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The Role of e-Learning Materials in Enhancing Teaching and Learning Behaviors

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Abstract—Access to quality education is a fundamental human right and a key component of every prosperous nation. Many countries, Saudi Arabia included, have poured resources into their educational systems because of the positive impact it may have on their economies. As more and more people rely on the internet in their daily lives, e-learning has emerged as a crucial resource for educators. This research examines the effects on teaching and learning practices brought about by the presence and use of online learning resources in educational settings. The research concluded that students' performance and teachers' efficiency were both improved with increased usage of e-learning resources in the classroom.

Index Terms—Conventional learning, Internet, e-learning, digital learning.

I. PURPOSE AND RATIONALE

Sustainable development relies heavily on education. With global competition on the rise, education has become more important, particularly in industrialised countries. The network becomes increasingly embedded in all global occurrences as more and more people get linked to it every year. There are currently a number of international online education programs available. The National Education Portal (iEN) is one of several existing learning systems in Saudi Arabia; it provides students and teachers with access to a vast collection of materials for instruction and study [1]. Traditional methods, such as classes and formalisation via document gathering, are a part of electronic learning, which is defined as the use of information and communication technologies by both instructors and students. The term "e-learning" may refer to a variety of approaches to education that combine face-to-face instruction with online resources, such as course materials, discussion forums, and live instructors [2]. The trend is away from traditional classroom instruction and towards more collaborative learning based on information and communication technology

channels, with an emphasis on individualisation, self-management, and adaptability. In this context, "it" refers to the use of internet technology to improve performance and understanding. By taking charge of their own learning, students may tailor their experience to meet their own needs and accelerate their progress towards their objectives [3]. As a result, it has gained immense popularity among both instructors and students. There are many steps involved in making an e-learning program: following content production, it must be managed shipment, and uniformity. Instructions for anything from individual features to comprehensive guides are all part of the content. One way to describe digital learning materials is as a collection of elements that are both useful and connected to educational objectives. In order to create greater education content, like a lesson tailored to satisfy the requirements of a certain curriculum, learning factors are used as a representation of discrete pieces of instructional materials organised according to a particular learning objective [4]. Online portfolios, digital libraries, and portals are a few examples of e-learning channels in action. There is a growing desire to remain competitive on a global scale, which is elevating the importance of education. There has been tremendous development in Saudi Arabia's educational system, but it has just one goal: to eradicate illiteracy among Saudi adults and youth and to ensure that the country's religious, economic, and social demands are met via education. Education accounts for over a quarter of South Africa's total expenditure, making the country one of the world's top spenders in this area. According to a mission statement from the Saudi Arabian Ministry of Higher Education, e-learning is more than just a tool to speed up and improve traditional education; it's a dynamic setting that continuously improves by integrating various parts of the learning process to allow for the systemic enrichment of education. As the population of Saudi Arabia rises, so does the demand on the country's educational system to provide more educational possibilities. A nationwide strategy for the implementation of IT has been deemed necessary as a result. Online education in Saudi Arabia has been expanding rapidly for a number of reasons. One of these causes is that there is a significant gap between the supply and demand for education; as a result, many schools are overcrowded and lack the resources to provide a more

conventional curriculum. One way to overcome these difficulties is via online learning. A vast number of settlements are isolated due to the fact that the Kingdom is a geographically big nation. By allowing educational services to be sent to distant locations, e-learning has the potential to reduce inequities across regions and areas. Finally, the tradition and religion of the monarchy dictate that men and women often attend separate educational institutions [5]. Because of this, the already-scarce facilities and human resources are under even more pressure. Additionally, women have been shown to be more vocal advocates for

e-learning in comparison to the male population, as it facilitates their access to education.

Most decision-makers in e-learning are new learning practices which have higher cost efficiency in comparison to conventional learning strategies which enable learners to customize their own learning experiences while teachers get the opportunity to more effectively structure their teaching practices. This has largely changed the way information is handled and managed within academic environments. Several learning initiatives have been structured to help in the development of students as well as electronic materials in several learning facilities. Despite these efforts, several shortcomings in developing, providing and utilizing electronic materials have been acknowledged across learning institutions in the kingdom. As the utilization of e-learning has become more popular in academic institutions, it has become more significant to examine the effect that this has on teaching styles and the performance of students.

This study is marginally significant. The results of the research provide ideas concerning e-learning features and the academic achievement for the provision of critical data to increase studies work in these sectors. It also provides the necessary knowledge and guidelines that concerned policymakers may take advantage of. Lastly, this paper highlights inputs to the learners, researchers, and teachers as concerns e-learning.

II. RESEARCH QUESTIONS AND OBJECTIVES

A. Research Questions

The research questions below were utilized to guide data collection while also structuring the research instruments used;

- Do computer skills affect the level at which e-learning is used to enhance teaching and learning behaviors?
- At what level do social and demographic factors affect the learning and teaching behaviors of students and tutors?
- Does engagement of e-learning materials have an effect on academic performance?

B. General Objectives

The general objective of this research was establishing the impact that e-learning has on teaching and learning behaviors.

C. Specific Objectives

- To determine the roles that computer competency may have on learning practices in students.
- To establish the effect of the durations spent offline/online on the academic performance of students.
- To determine the impact of using e-learning strategies on the efficiency of teaching practices

III. LITERATURE REVIEW

A. The Role of e-Learning on Academic Performance

Opinions on online education are diverse. There is little to no difference in academic achievement between conventional classroom instruction and tutoring conducted entirely online, according to several scholars who have studied the topic of e-learning. Having said that, a lot of evaluations reveal generally good perspectives about how e-learning has changed classroom methods. The primary metric for evaluating the efficacy of different teaching methods is the degree of academic achievement, according to a large body of research [6]. According to some research, pupils' performance improves when teachers use e-strategies, whereas other research finds the opposite to be true. Aside from improving students' performance in a number of areas of study, benefits include providing them with a plethora of new prospects. Some of the benefits of online education include more students enrolled and more time spent learning, access to educational programs in geographically isolated areas, more educational opportunities for students who do not live near schools, easier access to resources and teachers who do not live in the same area, and better communication between students and teachers [3]. When compared to students in more conventional classrooms, virtual learning students show more development in areas like critical thinking. Computers and self-directed study? Students in Mexico's Telesecundaria program outperformed their counterparts in traditional classrooms on a variety of measures, including a state-mandated final exam, competency in reading and mathematics as taught through interactive radio interactions, and students enrolled in chemistry via satellite. Not every circumstance calls for online education. Isolation, linguistic barriers, and an overall lack of practicality in contexts like foreign language instruction are all potential bad outcomes for the students engaged. The student's social development is another area that may cause concern for parents. Tutors' performance, students' engagement, and the improvement of skills and knowledge are all negatively affected by the increasing distance between them when using e-learning tools for teaching and learning. Online education presents unique challenges in highly technical fields like mathematics and the sciences. Students who participate in e-learning programs often attain results that are almost on par with those of students who attend classes in conventional classrooms [4]. This is because the quality of the education in both formats is comparable. Over the years, adult learners have been consistently seen at equal levels within the delivery systems. Learning that is provided online may be very effective when conducted correctly. Students' knowledge and understanding may be enhanced via the use of e-learning platforms. There are a number of benefits for students in hybrid or online learning environments compared to those in more conventional classroom settings, one of which is a greater degree of student agency and accountability. Additionally, they have an intrinsic drive that boosts their

persistence in education activities.

B. The Impact of Computer Skills

When it comes to e-learning technologies, some learners usually have an upper hand as compared to others for the facilitation of education programs. This individual advantage is usually significant in deciding the success of applying e-learning to education. Experiences that learners and teachers have with internet technologies is identified as the level of competency that students have with computers while being common with individuals that have high levels of income. There is a great difference between learners that are largely skilled in using computer tools as compared to those that have not yet had a chance to engage in the development of their experiences with networking tools [8]. The learning styles of students, as based on the Myers-Briggs personality type, can be used for the prediction of the level at which students and learners participate in e-learning. However, it should also be acknowledged that a critical related factor may be how familiar the student is with technologies. Several works of literature have indicated that experiences with computers strongly predict the attitude towards and the role that the internet and computers have on learning and teaching practices.

C. How Social and Demographic Factors Affect Learning

Some researchers have engaged in investigating the link that exists between social and demographic factors and the educational achievements of students. Others have highlighted how these factors affect the use of e-learning technologies by tutors and learners. Social and demographic factors include factors like the gender of students, learning styles, ethnicity, family size, family income levels, age, and marital status [9]. One main finding is that the learning style of a student does, indeed, affect their level of incorporation of e-learning materials into their learning practices. More conclusively, some personal factors that can affect the results that e-learning platforms have on learning include; the level of motivation, computer competency, communication capabilities and the learning style. Within Saudi Arabia, the female gender displays greater interests to obtain computer competency, as compared to the male gender, as e-learning technologies increase their access to learning and teaching resources that they would not have otherwise accessed through the traditional education system [5]. However, the main challenge faced by students is usually their own lack of autonomy in ability to learn by themselves or manage their own learning process.

D. The Duration Spent on e-Learning Platforms

Research has shown that the extent at which a student is engaged with e-learning has a positive correlation with the performance of students. The level of effort that a student invests in e-learning practices, largely determines their examination performance. More studies within this sector have been conducted to examine what affects the duration that students spend on e-learning. This is usually dependent on the attitude of the student and how they perceive e-learning materials (as being useful or not useful), how easily they can be used as well as the delivery medium.

Students that spend longer durations of time on Internet-based learning, usually take on more responsibility for the learning process, which then increases their academic performance [10].

The capability of effectively managing learning time is a critical factor within the e-learning environment. This is because interactions with a web-based medium need almost three more times that length of durations invested as compared to face-to-face teaching and learning practices.

Students who find time management to be challenging may not really adopt e-learning into their learning practices or behavior [11]. Hence, the role that e-learning may have on the teaching or learning behavior of students and teachers is largely affected by the perception of time management and competence that a student may individually possess. Students that utilize their time effectively have a higher likelihood of performing better as compared to those who have not time management skills. Self-regulated learners are usually aware of effective time management due to their sensitivity to deadlines and the duration taken for the completion of each assignment [11]. They usually engage in the prioritization of learning tasks, with the evaluation of more complicated in comparison to less complex tasks in regards to the completion duration that is involved. There is an awareness of the need of evaluating how the study time is spent and the necessity of re-prioritizing.

As mentioned before, differences in the learning styles of students also affect the level at which e-learning methods are able to enhance teaching and learning behaviors. This is due to the difference in how effective the channel of e-learning is for individual learners. Different learners have varying cognitive styles which have undergone extensive examinations. There is also great support within various works of literature with the statement that there are variations in the learning style of students.

IV. THEORETICAL AND CONCEPTUAL FRAMEWORKS

E-learning has become a general synonymous term related to the academic world. Over the years, decision-makers have become more inclined to integrate e-learning into the educational system as it is cost-efficient and allows students to obtain better control of their process of learning as they can decide when, where and how to learn. The growth of e-learning has made a great transformation of ways in which information is handled and managed between instructors and their students. Based on this, several e-learning initiatives that have been formulated to help in the education of students and the utilization of electronic resources in several academic institutions. However, despite these initiatives, there have been several inadequacies in developing the provision and utilizing electronic resources in different academic institutions. There is still no effective comprehension of the impact that e-learning has had so far on the educational sector. There has been little to no effort recorded in identifying the influence and effects of e-learning on the academic performance of students in different learning institutions. With the widespread integration of e-learning in different levels of education, it has become significantly essential to examine the effects that this learning environment has on the

behaviors of both instructors and students. Hence, this study will increase the level of information existent on the role of e-learning on academic performance.

Based on the reviewed literature, this present study will have great significance. First of all, the results that will be obtained will present a constructivist view of the role and position of e-learning in educational environments in regard to features such as the use of resources, and collaboration between the entities involved. This is key to act as a source of information for further research work within this particular area in the educational sector. Similarly, the study will also engage in the provision of knowledge and guidelines that can be used by policymakers. Hence, unlike other studies, the findings will not only highlight concepts of importance to the affected parties (the instructors and students) but will also hold importance for planners, and other social scientists. Research works are usually conducted with the perspective of the extension of the frontier of knowledge. In this light, the present study will contribute to the extension of the established frontier of knowledge which has been established by the literature review. This involves showing the predictive factors of highlighted features such as socio-demographic characteristics and prior computer skills.

A. Theoretical Frameworks

The focus of this study is the level of effect of e-learning technologies on various learning styles of students and how learners and students use it to gain knowledge in different ways, the facilitation theory and constructivist theory are well-known learning theories utilized to represent taxonomies of learning. The development of a collection certified process structured on the basis of learning theories which may help tutors in their encouragement of elevated preparation within students and provision of instructions in an online learning environment.

B. Constructivism Theory

Constructivism is a theory which is based on the belief that individuals create their own comprehension and information of the environment around them, through their experience of factors and reflection of these experiences [12]. When students come in to contact with new concepts, there is usually a reconciliation with knowledge and experiences gained previously. This may change their beliefs or result in their abandonment of the new information. To act as active creators of knowledge, students should have the ability to ask questions, make explorations and assessments of the knowledge that they already have. Within classroom this theory means the encouragement of learners to utilize active techniques like experiments and the use of authentic data for the creation of knowledge and reflection of their own comprehension. Constructivism results in the modification of the role of the teachers so that the teacher assist a student in the construction of knowledge instead of merely reproducing facts [13]. The constructivist teacher engages in the provision of tools such as practices for the solution of problems and using inquiries to gain more information. This may include the use of e-learning materials for students to engage in forming and testing each idea, making conclusions, and the conveyance of this information with the other students

around them. Teachers must comprehend the pre-existing conceptions that students may have and structure processes for addressing the information which can be used as a base. Constructivist tutors motivate their learners to take part in the assessment of how activities they get involved in assisting them in gaining comprehension. By formulating questions and directing them to themselves, learners can gain a range of expertise which involves the utilization of computers either offline or online. The learner then gains the capabilities needed to turn into self-motivated learners.

Teaching and learning practices in e-learning is seen as being self-directed learning, that further receives support from the constructivist approach. Based on the theory, e-learning is an active information procedure as generating information is conducted through personal experiences and interactions based on the environment that the learners exist in [2]. Based on this view, constructivism is distinguished from the objectivism, since learners are observed as passive recipients of information in objectivism.

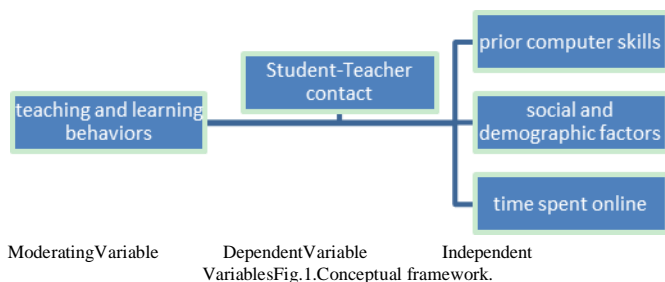
Learning behaviors as associated with e-learning are less effective as compared to the traditional educational practices on the basis of the objectivist educational philosophy. Learners are usually the leaders of self-regulated learning for developing total learning processes that includes perceiving problems, as well as adopting and assessing alternatives [14]. Learners have a similar role to that of producers through the organization and reorganization of knowledge like consumers, through the practical selection and using of knowledge. Students that have already been exposed to e-learning usually attend lessons for the registry of the times, places, subjects as well as the alteration of the lessons being attended. Proper evaluation of learners is usually more challenging as compared to traditional systems of education already being utilized, as the progressive learning method of evaluating learners is changed and also since personal interactions with the teachers (which are critical) are not conducted. Hence, the management of one's capability of organizing self-learning durations, processing of data, planning, and management of knowledge is critical.

C. Facilitation Theory (The Humanist Approach)

This theory was created by Carl Rogers. One core base of this theory is that learning occurs since the human being is naturally eager to learn and have responsibility for and at the core of learning practices. Hence, learning is approached as person-centered. E-learning only occurs if the individuals involved sign up and have the self-drive and eagerness to engage in learning despite where they are located in regard to learning institutions. Teachers mainly act as facilitators. The level of effort provided by the teacher is not a guarantee of success unless learners desire to learn. Within the theory, learning is usually observed as involving a change in one's perception which may involve the discovery of an individual's strengths and deficiencies [15]. Students engaged in e-learning have to have a perception that it is possible to acquire knowledge through the e-learning system. A positive level of self-perception has a consolidating effect on learning by allowing the learner to attack the target skills confidently. Learners are seen as being able to obtain information on their own, which negates the role that

transmission of information and the underestimating of the contribution of teaching.

D. Conceptual Framework



The conceptual framework above was utilized in the research. The independent variables include; computer competence, social and demographic factors, and the amount of time that students and teachers spend online that may affect the teaching and learning behaviors. Computer skills before any interaction with e-learning technologies are seen to increase the ease for learners to utilize computers and computer software which are utilized for the delivery of academic; social and demographic factors with the inclusion of aspects such as gender which have a role in learning and teaching behaviors. The learning and teaching behaviors of students and teachers are the dependent variable, how do these behaviors change the basis of the independent variables. The contact between teachers and students is the moderating variable which provides the effect of the relationship where it conducts the moderation of the relationship between the independent variables. Teaching and learning behaviors within an e-learning setup can be affected by several variables, in a positive or a negative way.

V. RESEARCH METHODS

A. Research Design

The research design used was an analytical survey. These also refer to diagnostic studies which try to make the explanation as to why some situations exist. The findings also enabled the researcher to make an examination of the link that exists between the variables and how explanatory inferences can be drawn. Within this study, the researcher was focused on the establishment between the use of e-learning materials and the teaching and learning behaviors within the Saudi education system.

B. Units of Analysis

Units of analysis are those structured for the aggregation of their characteristics for the description of an abstract phenomenon. They can also be described as what is under analysis. The unit of analysis within this paper was the study modes (e-learning and conventional learning)

C. Study Population

In this study, the population of interest was the students and teachers in the urban sections of Saudi Arabia who have access to computers for e-learning purposes. The target population for the study was 200 participants in total. This

sample size was seen as appropriate as most of the participants involved were located in different towns and areas across the country, constraints such as time did not enable the inclusion of a larger number of participants. For equal representation, a hundred participants involved in entirely traditional learning and teaching behaviors were involved.

D. Sampling Methods

A systematic random sampling process was used as a neutral start point was acknowledged by the researcher and the first student is chosen randomly from the target location. The consideration of gender equality was also essential and hence, for each male student picked, a female student was also picked. For the identification of students with access to e-learning resources, a list of schools was obtained from the education ministry, after which systematic random sampling was utilized for the selection of one hundred students and one hundred teachers.

E. Data Collection Instruments

The main instrument used for collecting data within the study was questionnaires. The questions within the questionnaires were restructured (close-ended) and unstructured (open-ended). The structured questions were created for measuring subjective responses for the clarification of the objective responses while also enhancing the formulation of recommendations. There were two separate questionnaires designed - one specifically for the teachers and the other one was used to address the characteristics of the students.

F. Reliability

Reliability refers to the level at which a research instrument would obtain similar results after being used repeatedly. To ensure reliability, the issue of the questionnaire to the respondents was conducted by the researcher who also carried out their collection. After two weeks, the questionnaires underwent testing by being administered for the second time to respondents that had similar characteristics. This enables the internal consistency of the questionnaire while also affirming responses from the selected sample.

G. Validity

Validity is the establishment of a link between the data and variables of interest. To ensure that the data collected was accurate, the researcher conducted a pre-testing of the questionnaires while also analyzing the results and making corrections on the questions that did not have clarity. The researcher also paid a visit to the students under the sampling population to ensure that they had an understanding of the importance of the study.

H. The Analysis of Data and Report

Data analysis is an iterative process which is made up of data reduction, its display, and drawing of conclusions. Within this research, data reduction occurred from critical elements in implementing e-learning to the enhancement of teaching and learning behaviors. It is then displayed in an organized form.

I. Ethical Issues

Confidentiality was an issue within the study. However, for its maintenance, the participants involved were guaranteed that any identifying data included would not be made available to other individuals who were not part of the study. The researcher also sought permission to conduct the research from the students themselves. Informed consent was obtained from the participants concerning the procedures that were involved. Lastly, anonymity was maintained concerning the identities of participants for guaranteeing privacy.

VI. FINDINGS

A. Questionnaire Return Rate

The study response rate was 75% as shown in table 1.0 below. A larger percentage of the completely filled questionnaires were from the students under the conventional study mode, only 35% of the questionnaires that were completely filled were by students that incorporated e-learning.

TABLE I: THE RESPONSE RATE

	Frequency	Percent(%)
Students that incorporate e-learning	25	12.5
Students that incorporate traditional mode	60	30.0
Teachers that incorporate e-learning	28	14.0
Teachers that incorporate traditional mode	47	23.5
Invalid	50	25.0
Total	200	100

B. Socio-demographic Factors

This is a presentation of the socio-demographic data of the respondents. The analysis was reliant on this information of the respondents for the categorizing of different outcomes.

1) Gender

The study sought to establish the distribution by gender of the participants in selecting the sample. It was observed that 42% of the respondents were male while 58% of the participants were female. This was an indication that more females to males were reliant on e-learning materials for the enhancement of teaching and learning behaviors.

2) Student Average Scores

The study wanted to establish the average score of the students. The figure below represents the performance of students who use e-learning methods as compared to those who are engaged in entirely traditional learning and teaching behaviors. In the participants who scored A, 55 percent by those who combined conventional study mode and e-learning strategies while 45% under a completely conventional teaching and study mode. 62% and 38% of the students who scored B were on e-learning and conventional study modes respectively.

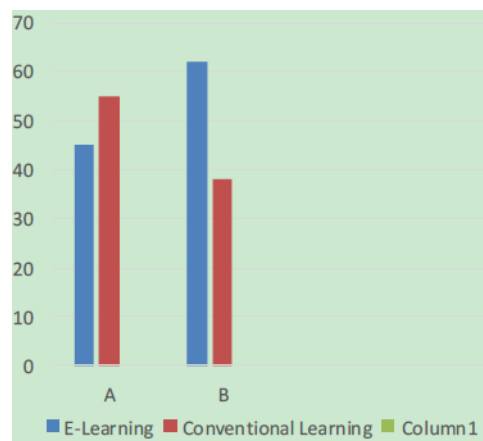


Fig.2. Student average scores.

3) Online Study Hours

The study sought to establish the number of hours that students spend in their online study. 15% of the population studied for 1-2 hours, while 40% of the population studies online between 3-5 hours, and 35% were between 5-9 hours. The study also showed that female participants studying and teaching using e-learning practices as compared to the male gender.

4) The Impact of Study hours on Teaching and Learning Behaviors

The study was focused on establishing the effect of study hours in a day on the teaching and learning behaviors. The figure below showed that those who spend between 1-2 hours made about 17%, 18%, and 18% of the students who scored A's, B's and C's respectively.

C. Impact of Computer Competency on Teaching and Learning Behaviors

This is a representation of the level of anxiety that students and teachers have as related to computers and how they academically perform and their efficiency of tutors while teaching. 12% of the respondents admitted to being anxious when utilizing computers while 86% of the respondents stated that they did not have any anxiety. 100% of the students who scored A in their studies stated that they did not have anxiety when using computers for learning practices, while 80% of those who scored B also stated that they did not have any anxiety.

D. Summary of Findings

A majority of the respondents within the study were female, which showed that more females as compared to males were interested in the use of e-learning materials within the educational environment. Students who used the conventional learning mode had higher performance in comparison to those who used e-learning as of the students who scored A's 55% used the conventional study mode, while 45% incorporated e-learning into their studying and learning practices. On the other hand, a majority of those who scored B incorporated e-learning practices into their education (62%), while 38% only used conventional studying habits. Also, the length of duration taken upon studying using e-learning practices had an effect on how effective teaching and learning behaviors were as compared to the academic performance and control over grades.

E-learning in Saudi Arabia has effectively transformed the

educational systems at different levels, resulting in the improvement of the learning experiences of students that are involved. Most students within the country, as based on the study's findings, have access to personal computers. However, despite this access, only a small percentage is actually interested in e-learning. As based on the Saudi Arabian Ministry of Higher Education's vision there is an increased realization of the potential of the educational tool and modern pedagogy methods (such as the incorporation of e-learning) to the education process [1]. This means that e-learning has already been observed as having great significance in education. Also, students who have positively responded to the use of e-learning materials that they have access to, have displayed increased confidence within their learning capabilities, which is shown in part by their better academic performance. E-learning materials provide a wider range of opportunities that tutors can take advantage of to introduce new information to their students. It improves the quality of the learning experience while extending the reach that any concerned teacher or tutor may have. By removing barriers to achievement, e-learning presents new and creative ways that teachers can utilize for the motivation and engagement of their students despite their capabilities by offering differentiated learning, differentiated learning is particularly useful for the students that need extra support in areas such as literacy, numeracy, and ICT [16].

Through these materials, learners of all types within the Saudi community can access individualized learning, with the inclusion of those that are disadvantaged, disabled or have special learning needs. This is enhanced further by personalized learning support through information, advice, and guidance services. It assists to find the course they require, with a seamless transition to the next stages of learning.

VII. DISCUSSION

The internet acts as a technological development that has the potential to change, not only the retention of society and accessing knowledge but also transforming and restructuring traditional models. The use of the internet for the delivery of e-learning initiatives has structured expectations within the business sector and the education sector as well. E-learning has enabled learners and teachers to take part in the expansion of their existing geographical reach, capitalizing on new prospective students, and to make an establishment of themselves as global education providers. E-learning has achieved prominence for future development in different levels of education, and yet little common understanding exists. Liaw et al. [2] make an outline of the wide spectrum of interests and comprehensions which are linked to the term, based on a social constructivist approach, whose objective is to make utilization of the communicative potential of online learning. There are also many variances in regard to students that take up e-learning as concerning their age or motivation, and the discipline that they study.

Based on the constructivist theory, online media can be utilized for supporting distributed collaborative interaction and dialogue, while also increasing access to information-rich sources. These courses place significance

on comprehension, instead of the memorizing and reproduction of facts, and contributions of social interactions and collaboration to learning [4]. Hence, with an application of constructivist theory, there are several pedagogies to be understood for the optimization of the potential of networked environments. These include collaborative learning, activity-based learning, resource-based learning, and problem-based learning. These pedagogies are essential as their operations involve the provision of opportunities for students to learn by engaging in activities, which may involve collaborative work, the solution of problems, and open access to electronic sources.

These pedagogies seem more applied to the female gender as opposed to the male gender. Within the findings, there is an indication that females have a greater reliance on e-learning materials as a way to enhance their teaching and learning behaviors. Based on the existing pedagogies, a combination of conventional study mode and e-learning strategies enhances collaborations and the basis of activities. This, in turn, supports the transformation of the educational system as the learning experience of students is improved. Resource-based and problem-based learning create a large number of opportunities that tutors can take advantage of for the introduction of new information to their students. Tutors can extend their reach to their students by utilizing the new and creative ways available for motivating and engaging their students. This is because of the existence of differentiated learning which ensures that all students, despite their learning needs, are exposed to individualized educational experiences. As it is delivered through technology-based solutions, e-learning makes the elimination of the expense and inconvenience of getting the instructors and students within the same place. It also increases just-in-time access to timely information. E-learning allows instructors to constantly and consistently engage in the updates of lessons and materials within the general network instantly. This ensures that the quality of the content and related educational materials are enhanced and students can immediately access the most current data. There can be the retrieval of information just before it is required, instead of being learned once in a classroom and then forgotten. Hence, for learners, e-learning portals increase the consistency of learning and their ability to constantly access data and information [14]. In turn, there is increased retention of content by enabling the personalization of learning. This is by creating a platform that supports a wide range of individual differences in learning styles.

Through e-learning, learners are exposed to an elevated level of simulation which can be personalized to the proficiency of each learner. With daily access, learners can learn at their own pace and make reviews of learning materials as often as they need to. Since they can engage in customizing the learning material to suit their needs, students can gain a greater level of control over their learning process, and gain a better comprehension of the material [14]. This largely speeds up the learning curve in comparison to entire dependence on instructor-led training. This infinitely increases the value of education that the learners receive.

Based on the constructivist theory, individuals create their comprehension and information about the environment

around them. E-learning portals and tools create more room for increased collaboration and interactions of students with experts and peers. Teachers are also able to use a wide range of teaching and communication techniques such as case studies, story-telling, streamed videos, discussion group and bulletin boards for the creation of an interactive online environment. This makes the education environment more stimulating while encouraging critical reasoning as it enables an interaction that is similar to a small group setting. Students that utilize e-learning platforms for learning are usually drawn into the subject matter at a deeper level due to the discussion that they get involved in. This is further supported by the fact that there is no monopolizing of attention within an online environment [15].

Due to the existing dependence of the current generation of learners on technology and social media platforms, using an e-learning platform enables increased peer contact which then elevates their performance. Lastly, e-learning acts as a risk-free learning environment. Students are more likely to try new things and explore new learning fields as there is no risk that they will expose themselves. Students are not only able to understand the reasons why they fail but also have an opportunity to try again. This type of learning experience engages the elimination of the embarrassment of failure in front of other peers. Students and instructors can engage in successful learning and teaching behaviors such as proactive participation, provision of feedback for the improvement of future experiences, and communication of learning possibilities. Students can become more active within their educational programs and services while also improving their skills and competencies in digital technologies.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

Knowledge utilization in the education environment is one of the main factors that should be taken into consideration. As a major tool for the utilization of knowledge, the incorporation of e-learning can be useful in capitalizing the resources the teacher has while increasing the quality of education that students are exposed to. The benefits and role of e-learning to education is significant for all the parties involved. Students are able to easily access the educational resources without having to travel or taking excessive time to search for these resources while teachers gain new channels of teaching and providing knowledge to their students.

The study makes an assessment of the effect of electronic learning on teaching and learning behaviors of students and teachers within the Saudi academic environment. A large number of students are not well prepared to carry out their studying and teaching practices using e-learning strategies, due to the unexpected complexities of how IT is applied as a learning tool which needs commitment as there are no strict regulations surrounding the exact learning durations [14]. The world has become smaller, and great progress has been made in the sectors of information and communication technologies. IT can be accessed by many students and teachers across the country, especially due to several

initiatives by the Ministry of Education such as the availing of the National Education Portal (iEN). This has increased the independence of the individuals that are involved in the education sector while increasing mobility by reducing the distance and difficulty of communication between students and teachers. The analysis gathered on the small sample of two hundred people, has shown that, there are still several issues that have to undergo critical consideration before e-learning can be clearly stated as being a great contribution to the enhancement of the performance of students and the practices of the teachers at each level of the education system, despite the individual differences that may exist due to personal backgrounds and learning environments. There are still large strides to be made before the Saudi government can fully incorporate IT into the education system and for the benefits of e-learning to be observed through the performance of the individuals that are involved.

B. Recommendations

This research provided its own point of view as well as the examination of different views concerning the role that e-learning materials have on the enhancement of learning and teaching behaviors. Despite the discovery that several issues have not been effectively addressed to e-learning implementation procedures, as the main focus on the research was on prior computer skills, the number of hours individuals spend on e-learning materials and the social and demographic factors. The following are the recommendations;

- 1) Critical aspects such as institutional factors, management factors, pedagogical issues, technological issues, interface design issues, evaluation issues, and resources support issues. The impact of e-learning materials with respect to these issues should be critically investigated.
- 2) A need also exists for carrying out detailed research including case studies on the basis of survey questionnaires with the involvement of different learning institutions which will, in the end, provide an enhanced comprehension of the effect of learning factors within the implementation procedures.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest regarding the publication of this paper.

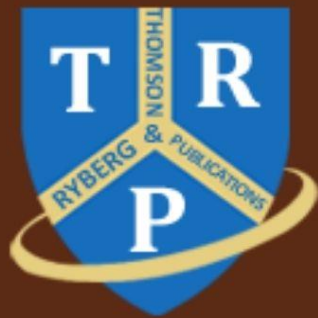
AUTHOR CONTRIBUTIONS

This paper had been written by a single author who had done all the research, writing and review stages. The author approved the final version of this paper.

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