



Perception, Experience, Attitude and Satisfaction on Using Information and Communication Technology-Based Teaching-Learning Activities in Medical Program

Riti Yusuf¹, Jalaluddin Md. Iqbal², Md. Ifta Khairul Hasan³, Sharmistha Roy⁴,
Taslima Nasreen Ahmed⁵, Zubaida Khan⁶

Article information

Received: 10-10-2021

Accepted: 05-12-2021

Cite this article:

Yusuf R, Iqbal JM, Md. Hasan IK, Roy S, Ahmed TN, Khan Z. Perception, Experience, Attitude and Satisfaction on Using Information and Communication Technology-Based Teaching-Learning Activities in Medical Program Sir Salimullah Med Coll J 2022; 30: 29-34

Key words:

Information and communication technology, medical program, teaching-learning activities

Abstract

Background: Educational innovation is moving from a fully traditional system to an innovative and interactive teaching method, inspiring our students for self-directed learning, concentrating on quality improvement, trying to mold the curriculum and evaluation system. Using Information and communication technology (ICT) in education is not to replace the traditional method, but to complement it.

Objective: To study the undergraduate students' attitude, experience and satisfaction regarding use of technology for teaching-learning, within E-learning Environments that is the Requirement of individual ICT infrastructure for the institutions, also the M-learning

Materials and Methods: Online questionnaire survey on 41 students of a batch in 4th year of SSMC on Google format was done to understand their ICT experiences and acceptance towards the tools in COVID pandemic mainly focused on M-learning, a part of E-learning. Moving out of the traditional system, a power point presentation was shared with the students through mail. They downloaded it in their smartphone, gone through it as a self-learning content to their exam. After their exam this survey was done. The data was collected online and automatically showed in pie charts.

Results: Among the 41 students 41(100%) have got the personal handle held tools. But still, out of their online classes they use these tools for educational purposes in this manner- 61% spends 25-50%, 22% spends 50-75% and 17.1% spends 10-25% of their total usage period. 68.3% students prefer video as a content, 17.1% as PDF and 7.3% as power point presentation. Due to advancement of the ICT tools 73.2% did not face any difficulty in receiving and reading the content. Degree of satisfaction was done through a 4-point Likert scale online. 26.8% were well satisfied, 43.9% were satisfied and 29.3% showed average in their response. All the students 41(100%) showed their interest on having same type of learning in future.

Conclusion: ICT influences our teaching learning system, which has a great prospect. Changes in this system is needed to get the benefit from ICT tools exclusively in future.

1. Asstt. Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

2. Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

3. Medical Officer, Department of Anaesthesiology, Dhaka Medical College, Dhaka

4. Lecturer, Department of Pharmacology, Dhaka Medical College, Dhaka

5. Asstt. Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

6. Asstt. Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

Correspondence: Dr. Riti Yusuf, Asstt. Professor, Department of Pharmacology, Sir Salimullah Medical College, Dhaka

Introduction

The millennium development goals can be achieved by making the information and communication technology (ICT) more reachable in medical and health education². COVID-19 pandemic has shifted medical students out of the clinical setting, rearranged residents across the health-care structure and bring changes in medical education to online¹⁸. Technology is acknowledged to enable attainment of higher levels of knowledge and skills and a great assistance for assessment.¹ Beginners are well equipped to welcome superior use of technology for edification. Acceptance of diverse ways for learning in undergraduates is the demand of the hour¹. Studies are going on, to explore the use and influence of educational technology in medical education, especially in resource-constrained environments². It is not surprising, that the trainers, lecturers, distance education providers and teaching institutions at all levels are increasingly using the Web as a medium for delivery¹⁶. The educators are recommended to be trained in creating digital resources and using technology for instruction and assessment. This will accelerate the transformation of the current Health Professions Education (HPE) and make it, affordable and accessible to all learners¹.

There is a wide scope to introduce, use of technology for online instruction, skills, training and assessment. The instruction tool, Power point presentation should not be excessive and needs to be relevant²⁷. More evidence needs to be generated regarding its effectiveness in improving knowledge, so that our decisions can be based on evidence¹. Faculty training plans for use of technology will aid in creation of resources and necessarily to applicate it in curriculum¹. Many of the research literature demarcates the empirical benefits, liabilities, limitations, and suggested practices for classroom teachers who utilize technology in their respective classrooms⁴. Before moving towards mobile learning, researchers had mapped the evolution process from the wired virtual learning environment of today, to the wireless learning environment of tomorrow¹⁶. Engagement with instructive content in social network communities are also common now a days², that shares the same object Research is going on the infrastructure of ICT based learning. Research shows, Integrative Learning Design

framework (ILD)⁷, Learning Activity Design (LEAD) framework are designated for the development and implementation of mobile learning activities in the specific field of technology-enhanced learning (TEL)⁷, explicitly addressing usability and adaptability⁷. Moreover, Electronic School Books (ESB) published free of charge by the Department of National Education in some countries²⁰. A rich e-Book platform (www.ebook.gov.bd) has been created by Bangladesh Government to make all textbooks and interactive books, that is, books containing videos, animation and pictures, available online²¹. The UNDP supported Access to Information (a2i) Program has changed the mindset within Government, to embrace ICTs as a powerful enabler for the nation's socio-economic transformation by facilitating government e-service delivery²¹. E-learning systems may not serve alone to the need for infrastructure resources and the location dependency. Mobile Learning would help resolve several of these issues and can be used for various applications such as recorded information, audio files, reading, learning applications, scheduling, calendar features, assessments, collaboration, support and co-ordination activities, amongst other functions⁶. ICTs delivers both students and teachers with more prospects in adapting learning and teaching to individual needs, by its technical innovation¹⁸.

Mobile learning: definition and devices

UNESCO (2012) identifies a popular definition of mobile learning as-

‘**Mobile learning** involves the use of mobile technology, either alone or in combination with other information and communication technology (ICT), to enable learning anytime and anywhere²⁵.’

Mobile technologies are constantly evolving: the devices include, in broad strokes, mobile phones, tablet computers, e-readers, portable audio players and hand-held gaming consoles²⁵.

Social network in Education

WhatsApp is a social networking, an online platform that is used by people used for educational purposes by the students too²⁶.

Likert scale scoring

Likert scale is an ordinal scale. Scoring at Likert Scale increased reliability of the questionnaire. It

is to be constructed in a logical manner to compose an index which measures the collective stance of the participant towards phenomenon²⁸.

Material and methods

This is an interventional study. The study was conducted in the Department of Pharmacology in Sir Salimullah Medical College (SSMC) on June to August 2021. One of the batches from the 4th year students was selected randomly. Among 42 students, a content on PowerPoint presentation was shared through e-mail. Among them 41 responded and 1 did not. They were instructed to download that into their own handle held. After their assessment exam they were asked about their experience of using the application offline. They were also asked about their perception and satisfaction about the content and the way it was delivered. The questionnaire was done in ‘Google Form’ templates, that is very popular, easily available, simple to conduct and share. A link was created and the URL was shared in their WhatsApp group. They were asked to fill up the questionnaire and send via e-mail. In the script they answered and typed their e-mail address than as soon as they submitted the survey data was available in simple pie charts and also data were automatically exported into a Google Spreadsheet. Only one of the students did not respond. Ultimately 41 responses were analyzed and managed into tables for further calculations.

Data Analysis

The data were analyzed using activity theory as an analytical basis, it allows the analysis of changing systems and the learning associated with them².

Results

Results are arranged in tables and in Bar graphs in the following manner

Table-I

Perception of students about m-learning

Question keys	In number n=41	Percentage (%)
i Using smartphone	41	100%
ii Preferred smartphone for study purpose	Android=39 Apple=2	Android=95.1% Apple=4.8%
iii Preferred content for mobile learning	Video=28 PDF=7 Ppt =3 others=3	Video=68.3% PDF=17.1% Ppt =7.3% others=7.3%

Ppt =Power point presentation

Table-I: Shows that all students 41(100%) are using smartphones, mostly 39(95.1%) are android and also apple 2(4%). Preferred content for mobile learning is PDF Power point presentation, Video and Others were chosen respectively 17.1%,7.3%,68.3%,7.3%

Table-II:

Student’s experience of m-learning

Question keys	In number n=41	Percentage (%)
i Time extent to use mobile phone	10-25%=7 25-50%=25 50-70%=9	10-25%=17% 25-50%=61% 50-70%=22%
ii Helpful in exam preparation	Yes=39 No=2	Yes=82.9% No=17.1%
iii Difficulty faced	1. Didn’t face any problem=30 2. Was not enough to need=6 3. Slides were not enough clear=3 4. Hard to understand=2	1. 73.2% 2. 14.6% 3. 7.3% 4. 4.8%
iv Use of the same content before	Yes=30 No=11	Yes=73.2% No=26.8%

Table-II: Shows Mostly 25(61%) of mobile users spends 25-50% of their total time for education and others 9(22%) for 50-70% and 7(17.1%) for 10-25% of their total time of mobile usage. Most of the students 39(82.9%) found the content Helpful in exam preparation. 73.2% didn’t face any difficulty, Slides were not enough clear to 7.3% and insufficient for 14.6% and other 4% found it hard to understand.

Table-III

Student’s attitude towards m-learning

Question keys	In number n=41	Percentage (%)
i Downloaded the content offline	Yes=41 No=0	Yes=100% No=0%
ii Go through Offline content	Yes=39 No=2	Yes=82.9% No=17.1%
iii Mobile contents for future learning	Yes=41 No=0	Yes=100% No=0%

Table-III: Shows 41(100%) downloaded the content, 39(73.2%) of them has already gone through the Offline content 2(17.1%) didn't go through it. 41(100%) students want to face mobile contents for their future learning.

Table-IV

Acceptance through level of satisfaction of students through a '4-point Likert scale' online towards m-learning

Level of satisfaction	In number (n=41)	Percentage (%)
1.Well satisfied	11	26.8%
2.Satisfied	18	43.9%
3.Average	12	29.3%
4.Not satisfied	0	0%

Table-IV: Shows 11(26.8%) students are well satisfied 18(43.9%) are satisfied and 12(29.3%) have average level of satisfaction

Discussion

This paper is one of the very few studies which has brought an opportunity for the students to use ICT based learning to an advanced level. The study focused on the in-depth relationship of students with the education systems of undergraduate program. Therefore, for adaptation of new technologies, they have to owe some clear perception of the learning system, to experience them and to possess a positive attitude towards it. This study attempted to give a picture of the response of students of medical college towards a new approach of teaching learning activities in medical program. It reveals that students are quite motivated for adoption of ICT based learning. A content was made in Power-point presentation, most commonly used tool for educational purpose considering student's perceived ease of use (PEU) as in other study where the effectiveness of using mobile devices in the learning was explored by Hsu L and Chen C. as a very new one it is to be discussed about the style of the content. This study offered a Power- point presentation in the form of images and re-using the material for later reflection and discussion, the same we can see in the study by Pimmer, C. and his colleagues². Questionnaire made in Google form in the way how Mohesh MI G, Syed Meerasa S. did in their

study³². It was distributed among students via WhatsApp a popular social networking site, as we see in a study by Dey S and Parabhoi L and also by Mohesh MI G and Syed Meerasa S.^{26,32}. Everyone has preferences for the ways to receive information. In a study done by Lujan H and DiCarlo S, on the first-year medical students shows that; for tailored instruction, to treat all students in a similar way and to motivate teachers to move from their favored mode; it is important to know their perception of content³⁰. All the students in the current study participated with personal smartphone skills and adequate previous ICT based learning experience. But according to a study done by Yusuf R. on medical students found that, students are not still much motivated of using these tools, for learning purposes and also by Bilal A and his colleagues got the same^{3,29}. Present study proposes still the same. Krnel D and Bajd B found in their study, motivation of the student to learn certain content is the key to success¹⁴. While Hsu L and Chen C found higher intention to use ICT based learning (IU)³¹. In many studies rather than using single mode, they prefer combination^{27,30,31}. Their perception reveals 68.3% students prefer video as a content, 17.1% as PDF and 7.3% as Power Point presentation, though MOODLE prefers Power Point presentation as their teaching tool. The study was designed to understand participants' experience with simple the new content supplied and also their interest towards ICT based learning activities. Where it is found that 70-80% students are with good experience. According to the student's experience, though they are involved in Online learning; out of their online classes, most of the students 25(61%) spends only 25-50% of their total time for education on their mobile, which has not so much different from previous study done by Yusuf R³. Moreover, learning experience using ICT reports a positive experience of students in the study of Liccardi I and his colleagues²². Due to advancement of the ICT tools as well as internet, 73.2% did not face any difficulty in receiving and reading the content, gives a positive response. Government initiatives for technological accessibility and good Internet connection has made it possible, which was a big obstacle in this area as located in research by Yusuf R.³. Their attitude from the very beginning to till end of the study appeared to be positive more than

90% which is similar to that of the study conducted by Taghizadeh M and Hajhosseini F employing blended one¹³, has grown higher than the previous research by Venkatesh S, and his colleagues²³. The current study reveals that, majority of the respondents had a positive attitude towards the changing role of teaching system like Bilal A and his colleagues reported²⁹. Degree of satisfaction was done through a 4-point 'Likert scale' (from well satisfied to not satisfied) online. 26.8% were well satisfied, 43.9% were satisfied and 29.3% showed average in their response. Student's satisfaction also found positive in the study by Taghizadeh M and Hajhosseini F and they also found relationship between student's attitude and quality of teaching, contributes to that¹³. In a study by Venkatesh S. and his colleagues students' satisfaction was found insignificant²³. All the students 41(100%) showed their interest on having this type of learning in future. This is a great achievement of this study to make them exposed to a new environment, as well as to a new infrastructure. Very few research has been done in this sector specially involving the Pharmacology department^{3,23}. A beneficial overview and contextual insight from this study, with the perception of the student's, their positive experience and attitude towards this learning activities can give a direction to the proper use of ICT in education Two of the students found the content hard, but as they found helpful for their revision material, they found it average satisfactory. May be because; from offline content, good, doubts can be cleared in next second proposed by Mohesh MI G and Syed Meerasa S³². However, effective implementation would depend largely on student's characteristics, as well as environmental and cognitive components of the delivery method²³. Expectations for and experiences with e-learning are directly related to the learning achievements and course satisfaction²⁹. This study was done creating a new material and to support the traditional learning in a small structure. Widespread study on it will definitely show us a path towards a new era of teaching learning activities in medical program.

Conclusion

This study concludes that students have comprehensive perception about technology. They are experiencing lots of new technologies and learning procedures. They are showing positive

attitude towards the information and communication technology, to bring them into their educational purposes. Their satisfaction level is fluctuating. The main contribution of the paper is to analyze current learning strategy and its development towards new technology. Their response to every question has enlighten the study to move ahead.

Recommendations

The framework of the learning system in medical program, has to be empirically tested and applied by other researchers and designers in medical sector.

To investigate what decrease their satisfaction and motivation.

There are also a number of concerns regarding BYOD (Buy Your Own Device) initiatives, which can be dealt with; through policy making, proper planning, and professional development opportunities for faculty.

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