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E-LEARNING IN SUDAN: PRACTICALITY AND CONSTRAINS CASES STUDY (SUDANESE UNIVERSITIES)

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ABSTRACT
The present study attempts to find out the practicality and constrains of launching e-learning in Sudan. The study adopted multiple approaches such as observation, historical survey in literature review and questionnaire for both university teachers and students to collect data concerning the practicality and constrains of implementing e-learning and teaching in Sudan. The study hypothesized that economic situation is the reason behind establishing and transforming to e-learning and e-teaching. Sudanese economic situation represented in weak infrastructure, technologically unqualified teachers and students can be major constrains in the way of transforming to e-learning during the time of coronavirus pandemic. Findings and results showed that E-learning and e-teaching are no longer choices, they are necessities. E-learning will not replace traditional teaching in Sudan. ICT infrastructure needs enhancement. Teachers are 50%+ ready for e-learning in Sudan.

KEYWORDS:
Constrains, e-learning, practicality, Sudan, Sudanese universities, ICT.

INTRODUCTION

1.2 E-learning: History, definition, and types

Electronic things become one of the characteristics of our modern centuries. Most of our daily activities become electronic; emails, e-banking, e-accounting, e-learning…etc.. electronic version of everything becomes one of this era's requirements and necessities. E-learning development is highly connected to development and improvement of technology. (Hubackova, 2015:1187) claims that in late eighties and nineties of the last century the first form of electronic education-Computer-Based Training was introduced. One of the most important requirements was to connect a personal computer to some other multimedia. This is how development of e-learning is connected to development of technologies. What is e-learning? Wang et al (2010 cited in(Kumar Basak et al., 2018:196) attempts that the term e-learning refers to the use of computer network technology, primarily over or through the internet, to deliver information and instructions to individual. They also introduce other related terms such M-learning for mobile learning and D-learning for digital learning. "E-learning as the experience dimension of e-learning, which includes such factors as engagement, curiosity, simulation and practice" (Elliott Masie as cited in Behera, 2013: 67) cited in (Kumar Basak et al., 2018).

There is a common ground among these definitions which is that e-learning is a computer based educational system that enables both the teacher and student to teach or learn respectively anywhere and at any time. The website "e-student.org" classified the types of e-learning into ten:

1- **Computer Managed Learning (CML)**computers are used to manage and assess learning processes. It operates through information databases which contain bits of information which the student has to learn, together with a number of ranking parameters which enables the system to be individualized according to the preferences of each student.
2- **Computer Assisted Instruction (CAI)**Computer-assisted training methods use a combination of multimedia such as text, graphics, sound, and video in order to enhance learning.
3- **Synchronous Online Learning**enables groups of students to participate in a learning activity together at the same time, from any place in the world.
4- **Asynchronous Online Learning**groups of students study independently at different times and locations from each other, without real-time communication taking place.

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5- **Fixed E-Learning**means that the content used during the learning process does not change from its original state and all the participating students receive the same information as all the others.
6- **Adaptive E-Learning**is a new and innovative type of e-learning, which makes it possible to adapt and redesign learning materials for each individual learner.
7- **Linear E-Learning**
Means that information passes from sender to receiver, without exception. In the case of e-learning, this becomes a very limiting factor, as it does not allow two-way communication between teachers and students.
8- **Interactive Online Learning**allows senders to become receivers and vise versa, effectively enabling a two-way communication channel between the parties involved.
9- **Individual Online Learning**refers to the number of students participating in achieving the learning goals, rather than the student-centeredness of the material.
10- **Collaborative Online Learning**is a modern type of learning method, through which multiple students learn and achieve their learning objectives together as a group. Students have to work together and practice teamwork in order to achieve their common learning objectives.

So many times, the teacher or learner uses more than one type of e-learning in the process of learning and teaching. Therefore, it does not mean that the existence of one type eliminate the other, in contrary, sometimes, the existence of one type suggests the existence of other.

OBJECTIVES

The main objective of the study is to identify the constrains and challenges in the implementation of e-learning in Sudan while and after coronavirus. As well as suggesting some practical issues that may help in better implantation of e-learning in Sudan.

METHODOLOGY

To find out the constrains and practicality of e-learning in Sudan. The researchers use a questionnaire to collect data. The questionnaire is approved and revised by Mohamed ElahfizHusein Abdallah, PhD, assistant professor at Omdurman Ahlia University. All questions were revised and modified by the referee. The questionnaire was in Microsoft Forms. The targets of the questionnaire were the two important participants of education: teachers and students. The questionnaire was 12 questions and statements, two of them were personal information and the rest about e-learning in Sudan. All the questions and statements were provided with options and frequencies, the last question was open for further suggestion(s) for better e-learning in Sudan. For more information about the questionnaire check the appendix. Most of teachers and student could not be able to access to the questionnaire because of internet issues. This another evidence of the weakness of the internet. Only 20 people from the study population accessed to the questionnaire, so the researchers tried to make hard copies of the questionnaire and distributed among the group of teachers and student.

HISTORY OF E-LEARNING IN SUDAN

(Salah et al., 2010)presented a paper in a conference about the current status of e-learning in Sudan. They provided a clear history of formal e-learning in Sudan, concluded that e-learning was a result of huge expansion in education in Sudan in early nineties. The establishment of Open University of Sudan in 2002 was a significant step towards e-learning in Sudan. In 2003, E-Learning Support Unit was established in this university. This unit contains six divisions: the educational web sites, live broadcasting (video conferencing), production of educational discs, virtual laboratories, Electronic Library, and support division that contains: research, education, training, curricula and modules. (AtikaYousof, 2010 cited in Salah et al (2010) that in 2003 Sudan University of Science and Technology offers distance learning via the Internet (On-line learning) for higher studies for a master's degree in computer-integrated Education Major. In 2004, the ministry of higher education established Sudanese Universities Information Network (SUIN).(Stubbé et al., 2016:136)conducted an experimental e-learning study in Sudan is a custom-built computer/tablet game that provides alternative learning opportunities to Sudanese children who are excluded from education. Unique in e-learning in Sudan is that children can learn mathematics, in their own remote village, without a teacher. This research study assessed the effectiveness of e-learning in Sudan in two pilots through a pretest– posttest control group quasi-

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experimental design. In Pilot I, 67 children in three remote villages, aged used the game for a period of six weeks, five days a week, 45 minutes a day; the control group did not receive any education. In Pilot II, 591 children in 19 remote villages, played the game for six months, for a maximum of five times a week, 45 minutes a day; the control group received informal education in out-of-school centers. The results of the analysis on the pretest–posttest data revealed that e-learning in Sudan increased mathematics knowledge acquisition in numeracy and adding significantly and maintained student motivation to learn. Analyses of control group data and EGMA (internationally validates Early Grade Mathematics Assessment) showed that the children in the experimental group learned more than children who received no education at all, informal or formal education. These findings suggest that the implementation of e-learning in Sudan can greatly benefit learning for out-of-school children like in Sudan. Stubbe et al study can be useful in present situation. The researchers recommended it to the ministry of education in Sudan. In Stubbe et al study, all facilities owned by the researchers.

SINGIFICANCE OF E-LEARNING IN SUDAN

Most of research written in the subject matter of e-learning, in and out Sudan, emphasized and highlighted the significance of e-learning in modern education, even before coronavirus emerged. (GOYAL, 2012:239)suggests that all research on e-learning in pre-coronavirus wondered whether e-learning will replace the old classroom teaching. Well, this is a very crucial, but the present research considers this inquiry as sub-aim, for the main aim is to examine the readiness of Sudanese educational systems and institutions for such a radical change in education. Because e-learning in the present situation is not a choice, but it is a compulsory process. Almost two academic years without teaching, the first year 2018-2019 because of the Revolution and taking over of a new regime. Sudanese revolution started in 19th of December up to the singing of Draft Constitutional Declaration between military and civilian representatives on 17th of August 2019, (wikipedia).The second year, when Ministry of education suspended the study in all Sudan due to coronavirus on 16th of March, Skynews(2020). Almost all the world starts e-learning. Sudan tries to waste more years no more, that's why Sudan is taking this daring step. E-learning is a solution for many problems in Sudan; such as, difficulties of learning in classrooms due to miscellaneous reasons such work, distance, disabilities...etc.(GOYAL, 2012:240) presented study by UK Chartered Institute of Personnel and Development published its latest survey on E-learning trends in 2011. The survey was based on responses from over 600 learning practitioners. 53% of organizations reported that they have increased their use of E-learning in the last 12 months and over 90% of public organizations reported that they are presently using E-learning.

CONSTRAINS OF E-LEARNING IN SUDAN

The differences between traditional learning and e-learning is useful in identifying what requirements that e-learning needs. The following table adopted in(Cohen, 2012:26).

Table 1: types of education models

MODEL FEATURE	Traditional model of education	Distance education system (e-learning)
Main knowledge source	Teacher	Knowledge bases in education system; any knowledge source accessed via the internet
Additional knowledge sources	Books, manuals, audio, and video materials	Traditional sources teacher, fellow students
Assessment	Only by teacher	System and teacher who is responsible for final assessment
Quality of education	Depends on teacher's quality, level of knowledge, and ability to share knowledge	Depends on quality of electronic knowledge sources and other didactic materials

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(Olan et al., 2014:306) investigates the current status of online education in Sudan. The study covers educational programmes provided by higher and general education institutions via the Internet. The study reveals that online education in Sudan is still at a very preliminary stage and it is mostly in the form of ongoing or planned projects which are yet to be implemented. The study also highlights the main obstacles that affect the development and implementation of online education in the country.

(Olan et al., 2014:308)traced the problems face implementation of online education in Sudan:

1- Weak ICT infrastructure
2- Lack of information literacy programs for both teachers and students.
3- Lack of ICT skilled manpower in general education sector.
4- Lack of slow pace of introducing Computer Science as a subject in school curriculum
5- Lack of managerial commitment and dedication to the introduction of ICT in the education system
6- Lack of courseware in both general and higher education sectors.

Sudanese universities, according to the decision of online education, are divided into three groups, agree, neuter and disagree. University of Khartoum against the decision for the same reasons stated by(Olan et al., 2014:308) in addition to other reasons such as, instability of electricity supply and lack of internet services in some areas (TagPress, 2020). (Rinas news2020) stated that the dean of faculty of information in Omdurman Islamic University, stated the requirements of shifting to online learning and teaching. The neuter universities are still discussing the possibility of shifting to e-learning and teaching. (Arkorful & Abaidoo, 2015)explains the benefit of e-learning as flexible, enhances the efficacy of knowledge and qualification, is cost effective, takes into account individual differences, serves self-spacing.

PRACTICALITY OF E-LEARNING IN SUDAN

Let us consider that e-learning is fatal in the present situation, so we need to quickly find out the possibility of implementing e-learning in the shade of present economic problems that Sudanese government is passing through. (Alamin & Abed Elgabar, 2014) stated two important factors affect student's satisfaction in e-learning in Sudan. First, the technical factors (ICT). Second, social factors that cause the success and popularity of the application of e-learning in Sudan. These two factors have been strongly connected with economic situation.A study conducted by (Tairab & Ronghuai, 2017)on analyzing ICT policy in K-12 Education in Sudan (1990-2016) summarized the problems faced e-learning in Sudan, and the results showed the necessity for policy emphasis on using technology in education, K-12 education in Sudan requires better technology equipment, inclusive ICT policy including primary and secondary education need to formulate. Therefore, the major factors that affect implementing e-learning in Sudan are economically determined, represented in lack of infrastructure which resulted in technological literacy. The present study hypothesized that to implement e-learning in Sudan the following factors should be highly considered:

1- ICT infrastructure includes hiring IT experts in educational institutions, establish formal emails for all the employees and students of ministry of education, provide all teachers with high qualities laptops, improve internet services in all educational institutions and owning or buying authorized educational applications to help in quickening the pace of the process of e-learning.
2- Teachers training to implement e-learning in Sudan.
3- Students readiness for this project "e-learning" includes students' training to deal with e-learning requirements.

DATA DISCUSSION

This research tries to find out what are the constrains that face e-learning in Sudan as well as the practical steps towards better e-learning in Sudan. The research hypothesized that: e-learning is a necessity not a choice in present situation. All the constrains that face e-learning in Sudan are economically determined.

Figure No. 1

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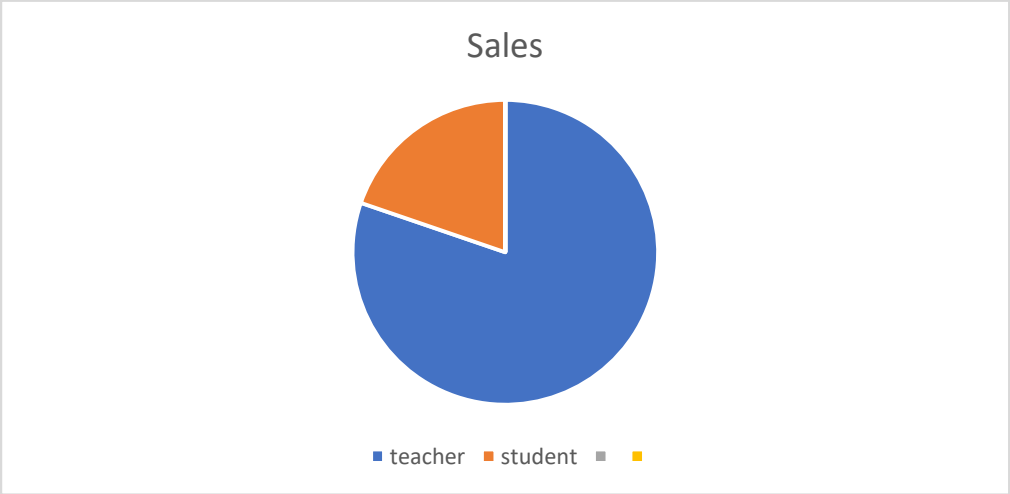

Figure No. (1) shows the population of the study in two major divisions; 13 teachers and 7 students. The total responses are 20.

Figure No. 2a

2. What is the name of the university you belong to?

20 Responses

1	anonymous	Senar university
2	anonymous	Cambridge International College
3	anonymous	Sudan University for Science and Technology
4	anonymous	Sudan University of science and Technology
5	anonymous	امدرمان الإسلامية
6	anonymous	ALNEELAIN UNIVERSITY
7	anonymous	Sudan University of science and Technology
8	anonymous	Omdorman ahlia University
9	anonymous	Omdurman Ahlia university
10	anonymous	Neelain University

Figure No. 2b

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11	anonymous	Om durman Alahlia
12	anonymous	Omdurman Ahlia University
13	anonymous	University of Sudan
14	anonymous	Omdurman Ahlia
15	anonymous	Omdurman Ahlia
16	anonymous	Omdurman Ahlia University
17	anonymous	Omdurman Ahlia University
18	anonymous	Bahari Ahlia College
19	anonymous	Sudan university for science and technology
20	anonymous	Omdurman Ahlia University

Figure No. 2ab show the different affiliations of the population of the study.

Figure No. 3

3 E-learning in Sudan is a rather necessity more than a choice.

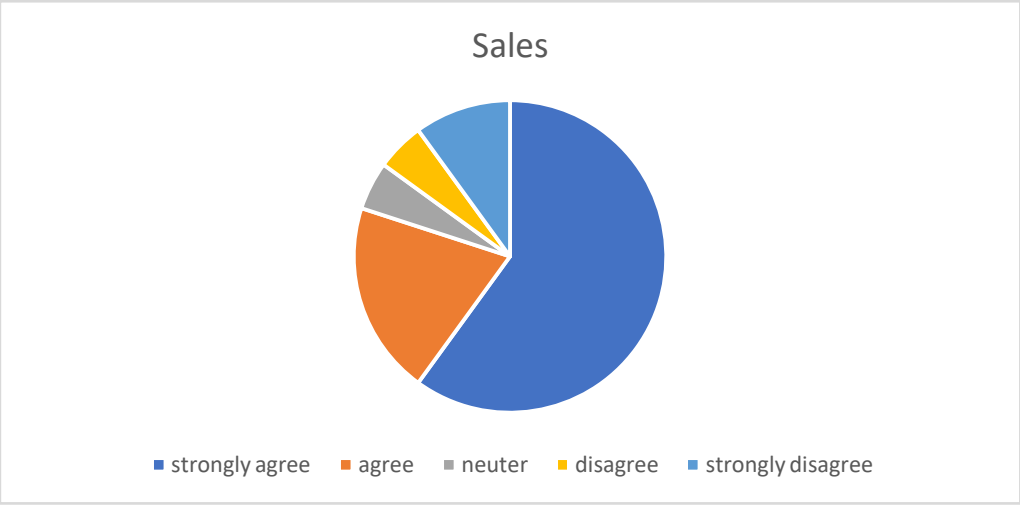

Figure No. 3 shows the result of the statement; e-learning in Sudan is rather necessity more than a choice. 12 people of the study population strongly agree with the statement, 4 of them agree, 1 is neuter, 1 disagrees with the statement while 2 strongly disagree.

Figure No. 4

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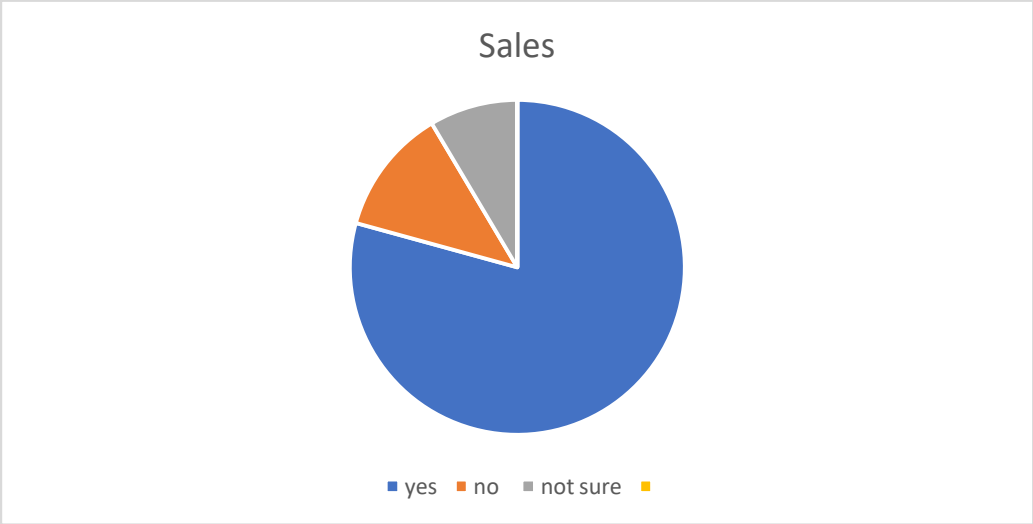

Figure No. 4 shows responses to the question, do you think that e-learning will work? Majority of study population responds with "yes", 2 people answer with "no" while 5 of study population respond with "not sure".

Figure No. 5

5 How would you rate the assumption that e-learning will replace traditional teaching in Sudan?

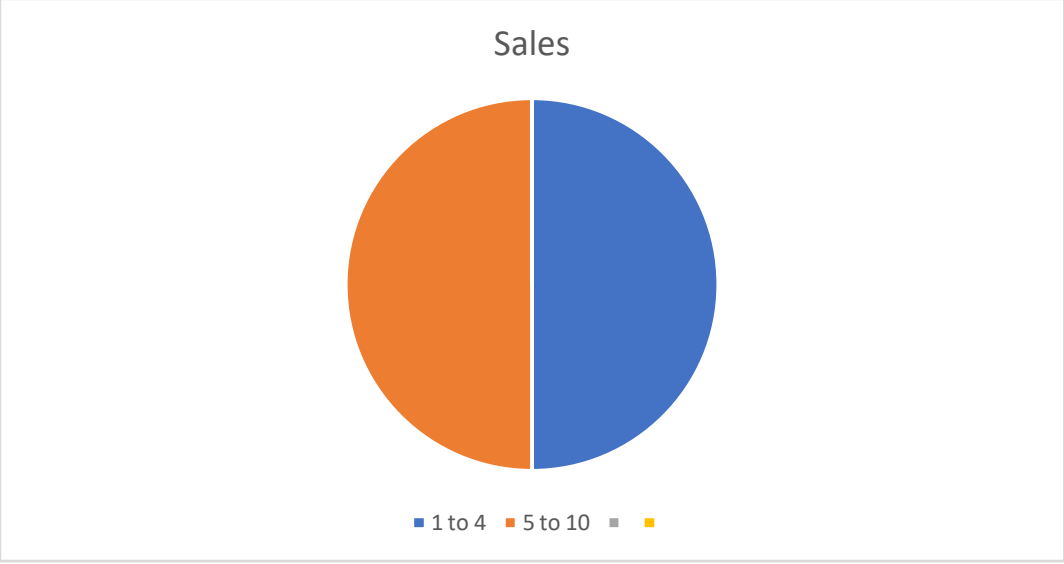

Figure No. 5 shows the responses of study population to the question, how would you rate the assumption that e-learning will replace traditional teaching in Sudan? 10 of the study population respond from 5 to 10 while the rest respond from 1 to 4 with the average number 5.15.

Figure No. 6

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6 How would you rate the technological infrastructure "ICT" readiness for e-learning in Sudan?

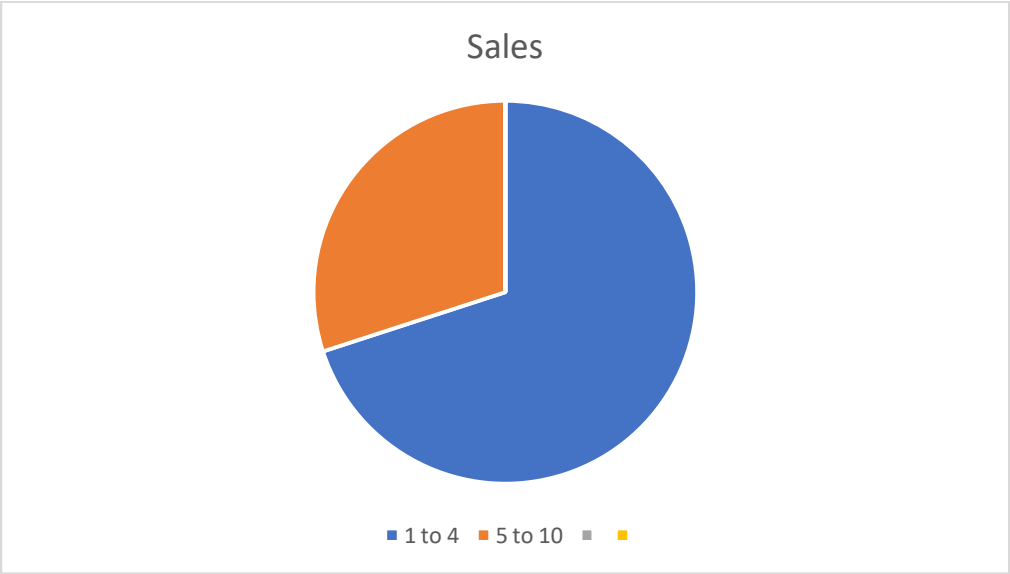

Figure No. 6 shows the responses of study population to the question, how would you rate the technological infrastructure "ICT" readiness for e-learning in Sudan? 6 of the study population respond from 5 to 10 while the rest respond from 1 to 4 with the average number 4.1.

Figure No. 7

7 How would you rate the teachers' readiness for e-learning in Sudan?

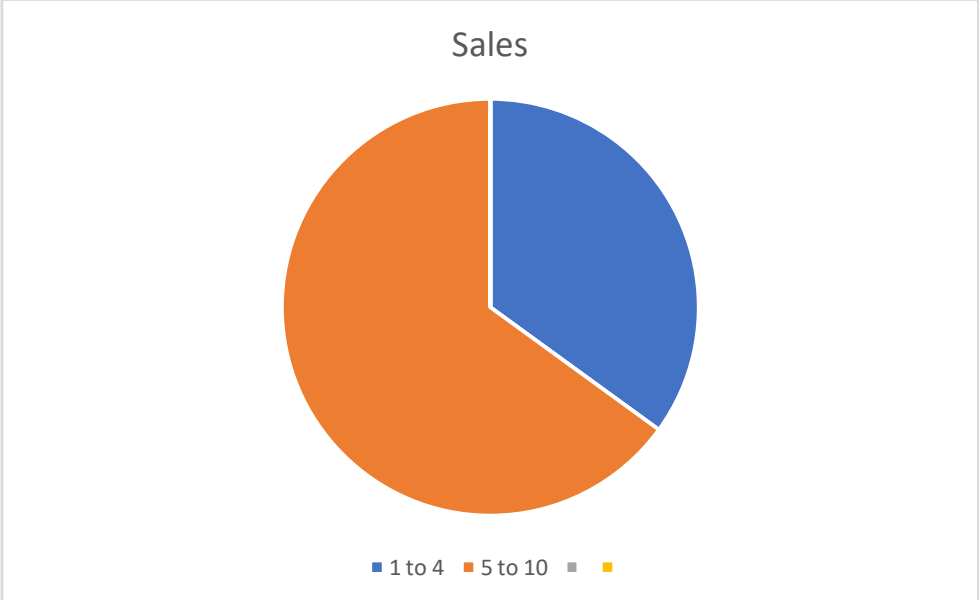

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Figure No. 7 shows the responses of study population to the question, how would you rate the teachers' readiness for e-learning? 13 of the study population respond from 5 to 10 while the rest respond from 1 to 4 with the average number 5.15.

Figure No. 8

8 How would you rate the students' readiness for e-learning in Sudan?

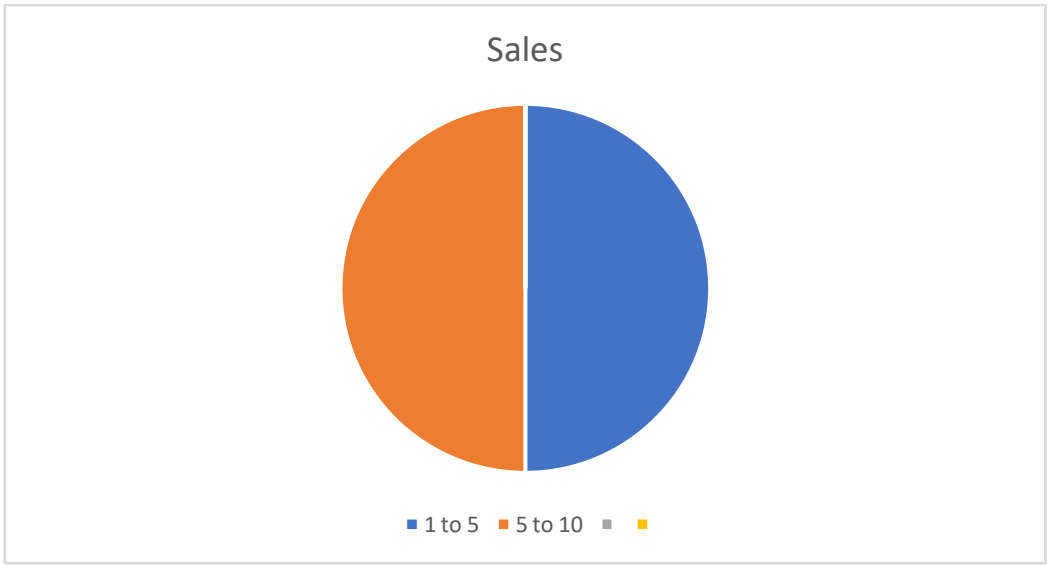

Figure No. 8 shows the responses of study population to the question, how would you rate the students' readiness for teaching in Sudan? 10 of the study population respond from 5 to 10 while the rest respond from 1 to 4 with the average number 4.6.

Figure No. 9

9 What is e-learning major technological constrain in Sudan?

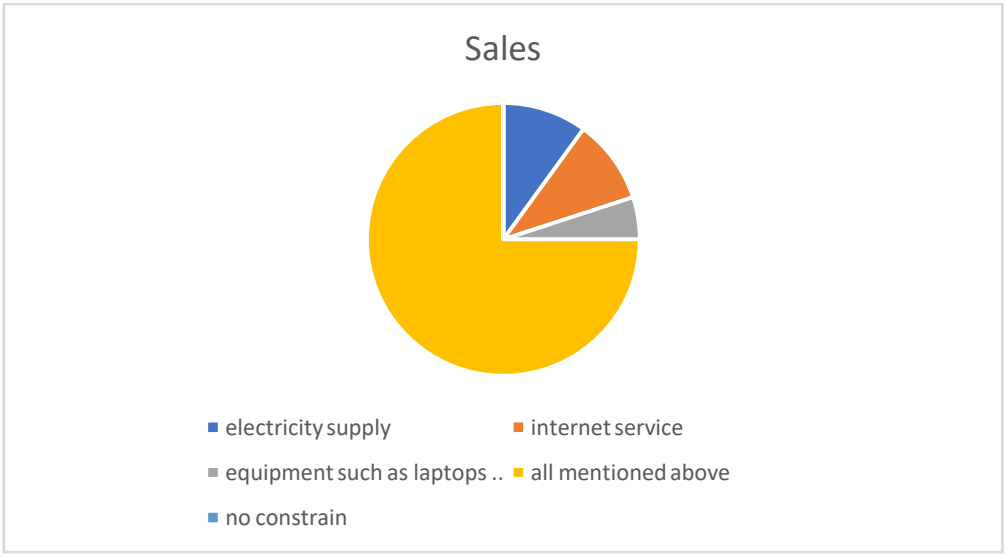

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Figure 9 shows the responses of the study population to the question; what is e-learning major technological constrain in Sudan? 15 of the responses choose choice "all mentioned", 2 of the responses choose electricity, other two choose "internet service", one chooses "equipment".

Figure No. 10

10 What is e-learning constrain, generally, in Sudan?

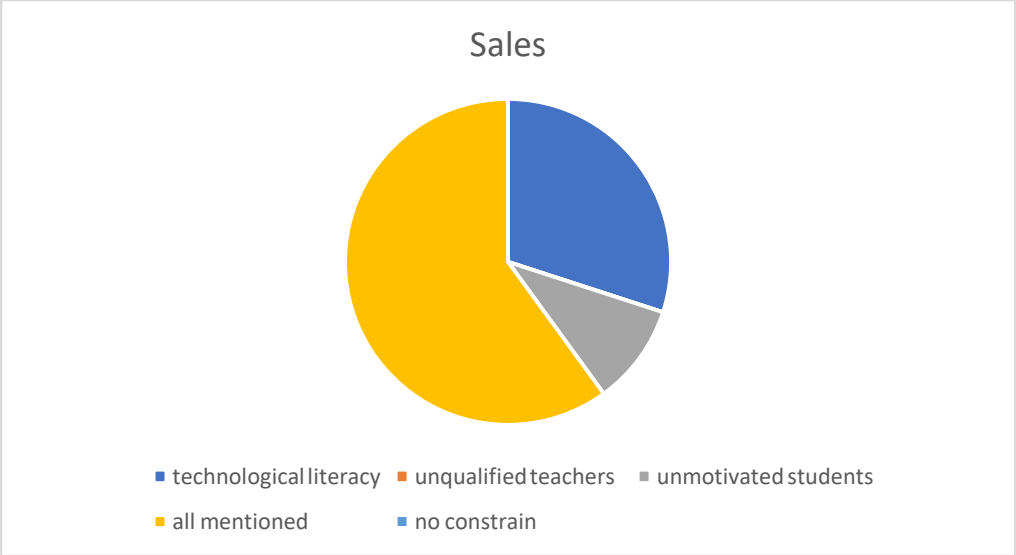

Figure 10 shows the responses of the study population to the question; what is e-learning constrain, generally, in Sudan? 12 of the responses choose choice "all mentioned", 6 of the responses choose "technological literacy", two choose "unmotivated students".

Figure No. 11

11 What is the important step towards better e-learning in Sudan?

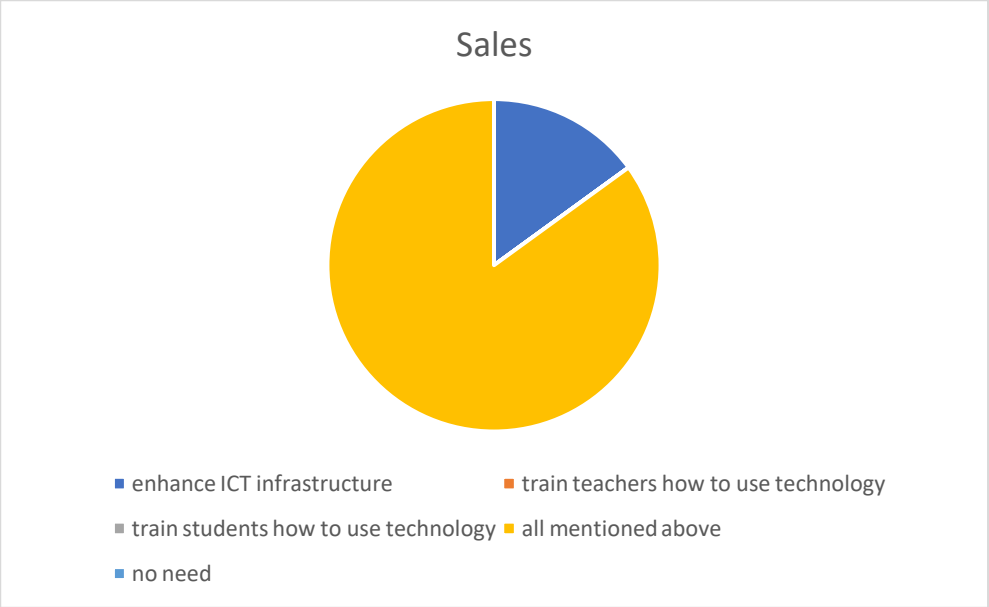

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Figure 11 shows the responses of the study population to the question; what is the important step towards better e-learning in Sudan? 17 of the responses choose choice "all mentioned", 3 of the responses choose "enhance ICT infrastructure" only.

Figure No. 12a

12 What is your suggestion(s) for better e-learning practice in Sudan?

ID ↑	Name	Responses
1	anonymous	enhance ICT infrastructure train teachers how to use technology train students how to use technology
2	anonymous	We need to decentralize university admission so that each state has all its students studying in it. After that provide statewide servers to cover the internet.
3	anonymous	Train students on how to use e learning
4	anonymous	Go a head
5	anonymous	Buy smartphones
6	anonymous	Strong net strong phones , facilities for stueents
7	anonymous	if we are practice e learning in Sudan we learn more

Figure No. 12b

8	anonymous	Training teachers on the applications of using e-learning and providing an appropriate environment, while raising the community culture of the importance of e-learning.
9	anonymous	I don't have
10	anonymous	1- Repair of electricity infrastructure, internet 2- technological literacy 3- Free technical education for teahers & students 4- Teaching computer skills for basic schools
11	anonymous	It's not suitable in sudan
12	anonymous	1- Introduce technology in the classroom. 2-Personalise the learning experience of the students. 3-Involve Parents in The Classroom
13	anonymous	Electric and internet
14	anonymous	N/A

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Figure No. 12c

15	anonymous	It's a brilliant idea and much helpful than the traditional one , but to do so we need to motivate teachers and students and train them for that, so that to make sure they are ready.
16	anonymous	The government must try to allocate much money for education especially in the future
17	anonymous	We have to enhance everything to last point.
18	anonymous	Create an English environment what I mean is designing a equipped city then ask for native English teacher voluntarily for course of 2_3years you'll have highly qualified locale teachers
19	anonymous	Generally it's all depends on our situation. .if we had good facilities. E.learing will be better. Then we need to enhance our situation. Simply
20	anonymous	Consistent electricity supply, strong internet signal and teachers are in need to be trained

Figures 12abc show the responses of the study population to the question; what is your suggestion(s) for better e-learning practice in Sudan?

FINDINGS

This study addresses the constrains and practical step of e-learning in Sudan. According to the data discussed earlier, the following results and findings are generated.

1- E-learning and e-teaching are no longer choices, they are necessities.
2- E-learning will not replace traditional teaching in Sudan.
3- ICT infrastructure needs enhancement.
4- Teachers are 50%+ ready for e-learning in Sudan.
5- Students need training how to use technology patterning to e-learning.
6- Technological constrains are electricity supply, internet service and equipment provision such as laptops for teachers.
7- General e-learning constrains in Sudan represented in technological literacy, unqualified teachers and unmotivated students.
8- The most important steps towards better e-learning in Sudan are:
   a. Enhancing ICT infrastructure.
   b. Train teachers and students on how to use e-learning technologies.
   c. Providing free equipment to teachers such as laptop
   d. Buying original and licensed MS educational programs and applications.

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CONCLUSION

The research attempts to find out the constrains that encounter e-learning in Sudan, besides, checking the practicality of implementing e-learning in Sudan. Based on the findings and the study population's suggestions, aconclusion may be drawn;economic situation in Sudan is the major constrain that stands as a barrier in the way of e-learning implementation in Sudan. Economic situation requires enhancement to make it possible for educational institutions implementing e-learning properly.

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https://www.tagpress.net/45762/
http://rinasnews.net/?p=13102

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APPENDIX

The questionnaire link and context: (all the questionnaire questions and statements are marked as *required*)

https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBLZtrQAAAAAAAAAAAAZAAJN2b2VUMDRLNzJDWkNINUFQNTlBQVpSTUNQVDJYWS4u

E-learning and E-teaching in Sudan: Practicality and Constrains

Required

1. I am a.....

- teacher
- student

2.What is the name of the university you belong to?

3.E-learning in Sudan is a rather necessity more than a choice.

- strongly agree
- agree
- neuter
- disagree
- strongly disagree

4.Do you think that e-learning will work?

- Yes
- No
- Not sure

5.How would you rate the assumption that e-learning will replace traditional teaching in Sudan?

Poor1 2 3 4 5 6 7 8 9 10 Excellent

6.How would you rate the technological infrastructure "ICT" readiness for e-learning in Sudan?

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Poor1 2 3 4 5 6 7 8 9 10 Excellent

7.How would you rate the teachers' readiness for e-learning?

Poor1 2 3 4 5 6 7 8 9 10 Excellent

8.How would you rate the students' readiness for e-learning in Sudan?

Poor1 2 3 4 5 6 7 8 9 10 Excellent

9.What is e-learning major Technological constrain in Sudan?

- electricity supply
- internet service
- equipment such as laptops, iPods, smartphones...etc.
- all mentioned above
- no constrain.

10.What is e-learning constrain, generally, in Sudan?

- technological literacy
- unqualified teachers
- unmotivated students
- all mentioned above
- no constrain.

11.What is the important step towards better e-learning in Sudan?

- enhance ICT infrastructure
- train teachers how to use technology
- train students how to use technology
- all mentioned above
- no need.

12.what is your suggestion(s) for better e-learning practice in Sudan?

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