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Research paper



Justifications for using interactive online education

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Abstract

The world is currently witnessing a renaissance of knowledge that can be described as the information era, the Educational environments became increasingly diverse, therefore, the institutions working in the educational field, are constantly seeking to create an efficient educational process to communicate knowledge to learners by the best possible ways and providing methods that aim to achieve the participation and create a link between the teacher and learners within the teacher guidance, in proportion to technological changes in the educational systems, where online education has undergone major changes in the organizational method of teaching. This prompts to focus on feedback as critically important in the educational process. The amount and type of interaction and feedback between the teacher and the learners depend on the link used; it is difficult to read "body language" of the learners over an audio link or recorded video, so the success of feedback process depends on face-to-face communication. This paper presents models of online education, and provides justifications for using interactive online education, and explains that there is a need for more researches in this field and take an active role in evaluating, selecting, and integrating tools and services that emphasize more teaching interactions.

Keywords: *Interactive Online Education; Online Education; Online Education Feedback; Online Education Mode; Online Education System*

1. Introduction

Technology has recently contributed to make changes in everything around the world. It has affected business, economics, media, medicine, education, and the computer became part of the World Wide Web as the first means of communication, therefore, educational issues and the ways to develop them are among the issues strongly raised at this time. Developing educational issues will not happen except through developing the educational methods used, so education must respond to this technological revolution, by reflecting the elements of this revolution on programs, decisions and activities, in a way that allows contemporary generations to adapt the nature of the current life trend. Education and training must benefit from these technologies and technological revolutions in activating and facilitating activities, tasks and achieving goals. According to [1], “The immense growth and enhancement of technology had expanded the development and implementation of numerous teaching methods.”

Therefore, due to technical developments in recent years, many modern methods of education have been launched, such as e-learning and blended learning, and there are many who argue for the need to preserve traditional education while introducing some modern technologies and tools to ensure direct interaction, because they feel that there is a complexity in technology. And the speed of its development and it cannot provide interaction between the parties and the educational process.

There are developments and changes in this era, such as: globalization and its political, economic and cultural manifestations, the industrial revolution 4.0 and the renewable knowledge revolution in various scientific sectors [2]. The aim of the educational process is to provide learners with practical skills and theoretical knowledge within the basics of input, process and output targeting human minds in order to transfer them from reality to a new and better reality, by giving them different knowledge and achieving many main and subsidiary goals, including mental, psychological and educational goals for the learner, so it is the duty of the actors in the field of training and education to understand it in order to be able to build effective educational models capable of exploiting the economics of modern information exchange and the creation of entrepreneurship, the exchange of knowledge, and the promotion of innovation and creativity to create and provide modern learning methods using information technology.

California Community College Academic Council discussed the characteristics of good education models, both face-to-face and technology-dependent [3], at the present time may are classifying e-learning to synchronous and asynchronous, with emphasizing that good implementation encourages effective communication between the student and the teacher, provides cooperative learning opportunities between learners, uses active learning methods, provides immediate feedback, invests learning time, sets high expectations for success, respects various talents and different teaching methods, uses appropriate tools, and supports Self-directed education, providing comprehensive services for students.

Therefore, global trends in educational development have become closely related to shift towards the field of technology in education, especially after traditional education systems have not met the requirements of transforming society into a knowledge society based on knowledge exchange, skills acquisition and self-reliance and development for everyone who wants to learn from anywhere through interactive communication as much as possible that serves the educational process, increases educational productivity and reduces costs with-

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out sacrificing educational quality and to help the teachers' staff meet the challenge of online education and maintain their role as teachers in the new online environment, Helping institutes without the need to re-imagine teaching models. So simultaneous interactive communication is crucial, and it is important for learners to be able to interact with each other and with their teacher, and it should be available, popular and relevant in a way that makes us able to break out of the traditional teaching process.

2. Methods

Online education is an activity supported by the use of information and communication technology and often follows these discussions about this technology, including the use of computers, accessories, electronic screens, satellite channels, the Internet and e-libraries, with the aim of providing learning throughout the day and for those who want in the place that suits them, through various ways to present content by animating visual and sound elements, making education more interesting.

2.1. Databases in interactive and online education mode

Many sources of databases were chosen in the selection of databases in this paper. Such as IEEE Explore, ACM, and Google Scholar. Search results were limited to papers in English language issuance. This review consists of papers with years of research that published in last 10 years Mostly. In advance search, the authors uses keywords which were following the search terms of “Online Education”, “Interactive Online Education” and “Blended Learning.” In table 1 displayed there are codes of databases used which are presented as P1- P3 to spell out the electronic databases in a classification.

Table 1: Databases Used in Research

ID	Databases	URL
1	IEEExplore	https://ieeexplore.ieee.org
2	ACM	https://www.acm.org
3	Google Scholar	https://scholar.google.com

2.2. Criteria for selecting the papers for review

The purpose of this review paper is to help find the need of providing online education in the interactive mode. To choose fit investigations to be consider by indicating by various further criteria. Conditions use in this study demands are limited to (i) describe Online Education (ii) Online Education System & Modes (iii) Justifications for Using Interactive Online Education (iv) Include an abstract. Fig. 1 shows the research review protocol that adopted which consists of many phases of selection criteria including inclusion, exclusion.

2.3. Papers excluded from the review

The titles and abstracts of the 107 papers recognized were read to choose papers and research which were potentially relevant. As predicted, because of the general idea of the search terms for interactive online education, numerous papers which appeared of the pursuit were not applicable to the review. Paper excluded for the following reasons:

a) Various papers do not include qualitative or quantitative evaluations of the eligibility of the mediation described.
b) Some papers recognized by search terms were avoided from review because it doesn't include an observational evaluation.
c) Paper should have said its research objective obviously.

84 of the papers and research has been exempted for further review due to the accordance to the title and based on abstract and conclusion.

2.4. Reviews of characteristics in online education

There are 23 papers reviewed related to previous studies in online and blended education concerning on the characteristics of online education particularly in feedback with regards to the concern of how online education can be effective in Interaction. The purpose of this review paper is to provide erudition to researchers/educational institutes for future research especially on how the online education should be provided.

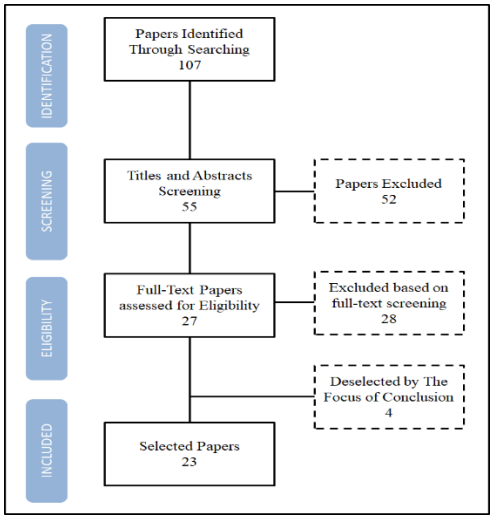


Fig. 1: Flow Diagram Of The Paper Selection Process.

3. Online education

Online education is an activity supported by the use of information and communication technology and often follows these discussions about this technology, including the use of computers, accessories, electronic screens, satellite channels, the Internet and e-libraries, with the aim of providing learning throughout the day and for those who want in the place that suits them, through Various ways to present content by animating visual and sound elements, making education more interesting, entertaining, effective with less effort and time [4].
Online education is a system in which students and teachers are not separated, and online technological tools are used to bring benefits to the learning process [5]. Online education is a method of learning that can make it easier for us to learn just as on campus through discussion in this case through the Learning Management System. Especially if some teachers in online learning, the way of lectures submitted and discussion via LMS for the learners is one of the things that have to be considered [6], Therefore, online education is a teaching method for communicating information to the learner and it depends on modern computer technologies, the global information network and their multimedia such as CDs, educational systems, e-mail, and a dialogue and discussion [7].
Online education is a structured learning activity, dependent on the use of teaching materials, and restrictions on study are reduced in terms of access, location, time, speed, method of study or any combination of these. Information technologies are the common use of information and communication technology (ICT).

4. Online educational systems

Technology is changing our educational systems, and these days the teaching and learning process in the classroom is often associated with the use and assistance of information and communication technology, as online education has undergone major changes in the organizational method of educational teaching in educational institutes; the learner can transfer his digital environment to anywhere, and this has been related to this great development in the services provided by networks, and some features appeared in storage spaces and high internet speeds, as well as providing a large number of programs that the learner can use without the need to install and configure it with operating systems. Hardware, so flexibility is an important feature of an online learning system.
In recent years, educational institutions have been investing in information and communication technology infrastructure to implement online education systems to improve the quality of education in secondary schools in Tanzania [8]. Most of these systems are implemented using a traditional web-based, traditional online learning approach on the institute's premises which are costly and limits use due to lack of scalability, flexibility and low quality. System quality represents the quality of the online learning process itself and includes software and data components [9]. These days the world witnesses that higher education is in the midst of the technological transformation and there will be a fundamental change in the current teaching and learning system as universities and colleges during the next decade [10]. The invention is directed to a learner interaction monitoring system, which captures the online learners' behaviors and evaluates online training courses [11]. As a result, many institutes are starting to adopt cloud computing as a solution, and this adaptation relies on well-defined online cloud education architecture to achieve better performance compared to the web-based online educational systems in the institute buildings. Hence, global trends in education development in general and university education, in particular, have become closely linked with the integration of technology with education.

4.1. Online education mode

Online education is education based on electronic technology as the revolution of educational technology, and therefore online education can be defined as an effort to connect learners with separate educational resources physically via the Internet, and to provide communication and interaction between them directly (synchronous) and indirectly (asynchronous) [12]. The major units in the education system consist of teachers, educators, content providers, education designers and educational experts who can interact, collaborate and play important roles in teaching and learning simultaneously and asynchronously [13]. Online activities in online education should be carried out through the use of innovative, synchronous and asynchronous information technology [14]. Online education (distance education) is offered through a variety of formats [15].

4.1.1. The asynchronous online education

Asynchronous mode provides students with learning at their own pace through an online education portal that provides courses in a specific area of interest or topics and can be accessed from one website [10]. Asynchronous online learning may allow learners to participate from different places at different times [6]. In the case of asynchronous education, students can easily fit the time of teaching their class schedule, and this allows more flexibility for those who may have family or work obligations, and more learners can consume materials simultaneously without increasing semester capacity [16]. Online asynchronous education is video recording [17]. Many courses are recorded, so students can substitute for class attendance by viewing asynchronous recordings [18].
Through research on this style of online education, there are many negative opinions; let's be enough to mention these. Asynchronous online education may not always be available when learners need assistance [10]. There are also indications that the asynchronous method impedes negotiation, interaction, and conversations, causing confusion, interruption of communication, and delay in responses [19]. Asynchronous online teaching and discussion may have an impact on students' level of comprehension, satisfaction and educational experience [20].
Asynchronous online education allows learners to receive lessons and educational content without the need to meet the teacher on the network at the same time, which allows the learner to learn educational content in the appropriate place and time over the Internet, and to re-study the educational content and read it electronically whenever needed, and all this leads to reduce teacher dependence and enhance the concept of self-learning and development.

4.1.2. The synchronous online education

The synchronized mode requires students to attend an online classroom that is supported by some tools such as slides, video streaming, shared whiteboards, and shared apps, and then switch to their homework at specific times, so they study in a scheduled framework with specific deadlines [10]. Online teaching can be improved through video content and concurrent online activities through live web conferencing, and use cloud computing services to make the online learning environment affordable and learner-centered [18]. Synchronous

online education is direct meetings [17]. Simultaneous online learning may include real-time activities that connect teachers and learners from different places [6]. Synchronous online instruction with the presence of the teacher is more consistent, and his will benefit the social interaction between the learners [20].
This mode of education requires that the teacher be present with the learners simultaneously on the network during the teaching process. The interaction in simultaneous online education takes place directly by linking the teacher with the learners via video conferencing with the possibility of exchanging files and instant messages, and this direct interaction facilitates the process of cooperation and exchange of ideas between them as well as between the learners themselves, and obtaining direct feedback that enriches the educational process.

4.1.3. The blended education

Educational and training institutions integrate online education with traditional education, which reduces face-to-face meetings and lectures, by providing a portion of educational content online, and this will contribute to solving the problem of learners' inconsistencies, and the high cost of technology tools used in concurrent online education. The desire to preserve traditional direct learning (and face-to-face) as well as the desire to realize benefits from online learning, has given rise to blended learning strategies [20]. This mode of education was created to minimize the limitations of online education, especially with regard to interaction and feedback. Most universities started using distance learning and transfer to the blended system of education in classes [21].
Blended education is the combinations of direct learning in class and e-learning by online in formal education [22]. Blended education is an intelligent educational model by combining direct (face-to-face) education and online education, which is used in the educational line [23]. So it is a mixture of methods and contents between live education and online teaching methodologies.

4.2. The synchronous online education models

a) Online audio classroom: The teacher provides educational content only through audio with the ability to provide voice interventions by learners, supported by a text of the conversation, so it is a two-way audio interactive channel.
b) Online Video Classroom (one-to-many): The teacher provides content for education through direct video through contacting the virtual classroom and learners' interventions implemented through the conversation text box.
c) Online Classroom with Video (One to One): The teacher provides educational content through direct video by contacting the virtual classroom and implementing learners' interventions through the chat text box or by video one by one.

5. Interactive online education

It can be considered as one of the methods of simultaneous online education that can reduce problems in online education specifically in feedback and interaction, increase educational productivity and reduce costs without sacrificing educational quality, and it also helps the teaching staff in facing the challenge of online education, And maintaining their role as teachers in the new environment via the Internet with the ability to see learners and communicate with them directly through audio and video and get feedback at the same time, and thus the educational process is implemented as it is in the classroom, but via the Internet.
Interactive teaching means teaching interventions addressed by the teacher to the class (or a subgroup) [24]. The interaction in simultaneous online education takes place directly by connecting the teacher and learners together via a live video conference with the ability to exchange files and instant messages, and this situation can be represented by a live broadcast over the Internet (many-to-many), so this requires the teacher to be present With the learners at the same time on the network during the education process to present the educational content and implement the learners' interventions through live broadcasting over the Internet, so it is an interactive multi-way video channel.

6. Justifications for using interactive online education

By focusing on online education many concerns can be found about the application process as an educational method. One-third of colleges and universities offer online courses, and higher education is forced to update policies to address disputes over copyright for online courses by reconciling with intellectual property issues [25]. Faculty members in educational institutions use computers and the Internet in the traditional learning process to perform normal tasks efficiently and are concerned with whether simple and reliable technology tools for use in more complex tasks [26].
Feedback is an important and necessary part of the online education system [27]. Using this method will improve teacher communication, increase student satisfaction, and change many students ’perception of homework and its importance in the educational process [28]. So interactive communication at the same time is very important, but not at the expense of educational content, so it is important to provide suitable interaction for learners in order to interact with each other or with their teachers.
The main purpose of interactive online education is to help teachers create online courses that bring teachers and students to collaborate and interact online, make the teaching process faster, upgrade teachers ’methods and strategies for teaching, improve student learning performance, and improve the quality of instructions [29]. The development and modification of online courses have shown that interactive learning is critical to the success and satisfaction of online students, and for improving the learning process and direct engagement with educational materials, IT education departments should play an active role in evaluating, selecting and integrating tools and services focused on further interactions of teaching and learning [18]. Online teaching platforms should provide technological features to enable a collaborative environment by expressing communication and cooperation among students, thus influencing usage and learners' satisfaction, which is an important aspect of the success of e-learning systems [29]. This approach will enable learners to take on the active role of an explorer or scientist, as they will participate in solving the problems they encounter when preparing and implementing their experiences, thereby benefiting from their personal feelings of curiosity. Learners will learn to investigate and innovate and use their personal characteristics and identity to self-organize their learning [30].
The most important justifications for using online education are:
a) The explosion of knowledge and technological development.
b) The communications revolution and the rapid transfer of knowledge and information.
c) Expanding the capacities and absorptive capacity of educational and training institutions in different stages and different types in order to be able to accommodate the increasing numbers of students.

d) The inability of traditional education institutions to provide educational and training opportunities for certain groups of society for several reasons such as economic, family, health, or geographical.

7. Related study

There are a number of similar or related research papers dealing with the necessary interactivity and feedback in the online educational process.

There is an imperative to improve participation, get emotional things, discussion and face-to-face communication in online learning management systems, without neglecting body language support for its importance in the communication process [6]. Online learning theory said that there was a relationship between teaching effectiveness and feelings of belonging and cooperation as well as the actual exchange of questions and answers and arguments [31]. There is strong evidence of a positive relationship between online activities, face-to-face instructions and learning outcomes [14]. Blended learning environments should facilitate interaction between teachers and learners, face-to-face communication, promote social interaction and support simultaneous online communication in order to foster community building [32]. Most online learning platforms are inadequate to provide collaborative learning and do not meet user requirements for two-way interactions, although it is essential to provide high-level interaction between teachers and students in real time [33]. Distance education theory emphasizes the necessity of face-to-face communication, group discussion and feedback in the online education system [27].

8. Conclusion

In face-to-face learning, all kinds of two-way communication can be achieved at the same time, but in online education, by contrast, there is a need to organize different communication channels for these different purposes, and feedback in the Internet is one of two forms; it is either impersonal and immediate or personal and late, and the success of distance education requires feedback, although it is difficult to achieve, because a delay in feedback can prevent learning [34].

In this paper, the researcher believes that there is a need to propose an online interactive educational model with good educational performance, activate participation, interaction and achieve feedback. This cannot happen in current online education methods that are often limited between asynchronous online education and mixed education, and it is necessary to identify appropriate learning tools and techniques that can be used to support all types of learners, not to ignore the direct interaction between the learner and the teacher and ensure feedback from direct online education (interactive).

Therefore, in the future, researchers can work to find an effective way to use the Internet to communicate with comments in a timely manner, and focus on direct online education with the flexibility set by the learners with a commitment to a specific learning time to ensure interaction the feedback process has been well done, which is considered a stone. The angle in the educational process, which will not be accurate with current asynchronous online learning methods that are implemented by recording materials in flexible time without any interaction or the role of the teacher.

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