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Implementing E-Learning as a Tool: Solution for Pandemic Disease in Case of Wollega University

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ABSTRACT

Wollega University is a public higher educational institution established in February 2007 in western part of Ethiopia. After that, the university is making a valuable contribution to the overall development of the country by producing high-level professionals, conducting problem-solving research and providing services to the surrounding communities, working in partnership with all stakeholders. This university provides teaching learning system face to face learning approaches. Due to this during this pandemic disease the university closes the teaching learning method to reduce transmissions of the virus. The researcher can able to propose E-learning as a solution to keep the continuity of education during this pandemic disease. In this paper the benefits of e-learning, features and the challenges to advancement and implementation of new educational system (E-learning) opportunities for this university are also briefly outlined.

Keywords: E-learning, Pandemic disease, covid-19, face to face learning

I. INTRODUCTION

E-learning or online learning has become very popular in developed countries, where most educational institutions have offered courses online already for long. In recent years, e-learning has been adopted in developing countries as well. The hypothesis is that despite possible challenges due to technical and financial matters, e-learning can prove to be an interesting and efficient way of facilitating learning also in developing countries. In order to develop new learning design, one should also analyze future trends in learning especially those related to learning strategy and content. There is a tendency that learning strategy has been shifted from traditional learning method to future learning, which is called the era of knowledge, where learners can learn anywhere be it in the classroom, library or at home, anytime be it in the morning at school, in the afternoon or in the evening, from anyone that means learners can have various learning sources i.e. lecturers, experts, practitioners or the society and by any means which means learners can use numerous types of learning media, for example the internet, CDs, radio, television, laboratory or their own experience[Etana,2020].

At the moment, there is a clear research gap in earlier research on e-learning in developing countries, since it is a fairly new phenomenon there. The objective of this study was implementing and opportunities of e-learning in developing countries are based on the

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case Wollega University. The theme is investigated from both students' and teachers' point of view.

II. History of pandemic disease across the world

Efforts to stem the spread of COVID-19 through non-pharmaceutical interventions and preventive measures such as social-distancing and self-isolation have prompted the widespread closure of primary, secondary, and tertiary schooling in over 100 countries.

Previous outbreaks of infectious diseases have prompted widespread school closings around the world, with varying levels of effectiveness.(Simon and Barnum, 2020) Mathematical modeling has shown that transmission of an outbreak may be delayed by closing schools(Jackson,2014). However, effectiveness depends on the contacts children maintain outside of school.(Zumla,2010 and Cauchemez,2009) School closures appear effective in decreasing cases and deaths, particularly when enacted promptly.(Auger, 2020) If school closures occur late relative to an outbreak, they are less effective and may not have any impact at all. (Simon and Barnum, 2020) Additionally, in some cases, the reopening of schools after a period of closure has resulted in increased infection rates. As closures tend to occur concurrently with other interventions such as public gathering bans, it can be difficult to measure the specific impact of school closures (Jackson, 2013).

During the 1918-1919 influenza pandemic in the United States, school closures and public gathering bans were associated with lower total mortality rates. (Barnum, 2020) Cities that implemented such interventions earlier had greater delays in reaching peak mortality rates. Schools closed for a median duration of 4 weeks according to a study of 43 US cities' response to the Spanish Flu. School closures were shown to reduce morbidity from the Asian flu by 90% during the 1957–58 outbreak,[33] and up to 50% in controlling influenza in the US, 2004–2008.(Wheler,2010)

Multiple countries successfully slowed the spread of infection through school closures during the 2009 H1N1 Flu pandemic. School closures in the city of Oita, Japan, were found to have successfully decreased the number of infected students at the peak of infection; however closing schools was not found to have significantly decreased the total number of infected students.[35] Mandatory school closures and other social distancing measures were associated with a 29% to 37% reduction in influenza transmission rates. Early school closures in the United States delayed the peak of the 2009 H1N1 Flu pandemic. Despite the overall success of closing schools, a study of school closures in Michigan found that "district level reactive school closures were ineffective.(davis ,2015)

During the swine flu outbreak in 2009 in the UK, in an article titled "Closure of schools during an influenza pandemic" published in the Lancet Infectious Diseases, a group of epidemiologists endorsed the closure of schools in order to interrupt the course of the infection, slow further spread and buy time to research and produce a vaccine.[38] Having studied previous influenza pandemics including the 1918 flu pandemic, the influenza pandemic of 1957 and the 1968 flu pandemic, they reported on the economic and workforce effect school closure would have, particularly with a large percentage of doctors and nurses being women, of whom half had children under the age of 16. They also looked at the dynamics of the spread of influenza in France during French school holidays and noted that cases of flu dropped when schools closed and re-emerged when they re-

opened. They noted that when teachers in Israel went on strike during the flu season of 1999–2000, visits to doctors and the number of respiratory infections dropped by more than a fifth and more than two fifths respectively.(Walsh,2019) . For schools and childcare facilities, the U.S. Centers for Disease Control and Prevention recommends short-term closure to clean or disinfect if an infected person has been in a school building regardless of community spread. When there is minimal to moderate community transmission, social distancing strategies can be implemented such as postponing or cancelling field trips, assemblies, and other large gatherings such as physical education or choir classes or meals in a cafeteria, increasing the space between desks, staggering arrival and dismissal times, limiting nonessential visitors, and using a separate health office location for children with flu-like symptoms. When there is substantial transmission in the local community, in addition to social distancing strategies, extended school dismissals may be considered.

As the pandemic progresses, schools may continue with remote learning or decide to reopen. Strategies such as cohorting, rotating schedules, eating lunch in the classroom, and utilizing outdoor spaces are some ways to minimize close contact.[41] Additional precautions include face masks, hand sanitizer stations, rearranging classrooms to enable physical distancing, and frequent cleaning. The CDC made a School Decision Tree to aid administrators in the planning process for reopening. The American Academy of Pediatrics urges re-entry policies need to be flexible and responsive as new information about the virus emerges.

The National Academies of Sciences, Engineering, and Medicine states that in-person instruction for grades K-5 and students with special needs should be prioritized to prevent children from falling behind. Younger children are at higher risk of suffering from long-term academic consequences and developmental deficits without in-person learning.

Timeline of covid-19

- **26 January:** China was the first country which instituted measures to contain the COVID-19 outbreak including extending the Spring Festival holiday and became the first to close all universities and schools around the country.
- **4 March:** UNESCO released the first global numbers on school closures and affected students on 3 March. It reported that 22 countries on three continents had enacted preventive measures including the temporary closure of schools and universities, impacting 290.5 million students around the world. In reaction, UNESCO called on countries to support affected students and families and facilitate large-scale inclusive distance learning programmes .
- **5 March:** The majority of learners affected by COVID-19 emergency measures was located in China, with 233 million learners affected, followed by Japan at 16.5 million and Iran at 14.5 million.
- **10 March:** One in five students worldwide was "staying away from school due to the COVID-19 crisis" while another one in four was barred from higher education institutions according to UNESCO.
- **13-16 March:** National governments in 49 countries announced or implemented school closures on 13 March, including 39 countries which closed schools nationwide and 22 countries with localized school closures.[23] By 16 March, this figure increased to 73 countries according to UNESCO.
- **19 March:** A total of 50% of the students worldwide were affected by school closures, corresponding to nationwide closures in 102 countries and local closures in 11 countries affecting 850 million children and youth.

- **20 March:** Over 70% of the world's learners were impacted by closures, with 124 country-wide school closures.
- **27 March:** Nearly 90 per cent of the world's student population was out of class.[51]
- **29 March:** More than 1.5 billion children and other students were affected by nationwide school closures. Others were disrupted by localized closures.
- **Mid-April:** A total of 1.725 billion students globally had been affected by the closure of schools and higher education institutions in response to the COVID-19 pandemic. According to the UNESCO Monitoring Report, 192 countries had implemented nationwide closures, affecting about 99% of the world's student population.(Redy,2020)

Aim of the Study

Novel corona virus and the resulting COVID-19 pandemic have resulted in more schools and HE Institutes faced with the challenge of how to maintain continuity of teaching and learning while facing the threat of extended closures. Subsequently, this study intends to examine how teaching and learning can still continue during such unprecedented times.

Subsequently the study was guided by the following research question:

What are the challenges and benefits of integrating E- learning in tertiary institutions especially in Wollega University in response to COVID-19 pandemic?

The study thus identifies three main objectives for investigation, which are:

- To consider key challenges in e-learning in developing countries
- To identify Benefit of E-learning for developing countries
- To propose relevant solutions for pandemic disease to wollega university

III. Challenges of e-learning in developing countries

It is obvious that e-learning involves computer or a mobile device and a good and reliable Internet connection. Without these, studying online is impossible. Usually, in developing countries the accessibility is limited to libraries, cafeterias or in other public places but generally studying online is so intensive that an own computer and an effective Internet connection is necessary. This is a challenge for those who do not have the devices or for those with a poor Internet connection. According to Vainionpää (2006, 201-202) research, studying at home with a quality Internet connection brings meaningful and positive experience on the learning.
In contemporary times, young people and kids who were raised around mobile devices often feel very comfortable using mobile devices, laptops and surfing the Internet. Sometimes we forget that not everybody have such a great computer skills. For those, *the challenge of e-learning is the computer skills.* This is a challenge for teachers as well, because they have to both have the know-how of the e-learning programs they are using for teaching but also have a competence to give support to students for using the programs. According to Vainionpää (2006, 48), it is essential for successful e-learning, that the student is not hindered by a lack of e-skills and computer skills. Kekkonen & Lappalainen (2009, 81) remind that technical competence or incompetence is something that should be taken into consideration while planning online courses.

Another challenge for e-learning is that some teachers as facilitators often find it more burdensome and time consuming to set up. One of the reasons for the burden is that e-learning is more difficult to some

in the point of view of evaluation (Vainionpää 2006, 202). So, the challenge is how to share the burden of the teachers that have e-learning courses. The problem of timing in e-learning is that the time splits into smaller units and is much harder to predict (Suominen & Nurmela: 2011, 235). On the other hand, Auvinen (2015, 13) reminds that e-learning environment actually gives opportunities for automating guidance which should ease the workload of the teacher a little bit. For some students, there might be a challenge that there is no face-to-face guidance. This means that they have to regulate their own learning (Auvinen 2015).

IV. E-LEARNING APPLICATIONS

E-examination: In this application, students are administered many proof exams in the internet environment before the formal exams, which enables them to determine their approximate levels. These proof exams, which enable the students to determine their approximate readiness levels, are the most facilitated e-learning services.

E-Drills: With the Internet-based drill softwares, it is aimed to create an effective and productive studying atmosphere for students. As students access these activities on the Internet, they could study on the units through interactive multimedia softwares and reinforce their knowledge by examining numerous examples. Internet-based drill softwares with animations and intensive student-computer interaction could be in service within this program. Students enrolled in the distance learning system, could study on the softwares with or without sound effects.

Therefore, students of the system could study more effectively and productively in the Internet environment.

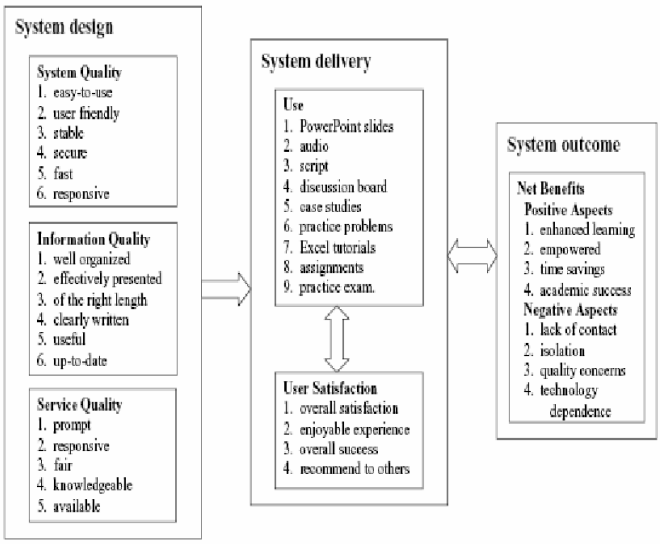
E-Book and E-Television: In order to enable the students to access the books and TV programs on the Internet, the contents of the course books and TV programs could be presented on the Internet as e-books and e-television. Therefore, a student of the system could easily access the course books, TV programs, study through the multimedia research softwares and assess him/herself through the proof tests in an Internet-café or at his/her own PC at the office.

E-Counseling: The one-to-one academic counseling provided to the students could also be provided in a similar format on the Internet. Parallel to the research softwares, students are allowed to ask questions to their academic counselors related to their course contents.

E-Sound Book: The E-sound book application, which enables especially the visually retarded students to listen to the course book contents, could be provided on the Internet.

Therefore, visually retarded students and the students with screen reading difficulties could access their course books form their offices or from an Internet-café. They could listen to the contents of the course book by downloading the sound files on their computers.

❖ **System design**

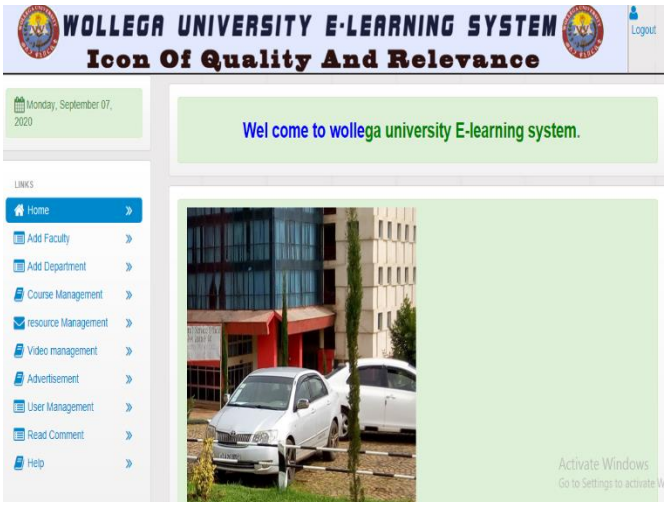


Over all structure of E-learning system in diagram

V. Some common features of E-learning are

- One can digitalize texts, images, sound, videos, leading to multimedia digitalized information.
- One can access any kind of information anywhere in the world in a few seconds.
- Digitalized information is more accessible, more interactive, easier to access, transport, store and process.
- Students are more active and self-directed in the learning environment
- Educational opportunities are close to home
- Students receive exposure to telecommunication technologies
- They can access to internet-rich learning environment
- They have opportunities to develop technology competencies
- They can contact with students in other locations all over the world
- They have opportunities to participate in online national and international events
- They can develop stronger relationships with classmates
- Students can determine time and place of "class time"
- They can access to global resources and experts
- Their interaction with classmates will increase.

VI. Implementation of E-learning model screenshot



VII. CONCLUSIONS

E-learning involves the use of digital tools for teaching and learning. It makes use of technological tools to enable learners study anytime and anywhere. It involves the training, delivery of knowledge and motivates students to interact with each other, as well as exchange and respect different point of views. It eases communication and improves the relationships that sustain learning. Despite some challenges discussed and how e-Learning has made a strong impact in teaching and learning during the pandemic disease. This research confirmed the influence of effort expectancy on the intentions of managers and academics to adopt and use e-learning. Also, it showed that the users would like to use an easy to use system that requires less effort from them, so they would have more time to do other activities. E-learning has a future in making the world a better place through learning, creating awareness and bridging the gap between the privileged and less privileged in developing countries. So the researcher proposes E-learning as a solution to overcome the closure of education during the outbreak of pandemic diseases.

Author profile

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