

# Implementation and evaluation of an e-learning system - A Cross-Sectional Study in a Medical College, Pakistan

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## Abstract

The aim of this study was to investigate the current opinions of undergraduate Medical students at the Pak Red Crescent Medical College of Pakistan in respect to information communication technology (ICT), by implementing e-learning system by mixing different strategies, start the e learning program first time on regular bases and then assess the feedback by MBBS Medical students from the first, second, third, fourth, and fifth year and they were asked to complete a questionnaire presented in a e-docs at the end of the sixth week of the e-learning during the lock down due to covid-19 pandemic. Students give a mix response, they feel difficulty to understand medical education first time online but later on they enjoy the whole learning process especially non clinical subjects and e feedback results shows, and Students do not want e-learning as replacing traditional instructor-based training but as a additional component to it, forming part of a blended-learning strategy. Assessments are quickly assessed and quick respond and less chance of cheating. A major disadvantage of early e-learning system, it only covers the cognition process, skill and attitude component of medical teaching and training is not fully taught and hands on activities are impossible to assess through e-learning.

**Keywords:** e-learning, Medical education, Coverd19, Distance learning program, Medical College, Medical Students.

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## INTRODUCTION

In past few weeks, it has been drastic changes in life style all over the world, particular in, Pakistan. This began last 6 weeks with a lock down, the closer of school, colleges and universities across the country and now complete lockdown across the whole country. Because of the virus, also known as COVID-19 by the World Health Organization (WHO) [1], close to a millions of students as well as teachers have been forced to remain indoors in 213 countries and territories worldwide [2]. The corona virus will usher us in a new age of home based working and e-learning.

Medical education has many long established pedagogical approaches to learning including face to face lectures, tutorials, small group discussions in classrooms, tutorial rooms, laboratories, wards and in lecture halls, via a teacher-centered model [3]. But recently the rapid involvement of iPads, smart phones, tablets, and e-book readers has personal digital devices in the education systems around the world has been observed [4]. Computerized technological resources have become essential in new era of medical education, particularly for basic sciences teaching or other medical

science topics that require the performance of specific tasks [5, 6]. This electronic learning (e-learning) is moving from textbooks in modern electronic format e books [7]. These resources can effectively help the execution of such tasks and the teaching-learning process itself. For last 10 years, the increased widespread use of e-Textbooks in education has been anticipated because of its flexibility, adaptability, accessibility, availability interactivity, and extensibility [4]. E-learning has always been standard as a basic element to facilitate effective and efficient teaching and learning including the context of basic sciences and in clinical practice [8].

## Definition

According to the Oxford English dictionary “ A learning system based on formalized studying at home but with the help of electronic resources on the internet is known as E-learning” [9] and the Medical education is “education related to the practice of being a medical practitioner; either the initial training to become a physician” [3]. Distance learning program conventionally defined as: any educational learning program in which the teacher and students are in

separated geographically or in time from his or her students; or in which students are separated from other students or educational resources [10].

As desire to continue medical education, we design Distance learning program, e-learning systems based on the principles and prerequisites of teaching and learning theories requires a comprehensive and systematic approach to instructional design procedures [4]. We use mixture of software to communicate between staff and with the students, including Google class room, Zoom, webinar, padlet and moodly. These educational media possess several distinct advantages over traditional didactic models of instruction. This is consistent with the use of modern technology to enhance the educational experiences of learners and educators [8]. An analyzing of the experience of instructional design, implementation and evaluation of an e-learning system is represented in this study.

## OBJECTIVE

To find out the effectiveness of newly established e-learning and assessment system in medical education.

## METHODOLOGY

A systematic approach to implementing e-learning by mixing different strategies to ensure successful implementation of the e-learning agenda:

1. Grounding technology choices in learning theory, curriculum values, and teaching practice
2. Thinking critically about communications needs
3. Engaging students-facilitators to provide support and expertise
4. Providing training and support for faculty and students
5. Provide students guidelines and instructions
6. Engaging faculty and students (by time table)
7. Intentionally engaging students (by assignments and quiz)
8. Considering sustainability throughout the implementation process
9. Integrating continuous evaluation (by forms) as part of the feedback process.

There was much intentionality in opt technologies to align with and enhance educational approaches.

### Steps of establishment of e learning program:

1. Identify the different moods of e learning.
2. Trained the facilitators by workshop and hands on training.

3. Make different classrooms on Google and meeting ids on zoom.
4. Approach the students and facilitate them to make a Google mailing id address.
5. Send the classroom codes and meeting ids to the students
6. Making the e-learning time table.
7. Communicate the students that the classroom attendance which is based on submission of assignments and Quiz on given time.

It is a Prospective and cross-sectional study. The questionnaire was designed to obtain information on the student's e learning program. Questionnaire based study was conducted among 390 students of first, 2nd, 3rd, 4th and final year undergraduate MBBS, of Pak Red Crescent medical college at Dina Nath in March-April 2020. All the ethical guidelines were followed. Participation in this study was voluntary.

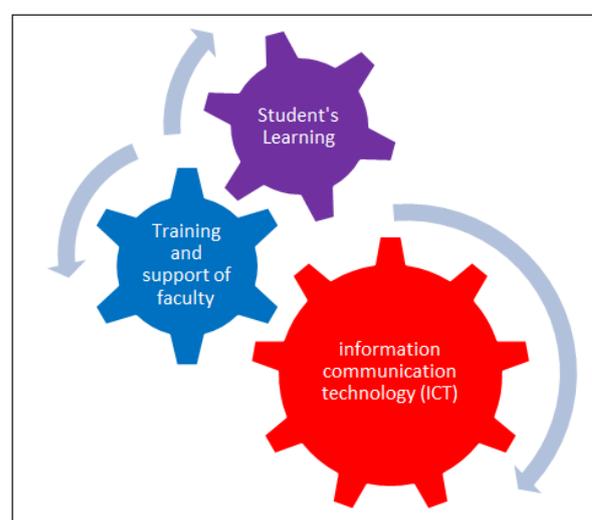


Fig-1: A cycle of e-learning program

### Development of the Questionnaire

They were given self-structured questionnaire, based on frequently asked questions by the facilitators and students during the establishment of the e-learning program. After explaining the purpose of the study and taking informed consent. The questionnaires had a panel of same 11 questions for all the students. All students who cleared the exam in first attempt were included and all students who respond the feedback from within 24 hours and all detainee students were excluded.

## RESULTS

Total students who give the response 133 (34.1%) and the following results were concluded:

**Table-1: % response of students on Questionnaire**

S/no	Questions	Disagree% (n=133)	Agree% (n=133)
1	Do you have access to internet	40 (30.1%)	93(69.9%)
2	Do you used internet for education in past	27(20.5%)	105(79.5%)
3	Do you find e-learning helpful	36(27.1%)	97 (72.9%)
4	Do you refer to online educational videos	65 (48.9%)	68 (51.15)
5	Do you refer online books, study material,wikipedia for education	74 (56.1%)	58 (43.9%)
6	Do you find e-learning better than didactic teaching	117 (89.3%)	14 (10.7%)
7	Do you find power point presentations better than chalk and board method of teaching	100 (75.2%)	33 (24.8%)
8	Do you find online teaching session interesting	110 (83.3%)	22(16.7%)
9	Do you find online assessment better than written assessment	105 (78.9%)	28 (21.1%)
10	Do you want e-learning to be continue in your college	104(78.2%)	29 (21.8%)
11	would you like to continue e learning after lock down	114 (86.4%)	18 (13.6%)

Mostly Students prefer different strategies for learning, a big number of students like Google class room lectures /online 98 (73.8%), moderate numbers support classroom lectures 21 (15.8%) and small number of students dislike lectures / e-learning 14 (10.5%). Student's favorite subjects for e learning are Physiology, Biochemistry, Pharmacology, Forensic Medicine and Pathology. Small numbers of students also like Ophthalmology and Gynecology. Students not appreciate to learn surgery, Medicine, Anatomy, ENT and Community medicine through e learning.

## DISCUSSION

Due to covet 19 pandemic situation in Pakistan, the traditional static methods of teaching and learning medical education changed rapidly into the modern and dynamic lines [11]. Now the passive medical student who is to be compelled to education becomes a creative doctor focused on a problem he/ she wants to solve in practice, in other word teachers center learning change into student center learning (self-directed learning). As we know Pakistan is a under develop country and whole country population not fully facilitated with good, cheep and high speed of internet so the students response regarding the internet facility is only 93 (96.6%) students have a excess of good quality of internet and 40 (30.1%) students have not a good excess of high speed internet. Same results shown in another study which showed that 61.5% of the students used Internet at their home [12, 13].

The questionnaire based study was conducted to acknowledge the student perception on e-learning in medical education. E-learning has brought radical changes in every sector of education. In this study results shows students are find quite satisfied by e-learning because it is helpful Due to the lots of benefits of e-learning, students are more focused and more often acquire knowledge from the internet sources rather than traditional lectures, handouts or text books [14, 15].

Majority of the students (89.3%) in this study, like to appreciate virtual learning or interactive learning same findings shown by some other studies that the online learning approaches and found that students interacted with the course content more often than they

interacted with the instructor, facilitator and fallows [16], but Many studies shows e-learning is more effective, organized, flexible, supportive and well controlled [17, 18]. About 100 (75.2%) students find power point presentations not better than old traditional method of teaching especially subject Anatomy and only 33 (24.8%) were appreciate the power point presentations then chalk and board method, Jabeen, N & Ghani, A *et al.*, find the almost same results especially in relation with Anatomy subject [19]. Shaheen *et al.*, study results shows that PPT used is beneficial as supplementary to enhance the efficacy of teaching [20].

The design and execution of online assessments have more impact on student performance either summative or formative, than the method of assessment delivery (online vs face-to-face). Various studies have found no difference in student satisfaction and grades on well-designed online and face-to-face assessments [21], but the results of current study shows 105 (78.9%) students not enjoy online assessments as compare to 28 (21.1%), this result may be due to our traditional summative assessment system which is based on face to face assessment. Most students thought their own growth had improved through use of the traditional assessment system

## CONCLUSION

E-learning is not only a method applied in academic teaching but it is also good method for different courses and trainings, in which the medical professionals may participate during their careers. The lack of ICT competence, useful in e-education upon graduation is a serious problem, as it is difficult for the graduates to obtain such qualifications (experience) outside the college. Students will get better knowledge but not skill and attitude will be deficient.

Correct implementation of e-learning program depends on various factors, like up to date technology and human resources. The most important components include appropriate planning of work. In order to implement and conduct distance education (e learning program) in an efficient way, we need an interdisciplinary team like: experts in ICT competence,

trained faculty, enthusiastic students and reliable contents.

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