted education in Saudi Arabia post-pandemic. It has allowed students to continue their education and has made it more accessible and personalized. Digitization has also provided teachers with new tools and resources to deliver engaging and practical instruction, even in a remote or virtual setting.

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