



# Students' perception on E. Learning and Remote Exams during COVID 19 Outbreak 2020

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## ABSTRACT

**Background:** Novel (COVID-19) has pushed educational institutions to learn through online resources, and the significance of e-learning has indeed become a necessity, current study was aimed to ascertain students' perceptions on the implementation of e-learning and remote exams at Collage of Applied Medical Sciences, Prince Sattam Bin Abdul-Aziz University-KSA. **Methods:** A cross-sectional descriptive study was conducted in August 2020 on 242 students from the faculty of Applied Medical Sciences at Prince Sattam University. A well-constructed questionnaire was designed and administered online (via Google online survey and distributed via E. mail, and WhatsApp groups) to students, it had 22 Closed-ended questions altogether in the following items, which were divided into five domains. The answers were graded on the 5-point Likert scale from 1 to 5. The SPSS software (version 26) was used for data analysis. **Result:** From the students (242) participating in the study, a majority (63.7%) was from the Medical Laboratory Sciences department, (45.9%) used their laptops, 69% had a negative impression towards E. learning. The perception was converging on whether the E-learning method helped them understand the scientific material smoothly and clearly; 21.1%, 22.3%, 21.5%, and 19.8% were agreed, neutral, disagreed, and strongly disagreed, respectively. 55.9 % of students agreed that remote exam questions are appropriate and comprehensive. **Conclusion:** Although online learning is regarded as less social contact, lack of social presence, communications synchronization, and not preferable by students; online learning definitely has some positive effects on students, it is a crucial platform in crisis periods and also for people who are unable to complete their studies in person.

**Key Words:** Covid-19, E-learning, Traditional teaching, Perceptions.

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## INTRODUCTION

The pandemic of newly discovered virus named SARS-CoV 2, were unknown before the outbreak began in Wuhan, China the capital of Hubei district, China since December 2019, which triggered an outbreak that flesh global attention because the virus was rapidly disseminated all over the world [1-3]. The infection began when adults presenting serious pneumonia of unknown cause referred to local hospitals [4, 5]. On January 30, the World Health Organization (WHO) Emergency Committee on COVID-19 confirmed that an outbreak of

SARS-CoV 2 is an international health concern, on the second of March, 2020, the Ministry of Health in Saudi Arabia confirmed the first case of COVID-19, on 8<sup>th</sup> of March, authorities and Ministry of Education announced the suspension of all educational institutions, including universities, schools, and technical and vocational training institutions to combat the spread of the virus not only on Saudi Arabia but in the majority of world countries. It directly affects each sector of human life, particularly education. Therefore, an immediate intervention from authorities in charge was required to manage the crisis such as working from home, social isolation, quarantine in

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case of symptoms; strengthening health services to control infection; and advising everybody to stay at home, as preventive measures [6, 7]

The novel coronavirus (COVID-19) has pushed educational institutions to learn through online resources, and the significance of e-learning has indeed been appreciated around the world. The unique effectiveness of information technology in various aspects of our lives today cannot be denied, nor can its growing popularity and success in the field of education be ignored [8, 9]. This role has acquired significant attention in the academic field. In addition, the outbreak of COVID-19 has closed all educational institutions around the world, posing numerous challenges at all stages and levels of education, especially for students [10]. The development of new software and learning management systems, both for teaching and evaluation, has pioneered the provision of effective solutions for educators and enabled policymakers to expand the use of information technology during quarantine days to cover university courses [11]. Distance learning had first been widely introduced in Saudi Arabia in the early 1990s and proceeded to expand in size in the years that accompanied the development of the internet and technologies. In 1996, the Ministry of Higher Education (MOHE) provided an internet and software Center offering a variety of ICT services to schools and educational centers. Despite the wide-based adoption of e-learning all over the world, it was never considered as a part of formal education in Saudi Arabia by the majority of the institutions until the spread of COVID-19. Due to the lockdown situation, however, now a lot of schools, colleges, and even undergraduate medical and dental institutes across the country are moving towards e-learning. [12]

Fortunately, Prince Sattam Ibn Abdul-Aziz University is one of the Saudi universities responded rapidly as it has an Online Electronic Programme constructed early since 2012 (Blackboard Inc), so stakeholders decided not to stop the educational program and then as soon as possible they involved all institutional administrators, teachers, students, etc., to make considerable efforts to optimally utilize the available technology for continuing the process of education and minimizing the gaps that have arisen as a result of the current situation. At the same time, the Deanship of Distance Learning (i.e. Blackboard) at Prince Sattam Ibn Abdul Aziz University has already begun offering lectures and training courses to faculty members and students on how to use distance learning technology in order to achieve the maximum benefits during the quarantine period [13-15].

The Blackboard Learning System is a simulated learning technology, and management system devolved by Blackboard Inc. It is a web-based database server that includes course design, flexible use, and modular

construct that enables integration with student information systems and authentication protocols. The Blackboard Platform is recently among the most successful educational frameworks used internationally, particularly in the Saudi University that invests in collaborative learning [16].

There are several studies based on the significance and efficacy of the implementation of e-learning and the world considered it a good teaching method and it is widely being appreciated by the learners [17-19]. There are numerous reasons for its general acceptance; ease of use, flexibility and better control over the environment are some of the few reasons that can be used especially for learners. However, in spite of its multiple advantages, there are quite a few limitations of e-learning such as social isolation, lack of student-teacher interaction, connectivity issues, etc. So, it is necessary to figure out the thoughts and opinions of students about the virtual approach to teaching and learning. It will be an interesting point to evaluate if the students are in accordance with the novel strategy, desire any improvements, or perhaps they prefer traditional learning altogether [20, 21]. The current study was aimed to evaluate students' perceptions of the implementation of e-learning during the quarantine period due to COVID-19 and to propose measures to improve the performance and efficacy of learning.

## METHODS

A cross-sectional descriptive study was conducted in August 2020 on the students of faculty of Applied Medical Sciences at Prince Sattam University, and approval was obtained from the faculty.

A well-constructed questionnaire was designed and administered online (via Google online survey and distributed via E. mail, and WhatsApp groups) to students. A total of 242 students participated in the study. The questionnaire was available online for students from 30 August to 21 September 2020. It had 22 Closed-ended questions altogether in the following items, which divided into five domain:

- Baseline data (include the type of gadgets used for e-learning, gender, etc.)
- Tools and techniques (4 items about easy access of e-lectures, etc.)
- Electronic content
- Quality of electronic Teaching effectiveness
- Online examination

The answers were graded on a 5-point Likert scale from 1 to 5 (1- strongly disagree, 2- disagree, 3- Somewhat agree, 4- agree, 5- strongly agree). SPSS software (version 26) was used, and the probability sampling technique namely convenience sampling method was followed to select the participants. Before the administration of the

questionnaire, validation by two medical educationists was done.

For further understanding of the data, 17 items of the questionnaire were grouped into 5. The questionnaire was emailed to all students for the collection of data. Informed consent was also taken from the participants. A mean was calculated for 17 items with scores ranging from 17 to 85. The Mean score came out to be 43. Those who scored less than the mean (<43) were considered having a positive attitude and those with a score of more than 43 were considered to have a negative attitude towards e-learning.

**RESULT:**

One-third of students (242) were participating in the study from the faculty of Applied Medical Sciences. The majority (63.7%) of them from the Medical Laboratory Sciences department, 45.9% of participants used their laptops, 69% had a negative impression towards E. learning. All demographic data are represented in Table 1. The result revealed that 36%, 43%, and 33% of students significantly agreed that they have easy access to their course, were provided with sufficient information to use the site, and received adequate university assistance facilitating the use of technology, respectively. (P-value=0.000) (Table 2). Table 3 summarizes the frequency of Students Perception of Electronic Content. 43.8% significantly agreed that electronic scientific material was comprehensive, about 36% also agreed about contents including exercises and assignments that help them learn (p. value=0.000). However, 25.8% disagreed and 20.7% strongly disagreed that information obtained from electronic material was not equal to what obtained by the traditional methods. The perception was converging on whether the distance learning method helped them understand the scientific material smoothly and clearly, 21.1%, 22.3%, 21.5%, and 19.8% were agreed, neutral, disagreed, and strongly disagreed, respectively (Table 4). Regarding perception towards Interactive Methods displayed in Table 5, where students represent optimistic views as they strongly agreed, agreed, and neutral towards sending and receiving educational

materials. Regarding remote examinations and evaluation methods, about 55.9 % of the students agreed that Exam questions are appropriate and comprehensive, and are conducted in a variety of ways (Table 6). Department of Physical Therapy and Health Rehabilitation and nursing showed a significant correlation with interactive techniques and Remote Examination & Evaluation (Table 7).

**Table 1: Baseline data of study participants.**

Parameters	Frequency N=242	Percentage %
<b>Department</b>		
- Medical Laboratory Department	96	39.7
- Radiology and Medical Imaging	54	22.3
- Physical therapy and Health Rehabilitation	54	22.3
- Nursing	38	15.7
<b>Gender</b>		
- Male	130	53.7
- Female	112	46.3
<b>Residence</b>		
- Town	226	93.4
- Village	16	6.6
<b>Academic level</b>		
- Level 3	49	26.2
- Level 4	17	7.0
- Level 5	71	29.3
- Level 6	15	6.2
- Level 7	51	21.1
- Level 8	13	5.4
- Level 9	26	10.7
<b>Gadget used</b>		
- Laptops	111	45.9
- Mobile	63	26.0
- I pad	35	14.5
- Computer	33	13.6
<b>E. learning is better than traditional</b>		
- No	167	69.0
- Yes	75	31.0

**Table 2: Students perception regarding Tools and techniques**

	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean ±SD	T. value	P. value
1	Easily access to course materials	59 (24%)	<b>78 (36%)</b>	66 (27.3%)	21 (8.7%)	9 (3.7%)	3.69 ±1.05	10.2	0.000
2	The internet speed is adequate and I can attend the lecture without interruption	49 (20.2%)	64 (26.4%)	<b>72 (29.8%)</b>	40 (16.5%)	17 (7%)	3.36 ±1.18	4.8	0.000
3	Sufficient information has been provided to use the site for educational materials	62 (25.6%)	<b>104 (43%)</b>	54 (22.3%)	17 (7%)	5 (2.1%)	3.83 ± 0.96	13.5	0.000
4	There is adequate university assistance facilitating the use of technology	37 (15.3%)	<b>80 (33.1)</b>	80 (30.1%)	33 (13.6%)	12 (5%)	3.40 ± 1.06	5.9	0.000

**Table 3: Frequency of Students Perception of Electronic Content**

	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean ±SD	T. value	P. value
1	Scientific material presented electronically is comprehensive and adequate	56 (23.1%)	<b>106 (43.8%)</b>	40 (16.5%)	31 (12.8%)	9(3.7%)	3.70± 1.08	10.1	0.000
2	The information obtained from electronic material is equal to that we obtain by the traditional method	49 (20.2%)	50 (20.7%)	31 (12.8%)	<b>62 (25.8%)</b>	50(20.7 %)	2.94± 1.94	0.62	0.536
3	The content includes exercises and assignments that help me learn	51 (21.1%)	<b>87 (36%)</b>	77 (31.8%)	15 (6.2%)	12(5%)	3.62± 1.04	9.27	0.000

**Table 4: Teaching Effectiveness techniques**

	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean ±SD	T. value	P. value
1	The distance learning helped me understand the scientific material clearly	37 (15.3%)	51 (21.1%)	54 (22.3%)	52 (21.5%)	48 (19.8%)	2.90±1.35	1.09	0.275
2	Online scientific material provided me with additional training and skills.	37 (15.3%)	<b>72 (29.8%)</b>	50 (20.7%)	44 (18.2%)	39 (18.1%)	3.10±1.32	1.17	0.242
3	Distance learning method improved my self-reflection skills	59 (24.4%)	68 (28.1%)	48 (19.8%)	39 (16.1%)	28 (11.6%)	3.38± 1.32	4.43	0.000

**Table 5: Frequency of Students Perception towards Interactive Methods**

	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean ±SD	T. value	P. value
1	Sending and receiving educational materials was unhindered	43 (17.8%)	<b>66 (27.3%)</b>	<b>67 (27.7%)</b>	40 (16.5%)	26 (10.7%)	3.25±1.23	3.13	0.002
2	There is continuous coordination between students and teacher about the content presented electronically	62 (25.6%)	99 ( <b>40.9%</b> )	46 (19%)	24 (9.9%)	11 (4.5%)	3.73±1.09	10.5	0.000

**Table 6: Remote examinations and evaluation methods**

	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean ±SD	T. value	P. value
1	Exam questions are appropriate and comprehensive, and are conducted in a variety of ways	63 (26%)	<b>95 (39.9%)</b>	47 (19.4%)	18 (7.4%)	19 (7.9%)	3.68 ± 1.17	9.1	0.000
2	I can ask any questions and inquiries during the remote test and they will be answered	63 (26%)	48 (19.8%)	<b>73 (30.2%)</b>	24 (9.9%)	34 (14%)	3.34 ± 1.34	3.9	0.000
3	The satisfaction with the test performance and the result was high	<b>74 (30.6%)</b>	66 (27.3%)	58 (24%)	21 (8.7%)	23 (9.5%)	3.61±1.27	7.5	0.000
4	I believe that remote exams are a convenient way to assess my learning	<b>89 (36.8%)</b>	52 (21.5%)	37 (15.3%)	24 (9.9%)	40 (16.5%)	3.52± 1.48	5.5	0.000

**Table 7: Correlation of all items with regard to Departments**

Measured Items	Departments	N (%)	Mean± SD	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Tools	Medical Laboratory Department	96	3.6±0.8	0.1	3.4	3.7

	Radiology and Medical Imaging	54	3.3±0.9	0.1	3.1	3.6
	Physical therapy and Health Rehabilitation	54	3.7±0.8	0.1	3.5	<b>4.0*</b>
	Nursing	38	3.7±0.7	0.1	3.4	3.9
<b>Electronic content</b>	Medical Laboratory Department	96	3.4±1.1	0.1	3.2	3.6
	Radiology and Medical Imaging	54	3.2±1.1	0.1	2.9	3.5
	Physical therapy and Health Rehabilitation	54	3.6±0.9	0.1	3.3	3.8
	Nursing	38	3.6±0.8	0.1	3.3	3.9
<b>Teaching Effectiveness</b>	Medical Laboratory Department	96	3.2±1.1	0.1	2.9	3.4
	Radiology and Medical Imaging	54	2.9±1.2	0.2	2.6	3.3
	Physical therapy and Health Rehabilitation	54	3.2±1.1	0.2	2.9	3.5
	Nursing	38	3.1±1.2	0.2	2.7	3.5
<b>Interactive technique</b>	Medical Laboratory Department	96	3.5±1.0	0.1	3.3	3.7
	Radiology and Medical Imaging	54	3.3±1.1	0.2	3.0	3.6
	Physical therapy and Health Rehabilitation	54	3.5±1.0	0.1	3.2	3.7
	Nursing	38	3.9±0.9	0.2	3.6	<b>4.2*</b>
<b>Remote Exams &amp; Evaluation</b>	Medical Laboratory Department	96	3.6±1.0	0.1	3.4	3.8
	Radiology and Medical Imaging	54	3.3±1.2	0.2	3.0	3.7
	Physical therapy and Health Rehabilitation	54	3.5±1.0	0.1	3.2	3.8
	Nursing	38	3.9±1.0	0.2	3.5	<b>4.2*</b>

## DISCUSSION:

The novel coronavirus (COVID-19) forced educational institutions to conduct learning via online tools, the importance of e-learning was being realized all around the world. For some time now, the Saudi Arabian Ministry of Education has been promoting the implementation and usage of information and communications technology (ICT) in education at all levels. Over the years, e-learning has been used as a supportive and often alternate method of facilitating classes and tests.

Out of 242 students participated in the study; finding revealed that 45.9% of them used laptops gadget for E. learning, s majority of them (39.7%) were from the department of Medical Laboratory Sciences, and 69% had a negative impression towards e-learning, as they considered traditional learning is better. This conclusion is in agreement with Abbasi et al. [11].

With regard to students' perception toward tools and techniques, most of them used laptops for their sessions while only 26% preferred their mobiles since it is the most popular gadget among the students for e-learning comparable to laptops and tablets, our finding conflict with a study that revealed that 66% of students used mobile devices for e-learning [22].

It is important to state that students were significantly agreed that they are faced no problems towards tools and techniques as they can easily access course materials, the internet speed is adequate, they can attend the lecture without interruption, and sufficient information has been provided to use the site, as well as there is adequate university assistance facilitating the use of technology, our finding comes in contact with the previous report in

literature [23]. With regard to the students' perception towards electronic content, one-third of them agreed that scientific material presented electronically is comprehensive and adequate, and content includes exercises and assignments that help them learn, however, about half of participants disagreed that the knowledge obtained from electronic material is equal to that we obtain by the traditional methods. This a critical point because face-to-face learning facilitated student's feedback, brainstorming at the beginning and during the session, as well as eye contact. There also exists literature that reports students preferring face-to-face teaching to online teaching [24].

However, the advantage of distance learning the student agreed that E-learning helped them to understand the scientific material clearly, and provided them with additional training and skills, as improved their self-reflection skills. Students appreciate the instructor's interest in their opinion and they feel more invested in a course and they have some input into its operation. Sending and receiving educational materials, and continuous coordination between students and the teacher about the content presented electronically were done spontaneously since the majority of students agreed. It also recognizes that the instructor cares about their learning experience and therefore it increases their interest in the course. Most of the study subjects were convenient and satisfied with Remote examinations and evaluation methods. There is some considerable evidence that online exams can put a higher cognitive burden on students as compared to traditional paper-based assessments. Students must demonstrate that they have

achieved the requirements of their course, along with dealing with the browsing technology and the increased complexity of the online exam [25].

One of the key features of the remote exam is that it allows distinctive exam questions that were not previously possible using traditional paper-based exams, hence, it represents an opportunity to construct an exam that introduces a more realistic and innovative assessment. This advantage was exploited by allowing students access to their grade after finishing the exam that they would normally be done by the course instructor from electronic exam settings [26, 27]

On the other hand, correlation of all items measured with regard to departments; students from the Department of Physical Therapy and Health Rehabilitation admitted some structural problems towards electronic tools and techniques (95% confidence interval 3.5-4). nevertheless students from the Nursing Department assumptive that they were not satisfied with an Interactive technique and Remote Exams and Evaluation (Mean value  $3.9 \pm 1.0$ , and 95% confidence interval 3.5-4.2). This potential problem emphasizes the need for intervention to solve the problem; such as objectives of each lecture, and grading policy should also be stated clearly.

According to the current findings, more or less should lead us to follow orientations, which give us prospective view: Blackboard training programs should be improved and to achieve maximum result, improve the Internet connection (University Network), significantly raise technical support and increase efficiency: quick communication and professional maintenance, and address any problems that may prohibit faculty members from using Blackboard features, an instructor should respond to students' inquiries, and make good use of interactive technology.

Finally, the Faculty of Applied Medical Science in Prince Sattam Ibn Abdul Aziz University constructing faculty member groups between colleges to enhance coordination and share experiences on the Blackboard characteristics, which to some make degree, the performance of the students during the pandemic and the educational result were satisfactory, as was clearly evident in this study.

Limitations of the study: the participants in this study were just from one university and one faculty. Adding more sample from a different university should be conducted.

## CONCLUSIONS:

The study aimed to explore the difference between online learning and face-to-face learning perception among different levels of students. Although online learning is regarded as less social contact, lack of social presence, and communications synchronization, online learning definitely has some positive effects on students. Online

education is a crucial platform for people who are unable to complete the studies that they have, as well as in crisis periods.

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The authors declare that they have no conflict of interest.

## Authors' contribution:

- LE (Construction of questionnaire, and Scientific writing of manuscript)
- NA (Proofreading)
- YM (Statistical analysis of data)
- HAW (Scientific writing of manuscript, and proofreading and review).

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