

# E-Learning During the Period of Pandemic (COVID-19) in the Kingdom of Saudi Arabia: An Empirical Study

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**Abstract** E-learning is Information Technology (IT) supported virtual education system. It has emerged as a dominant channel of learning. The value of e-learning in education has led to a substantial development of online courses. This study plans to commence with the notion of e-learning, and talk about its need and span in education. There is a special focus on how e-learning can solve the disruptions in education sector due to the pandemic (COVID-19). A survey was performed to verify teachers' preference towards diverse features of e-learning. The research results show that the majority of the teachers held positive opinion towards e-learning.

**Keywords:** E-learning, Pandemic (COVID-19), E-learning features, E-learning challenges.

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## 1. Introduction and the Background of the Study

Education program is going through a significant amendment with the expansion of innovative technologies and speedy expansion of the Internet. This technology supported education is broadly known as e-learning [1]. It is also known as Web-based education, virtual education or IT supported teaching [2]. The features of online education are flexible instructions and learning that boost independent and self-governed education. The students may decide about the site and time of their education, thereby defeat the physical blockades [3,4].

Likewise, the manpower of various educational institutes is incapable to manage their educational programs with the current arrangements. It may be solved by integrating 'blended learning' that merges virtual education with the current conventional educational techniques [5]. The mechanism used in online education may differ from a DVD or video conferencing capacity, to the practice of software for building an online educational environment [6]. To make online education fruitful the educational goals ought to be simple as well as educational topics should fulfill all the areas of education (i.e. knowledge, abilities etc.) [4,7].

In addition, the globe became technically refined more than ever before and teaching and learning is no exception [8,9,10]. The introduction of a variety of electronic gadgets (i.e. smart phones, tablets and computers etc.) has facilitated us to provide education outside the conventional physical class rooms. The availability of the Internet and tools such as Google Docs, Google Hangouts,

Skype, Wikis etc., have created education more collaborative, interactive and efficient [11]. Education is not limited to the physical classroom anymore; on the contrary, modern technical advances (i.e. computer, Internet etc.) have permitted to offer education residing anywhere in the globe [12]. In 2001, Massachusetts Institute of Technology (MIT) teachers offered Open Courseware, which granted entree to the learning resources of almost 2,300 MIT subjects to more than 200 million learners [13]. Massive Open Online Courses (MOOCs) ease unrestricted involvement and entree to materials of 6,850 online subjects. Around 58 million learners registered for MOOC subjects in 2016 and almost 700 institutes, including MIT, Oxford, and Harvard etc. took initiative to offer such subjects [14]. Similarly, online resources from YouTube, TED Talks, Udemy etc. played a vital role to create education more effective and efficient [11].

Besides, e-learning is playing a crucial role to improve performance of the academia [15]. It incorporates a variety of events: from supported education to blended education as well as online education [16]. Learning Management Systems (LMS) are widely used for e-learning. In most of the cases, they are the initial point of online education program. Wikipedia defines LMS as a software application for the administration, documentation, tracking, reporting and delivery of educational courses and training programs. Presently, the value of LMS is more than \$ 3 billion [17]. The growth of LMS and LCMS (Learning Content Management Systems), the expansion of the apparatuses for arranging webinars or online learning, the apparatuses for constructing educational materials and acquiring novel technologies are of the top most precedence in education [18]. As per the Ambient Insight, online education industry in Western Europe was around 8 billion dollars in 2016, whereas in the Eastern

Europe was about 1 billion dollars. The principal acquiring nation in Eastern Europe is the Russian Federation whereas The United Kingdom is the major acquiring nation in Western Europe. LMS does not depend on any specific subject; rather it has more broad managerial aspects. It cares about the growth of reusable educational contents [19].

Nevertheless, although there are many advantages of LMS, various e-learning programs assisted by them, particularly in emerging nations, were fully or partly unsuccessful [20,21]. On the other hand, e-learning assists pupils with the entree to excellent learning opportunity. It is also a decent choice for lifelong education [22]. With this method, educational institutes may cut terms, deliver more courses and reach learners throughout the country or globe as it permits learners to learn anytime and anywhere. It also helps to make preliminary as well as advance teaching and learning more available to a larger number of learners. Needless to say, to make online education successful, the institutes ought to deliver the facilities of virtual registration, automatic entree to resources and prompt response to queries [19,23,24].

In addition, e-learning is a program to fulfill the requirements of vastly experienced experts in the contemporary scientific arena. The challenge of partition between learner and instructor is resolved by a cross mixture of a student-centered online learning [25]. E-learning turned out to be extremely admired in industrial nations, where virtual lessons have been offered for a long period of time [19,26].

In a nation like Kingdom of Saudi Arabia (K.S.A) where education is one of the highest priorities of the administration, there is a burning requirement to investigate the teachers' insight concerning online education. The prospect of online education will be dogged by the intensity of satisfaction by its most vital stakeholders, the teachers. Consequently, it is extremely important to seriously assess the teachers' views and their opinions concerning virtual programs, which would be constructive in creating education more attractive and efficient.

## 2. Methodology

A survey was conducted among the teachers of Management and Information Technology (MIT) Department of Jubail Industrial College (JIC) of Kingdom of Saudi Arabia (K.S.A.) in March to May, 2020 about e-learning. Data were gathered in the shape of self-administered survey. The survey was validated by pilot research conducted on selected teachers. After attaining agreement on the validity and relevancy of the survey from the teachers it was disseminated to all constituents. The rationale of the research was enlightened and well-versed approval was attained.

The data were monitored for correctness and deficient data were barred from the investigation. The data were examined by utilizing the Statistical Package for Social Science (SPSS). To judge thoughts of the teachers towards e-learning, ten statements were assembled and five points Likert scale was utilized for scoring: 5. Strongly agree, 4. Agree, 3. Not Sure, 2. Disagree and 1. Strongly Disagree.

## 3. Pandemic (COVID-19) & E-Learning

Huge eruption of pandemic virus, natural tragedy etc. took place in the world, distressing not only health industry, but also the education sector. For example, in 2002, SARS distressed numerous nations around the globe. To prevent the virus, traditional face-to-face education was prohibited in some areas in China [27]. Likewise, in 2009, the epidemic of H1N1 Flu distressed numerous inhabitants around the globe, causing educational institution shuts in numerous nations and regions [27].

As a matter of course, the COVID-19 is leaving new lesson for all spectra of life and across all sectors. The education sector is no exception. With the eruption of COVID-19 being acknowledged a pandemic by the World Health Organization (WHO), people are facing a key challenge in all over the world. It has drastically influenced our life styles. Moreover, it is testing our adaptability and flexibility in response to a major crisis like COVID 19. We are dealing with unusual methods of working, studying etc. Virtual shopping and social media are not novel to us, nor is online education. Nevertheless, COVID-19 is stimulating the requirements to deeply investigate the prospects of virtual education [28].

Besides, UNESCO confirmed that, as of 25 March, 2020 educational institutions shut down in various nations for the period of the COVID-19 prepared around 1,524,648,768 students being barred from the usual learning practice. Substitute methods, like e-learning at house, were utilized to ensure undisrupted education. To survive in the insecurity and challenging world, learners ought to be ready to excel the 21st century skills to work out troubles vigorously. Self-discipline ability acts a vital role in learners' accomplishment. For the period of learning disturbance, it is an excellent chance to uphold learners' active learning at house to train self-discipline skills [29].

In addition, the current pandemic (COVID-19) has altered the methods of teaching and learning perpetually. Therefore, learning has altered significantly, with the huge increase of e-learning. Even before COVID-19, there was rapid expansion and acceptance of educational technology, with worldwide Edtech investments getting US\$18.66 billion in 2019 and the general market for virtual education predicted to be \$350 billion by 2025. There has been a considerable growth in the usage of online tools (i.e. video conferencing, webinar, virtual tutoring etc.) since the eruption of COVID-19 [28].

Similarly, in the Kingdom of Saudi Arabia, the Ministry of Education (MOE) is using TV and social networks to transmit education for all grades. It has nominated around 127 administrators and instructors to offer regular teaching in 112 enlightening courses through 19 TV channels (transmitting nationally from a classroom in Riyadh). Learners are presented five choices by the ministry for online education [30].

On the other hand, although several experts consider that the unintended and quick shift to e-learning - with no guidance, inadequate bandwidth, and no homework - may end in an unsatisfactory user experience that is unfavorable to persistent development, others consider

that a novel fusion model of teaching may appear, with noteworthy advantages. According to Wang Tao, Vice President of Tencent Education, e-learning will ultimately turn out to be an essential part of education. There have already been successful shifts among various educational institutes. For instance, Zhejiang University administered to obtain more than 5,000 subjects online in just two weeks into the shift using “DingTalk ZJU”. The Imperial College London initiated offering a subject on the science of COVID-19, which is at present the most registered class commenced in 2020 on Coursera [28].

Still, many are by now touting the advantages. For instance, Dr. Amjad, a faculty member at The University of Jordan who has been utilizing Lark (a Singapore-based firm) method to educate his pupils states, “It has changed the way of teaching. It enables me to reach out to my students more efficiently and effectively through chat groups, video meetings, voting and also document sharing, especially during this pandemic. My students also find it is easier to communicate on Lark. I will stick to Lark even after COVID-19. I believe traditional offline learning and e-learning can go hand by hand” [28].

Moreover, in reaction to high need during the pandemic, various virtual learning firms are providing right of entry to their services at no cost. After broadcasting complimentary live courses, BYJU (a Bangalore-based educational technology firm) has noticed a 200% raise in the number of new learners utilizing its service. In the meantime, Tencent classroom has been broadly utilized since mid-February, 2020 after the Chinese administration instructed learners to restart their lessons through e-learning. It ended as the biggest “online movement” in the history of education. Other firms are augmenting capacities to offer a one-stop store for instructors and learners. For instance, Lark, started to offer unrestricted video conferencing time, auto-translation capacities, editing of projects etc. to learners. To do so promptly and in the period of pandemic, Lark ramped up its universal server infrastructure and engineering capacities to guarantee dependable connectivity. Similarly, Alibaba’s online education solution, DingTalk, had to arrange for a similar situation: “To support large-scale remote work, the platform tapped Alibaba Cloud to deploy more than 100,000 new cloud servers in just two hours - setting a new record for rapid capacity expansion,” according to DingTalk CEO, Chen Hang [28].

## 4. Features of E-Learning

The three main features of e-learning are the nature of the learning practice, synchronicity of involvement, and existence or nonexistence of face-to-face education [31]. The learning practice is called ‘didactic’ when the educational item is basically passed to learners and they can’t alter it, and ‘active’ once the learner has control over the educational procedure [32]. The learning is called Synchronous while the guidelines are delivered on the spot. In this type of learning, learners interact with teacher in real time. There is communication among the learners utilizing the available audio-visual supports like chat, online classrooms, as well as audio and video conferencing. In case of Interactive category, the

educational content progresses as the course advances and students interact; the teachers perform as expeditors and assist in the progression of knowledge.

Besides, e-learning is allocated into complete learning and blended learning, subject to the use of the technique as either extra or extension of the face-to-face education. In case of complete e-learning, face to face contact is not necessary. However, in case of blended kind of e-learning face to face contact is required. For blended e-learning, both face to face and online learning is used from time to time [32].

Furthermore, learning management coordinators have a key responsibility in accomplishment of e-learning outcomes. They need to take care of technical issues and preserve the system well-designed for maximum benefits. Educators should take adequate training to be familiar with the system. Pupils ought to study about the e-learning techniques. Organization ought to create a distinct IT unit to take care of all the technical issues related to e-learning.

On the other hand, Learning Management System (LMS) is used for the instructors and pupils to provide contents, detects and measures individual and organizational learning objectives. Moreover, it gathers data for overseeing the educational procedures of the institute [33]. The instructors make and distribute content, observe pupils action, and evaluate pupils’ performance. Additionally, the pupils may access materials straight on electronic devices, may participate in the examinations by using Internet. The pupils may measure their performance. LMS can perform following activities: Registration (Enroll and manage students online for web-based actions); Scheduling (timetable of various subjects); Delivery (distribute virtual courses); Tracking (identify the advancement of the students); Communication (contact by e-mail, webinars etc.); and Testing (evaluate competency, student pledge etc.) [32].

## 5. Advantages of E-Learning

- **Flexibility and comfort of entree:** E-learning is not static or time bound to a specific timetable. It is simple to reach. As a result, students may access it anytime and from anywhere. Instructors may improve and oversee the educational contents anytime they want [34]. The availability of the content via mobile also supplements this feature [35].

- **Diverse nature:** E-learning is sans borders. It is valuable in isolated / remote villages as well [36]. The learners can essentially be from any area of the world [37].

- **Time-saving:** Many learners can be engaged at the same time, thus decreasing the time required for the program. The material once prepared is everlasting, and may be re-examined many times. The saved time in making materials may be utilized by the instructors to improve their advanced level of intellectual e-learning [32,38].

- **Adult learning values:** E-learning assists in gaining knowledge in depth, escalates self-motivation, and accomplishes the adult learning values [39]. Likewise, it permits learners to establish their own learning methods. It is personalized to learner’s needs, thus assisting in self-directed learning [40].

• **Uniformity:** As same material is displayed to all the learners; the curricula consistency is preserved across the learners. The learners resided in off campuses obtain same materials. This assists in the constant accomplishment of learning goals due to identical accessibility of quality and quantity of materials disseminated [32,40].

## 6. Challenges of E-Learning

**Hardware and software issues:** The technical arrangement (i.e. hardware and software) is essential for e-learning platform. The matters associated to the hardware are expenses, shortage of components, and shortage of mechanical expertise to run those [41]. The software matters are the necessity to gain authorizations [42], and regularly updating the hardware to support them. 24/7 entree at both campus and off-campus is essential for e-learning to be effective [32].

**Connectivity:** The accomplishment of e-learning relies on the adequate Internet connection [43]. Satisfactory bandwidth is required at several stages to safeguard appropriate downloading.

**Financial matters:** There are financial issues for fixing, operating, and maintenance of the e-learning platform. In addition, it is necessary to develop the infrastructure and hiring the IT experts. It is an extra pressure on the organization's funds. As a result, management may be unenthusiastic to finance on e-learning programs [32].

**Protection of personal information:** The confidentiality and safety of data need to be preserved. With the growing virtual world, cybercrimes are also mounting. As a result, identity management need to be handled effectively and efficiently [44]. Modern antivirus software as well as operating systems are also required. Additionally, special attention needs to be given on the matters related to plagiarism.

**Instructor and support staff unavailability:** It would be a big challenge to guarantee enough number of efficient workforce (i.e. academic and support staff). To maintain high standard of e-learning program, institutions need to have adequate number of staff [40]. It is vital to have enough support staff to sustain the ever-changing conditions of e-learning [32].

**Technical support:** In many institutions there is not enough mechanical backing to operate e-learning program properly although they may possess good infrastructure [45]. The instructors are normally not conscious of the sort of support needed in specific programs. Numerous researches suggested that knowledge and expertise of information technology at learners' stage is mandatory to embrace e-learning [32,46].

**Lack of face-to-face interaction:** The absence of direct interactions is one of the biggest challenges of e-learning [39]. The deficiencies of tutor support, particularly in case of the complex subjects, were quoted as a drawback of e-learning [47].

**Psychological matters:** Both teachers and learners feel stress about e-learning mainly when adequate guidelines are not readily available [33]. The need of knowledge for understanding the notions of tough subject makes students more cynical. Predominant myths concerning the e-learning can disappoint the learners [48].

**Language obstacles:** Various researches identified that language is a hurdle in execution of e-learning [49]. Alike traditional learning, the guidelines in e-learning are delivered in English, which can be a challenge for the learners who are not comfortable with the foreign language [32].

## 7. Can Students Study by Themselves?

Some researchers describe the fresh students as “digital natives”, “millennial students” [50,51]. Pupils intermingle and associate 24/7 with other learners with the help of social media. Many young learners prefer to study though the web and are accountable for their learning activities. They also prefer to use electronic devices for the sake of education [51,52,53].

Moreover, some researchers presume that pupils of current generation are eager and capable to develop their individual study agendas as per their desires and abilities. They are also able to manage their specific study procedures. Likewise, some scholars claim that learners ought to be at the middle of academic decision-making, comprising syllabus development as well as would be regarded as initiators of education [52,54].

Nevertheless, there appears to be a discontinuation between how pupils practice and intermingle with equipment in their private and communal lives and how they utilize equipment in colleges, universities as pupils. A lot of pupils utilize electronic media for different objectives such as downloading music, talking with friends, playing video games, nevertheless most of them are not interested to study comprehensively through e-learning channels [55,56]. It is not enough for the learners to recognize how to utilize the mobile devices, software, various apparatuses that exist at a given time during their study period rather they ought to be able to adapt to new digital settings. Moreover, they need to develop behaviors that nurture the non-stop mastery of new digital talents as technology is always changing [51,52,54,57].

On the other hand, portion of the misunderstanding linked to the capability of pupils to become self-directed and develop their individual courses in the virtual age stems from the misunderstanding between entree to information and knowledge creation. The Internet allows entree to unlimited information of any type. Nonetheless, there is a huge dissimilarity between imparting information vs. creating knowledge. The conventional role of educational institutions at all stages, from primary education to higher education (i.e. university), is to support their pupils to create knowledge through leadership, coaching and individual care, and not just to convey information [52].

If the key drive of education was to gain information, learners could have studied at their residence from manuals and booklets, during the pre-digital age, instead of attending educational institutes. However, for most pupils, the support of a teacher is vital to convert information into knowledge [58,59]. Learners in educational framework (i.e. school, colleges, university etc.), require the help of experienced instructors to convert information into significant knowledge [55].

## 8. Digital Literacy of Teachers

Technology alone cannot make e-learning successful. Digitally confident teachers are vital for the success of e-learning. The new technologies oblige the teachers to undertake new duties as well as to cultivate varieties of innovative abilities. Numerous researches identify the various roles, which instructors are anticipated to accept when applying the new technologies in teaching [51,54,59,60,61]. The following are the examples of responsibilities instructors are projected to accomplish in e-learning: deliver curriculum, instructional materials, learning plans; observe and judge learning, deliver criticism and grades; as well as construct a learning group in which students feel secured and trust their offerings are effective [52,61].

Presently, many institutions are not under taking extensive policies to solve the digital knowledge requirements of their teachers. Many teachers are not well-prepared to monitor pupils in improving the digital capabilities they need. According to research conducted by Stanford History Education Group, almost 40% of the teachers could not identify the Internet sources. Interestingly, these were history academics, who were educated for long period to check carefully and judgmentally at texts. Moreover, several teachers could not find a modest problem of web trustworthiness [56].

On the other hand, various digital atmospheres ought to be generated in the educational institutes where teachers may investigate technology heightened education. It may develop required skills of the teachers to expedite learners' engagement [54,56,57]. Apparently, as technologies advance and novel procedures flourish, the sense of digital literacy will continue to change. Novel apparatuses and practices will challenge both instructors and pupils with the potential desires for novel abilities and talents [52].

## 9. Reluctance of Academics to Adopt Online Teaching

Numerous researchers recognize that the uses of the cutting-edge technologies in teaching are presently rather restricted and many virtual applications are utilized predominantly as supplementary tasks to offline education [60,62,63,64]. There are numerous causes for the unwillingness of teachers to apply the extensive range of opportunities rooted in virtual education:(1) Unbundling of the academic duty; (2) Overloaded tasks and stress; (3) Nonexistence of constant maintenance methods; and (4) Anxieties related to copy right issues [52].

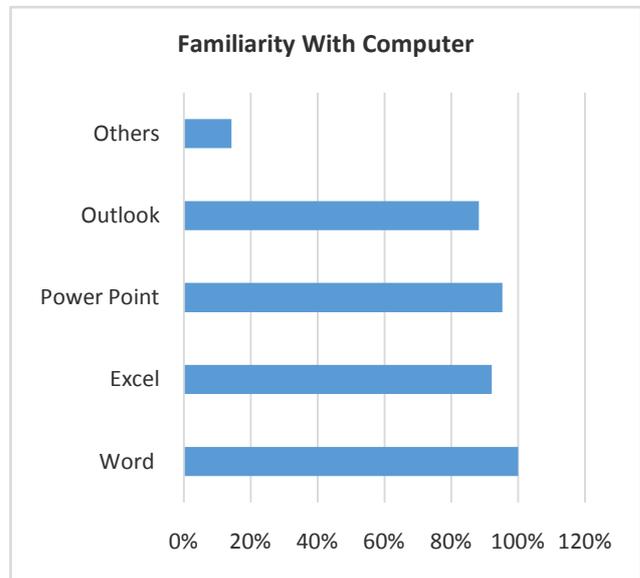
## 10. Results

### 10.1. Profile of the Respondents

There were around 40 faculty members in MIT department of Jubail Industrial College (JIC). Among them 33 teachers participated in the survey, which make response rate of 82.50%. Out of the total, 5 replies were disqualified because of incomplete information. All

respondents were male as JIC has only male campus. Teaching experiences of the respondents range from 9 months to 21 years with mean of 10.24 years.

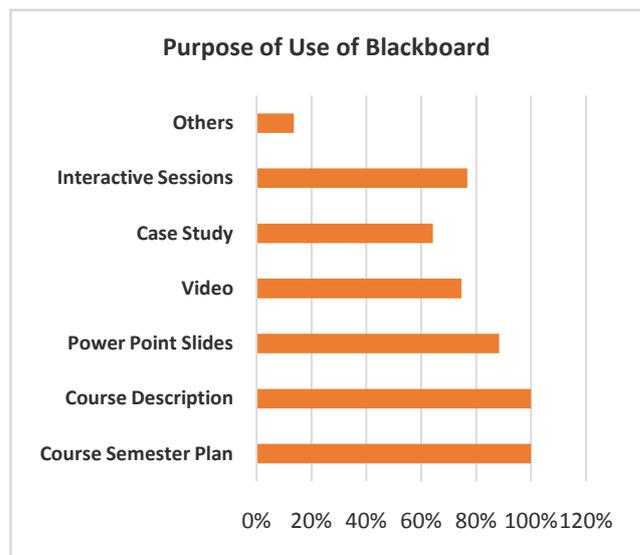
### 10.2. Computer Skills



Source: Survey

Many teachers 22 (78.57%) use laptop regularly, whereas 28 (100%) of the teachers use desktop computer for various purposes (i.e. teaching and communication). On an average majority of the teachers spend 2-4 hours per day with their computer. Majority 25 (89.27%) of the teachers are familiar with the Microsoft Office (i.e. Word, Excel, and Power Point etc.) as well as Outlook.

### 10.3. Experience and Familiarity with Contemporary E-Learning Technology

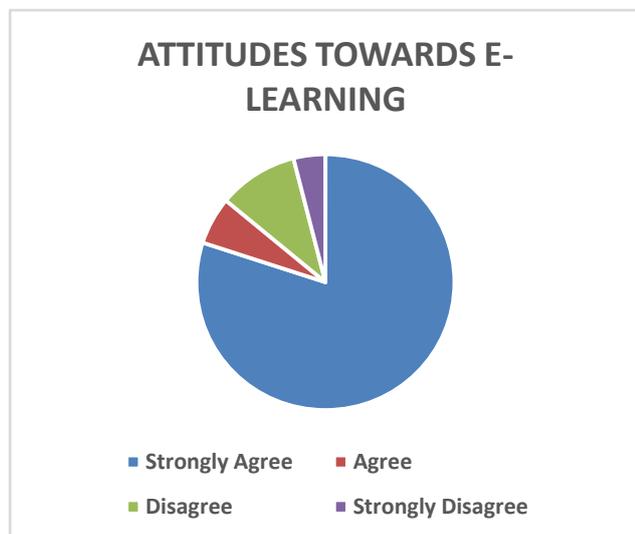


Source: Survey

JIC use Blackboard as its online platform. Every teachers of MIT department have Blackboard account. In normal condition, about 92.31% teachers use Blackboard to share learning materials (course semester plan, course

description, power point slides etc.) with the students. However, during the period of pandemic (i.e. COVID-19) all teachers were bound to use Blackboard extensively.

#### 10.4. Attitudes Towards E-Learning



Source: Survey

Majority of the teachers (86%) held positive perceptions about e-learning. Many teachers observe that e-learning save time and energy in editing and modernizing of educational materials. About a small number of teachers (14%) ponder implementation of e-learning as an extra liability for them as they are not confident to meet the technical demands. Again, during the pandemic (i.e. COVID-19), JIC had to shift all educational activities from traditional face to face classroom system to all online education. All the teachers wholeheartedly co-operated to make online education successful.

#### 10.5. Opinion on E-learning Techniques

Most of the teachers welcomed the idea of new technology and techniques in education. However, they pointed out that adequate training and workshops are required to make e-learning activities more effective and efficient.

### 11. Discussion

The modern advancements in technology have transformed the educational procedures. Therefore, it is imperative for the learners and teachers to adopt them. The conventional teacher focused education is shifting to student focused education, which facilitates the learners to manage their own education. This is assisted by the possession as well as use of knowledge dispersed and perceived by technological means known as e-learning.

Besides, the conventional class room discussions are gradually declining. Likewise, teachers and learners are accepting more pioneering and efficient methods of interactive education. It is rationally implemented by live

teaching technology software that is incorporated with Blackboard education system.

### 12. Limitations of the Study

This research is not out of limitations. The study only involved male teachers. As a result, gender variances could not be recognized. Also, the results offered in this research are established on an investigation of only one educational institution in K.S.A with limited number of participants. Therefore, the results may not be generalized. It means that attention must be applied in its application, as outcomes of this research might not be exchangeable to a big sample size. In addition, this research was based in K.S.A, which may be inclined by Arab culture. It indicates that the observations of this research may be culture dependent.

### 13. Conclusion

The dialogue on the execution of technology in education spotlights primarily on students' opinion rather than on teachers' view [53,54,57]. In many educational organizations, the technologies (i.e. e-learning) are utilized mostly for add-on purposes and not for replacement of conventional class room teaching [3,65]. This article professed the crucial responsibilities of teachers in e-learning environment in Kingdom of Saudi Arabia.

The contemporary literature reviews as well as the survey results visibly specify that it is crucial to incorporate e-learning in education system. This incorporation into education symbolizes a move of the responsibility of teachers from dispenser of learning materials to catalysts of students. The outcomes of this research offered the management the precise views of the teachers towards e-learning. In general, the teachers are very positive about e-learning. In addition, this research can support the instructors in creating quality materials that may improve the quality of e-learning. On the other hand, the authority and the management can use this research to tackle the constraints of the e-learning and offer better methods to generate a suitable e-learning atmosphere.

### 14. Recommendations

This research proposes the following recommendations:

- While Information Technology (IT) accelerated the life of human being in a new pace, e-learning has altered the learners' way of learning. On the other hand, though, e-learning is widely accepted in institutions of Saudi Arabia, we recommend that arranging formal training for the teachers who are not comfortable with technology could be useful. This is sustained by Hung [66], who stated that for users to use e-learning efficiently they need skills, like the capacity to recognize materials for learning, choosing and applying learning tactics, observing individual performance, and successfully applying skills and knowledge to reach learning objectives.

- Appropriate coordination among the core stakeholders (i.e. employers, parents, trainees / students etc.) is essential for active adaptation of e - learning.
- Course syllabus ought to be revised to promote the use of e-learning platforms.
- Authorities should announce handsome rewards for both instructors and pupils / trainees to motivate them to use e-learning system.
- Instructors / educators may fine-tune their present pedagogy to augment pupils' virtual commitment and communications [11].

## 15. Future Research

In the future, researchers may analyze the opinion of other important stakeholders (i.e. employers, parents, trainees / students etc.) of e-learning. Scholars may organize this research with large number of participants as well as with other departments and organizations in both developed and developing countries.

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