

Exploring Challenges and Satisfaction from E-Learning in Higher Secondary Grade School Students in Rural Tamil Nadu

Santhoshi Ramamoorthy¹, Pranesh Ramamoorthy², Dr. Kala Samayan³

^{1,2}Clinical Supervisor at the Department of Audiology and Speech Language Pathology, SRM MCH & RC, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu. 603203

³Professor & HOD i/c, Department of Audiology and Speech Language Pathology SRM MCH & RC, SRM Institute of Science and Technology Kattankulathur, Chengalpattu. 603203

ABSTRACT

This study investigates the landscape of e-learning among high school students (grades 10-12) in India, aiming to identify challenges and opportunities within digital education platforms. Through surveys and qualitative analysis, it uncovers insights into students' perceptions of e-learning. Findings reveal significant challenges, with 43% of students disagreeing that e-learning effectively engages them, while only 10% find it innovative. Additionally, 72% report feeling stressed and requiring more mental effort during e-learning, impacting their well-being. Confidence in facing examinations decreases for 66.7% of students, and 79.2% experience reduced interest in studies during virtual learning. Furthermore, 81.7% note a decline in interaction with teachers and peers, a vital aspect of traditional learning. Technical obstacles persist, with only 23% using laptops/desktops, 77% relying on mobile phones, and 22.9% receiving no e-materials for reading. Most students (85%) endure 1-5 hours of e-learning daily, primarily through real-time platforms like Zoom and WhatsApp calls (75%). In conclusion, this research sheds light on the multifaceted nature of e-learning experiences among high school students in India. While significant challenges exist, including reduced engagement, increased stress, and technical obstacles, there are also opportunities for enhancing learning outcomes through flexible access and innovative methodologies. By addressing these challenges and capitalizing on opportunities, educational institutions and policymakers can optimize e-learning experiences and ensure equitable access to quality education for all students.

Keywords: E-learning, High school students, Challenges, Student perceptions

Introduction

Education has a crucial role in determining a nation's competitiveness, particularly in the realm of higher education [1,2]. Higher education enhances a country's human capital by equipping individuals with advanced skills, specialized knowledge, and critical thinking abilities [3-5]. Recognize that credits are increasingly vital for students' career prospects and employability post-graduation. When technology is used, it may enhance the production and delivery of higher education [3,6]. According to Bulturbayevich (2021), the shift to digital learning may pose greater challenges than commonly assumed [7].

Digital technologies have been used in higher education classrooms since the 1980s, beginning with the integration of administrative systems such as student management and examination platforms by institutions. The integration of digital technology in higher education classrooms is complex and requires further empirical and theoretical investigations to understand its impact on students' educational experiences. Several digital technologies that are often used in higher education include digital course management systems, mobile digital tools, digital collaboration tools, and digital game-based tools. Real-time online interactions are facilitated by digital collaboration tools, while mobile digital tools are specifically intended for mobile devices. Utilizing digital game-based technologies enhances student participation and attentiveness. E-learning offers several advantages, including significant cost savings through reduced physical infrastructure requirements, unparalleled flexibility in accessing a wide range of materials and lectures at any time and from any location, and immediate access to updated and relevant content. Indeed, challenges in the execution of the e-learning system have been evident, such as technical difficulties in online platforms, a lack of face-to-face interaction leading to reduced student engagement, and disparities in internet access affecting learning outcomes. A current debate surrounds the comparison between online and onsite learning approaches [3,6], with proponents of online learning highlighting its flexibility and accessibility, while advocates of onsite learning emphasize the importance of in-person interactions and practical experiences. Challenges stem from students' limited understanding of the subject matter, the shift from in-person sessions to assignments, and the reliance on technological resources and infrastructure accessibility [8,9].

This research aims to explore the challenges and opportunities of e-learning, specifically among high school students in grades 10 to 12, with a focus on their experiences and outcomes in online learning environments. The research outcomes aim to offer practical insights to Indian educational institutions, including the development of customized e-learning strategies, the identification of effective teaching methods such as interactive online simulations, and the promotion of enhanced student engagement through virtual group projects.

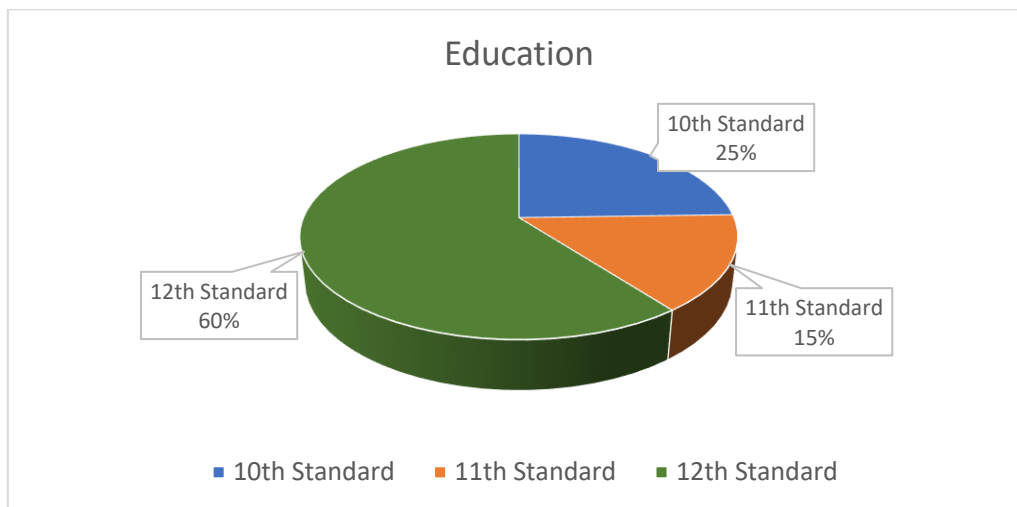
Method

The objective of this study was to investigate the obstacles and potential advantages of e-learning in the context of pupils in the tenth, eleventh, and twelfth grades. To achieve this, a non-experimental survey design was implemented. The methodology comprised two phases: Stage 1: Content validation and the development of the online questionnaire for the survey. Stage II: The administration of the questionnaire in higher secondary institutions.

Participants

A total of 52 high school students in the age range of 15 to 18 years (mean age =16.72; males = 18 and females =33; transgender = 1) took the online survey. This group was further subdivided based on the class they were in. Group I include 10th grade students; Group II includes 11th grade students; and Group III contains students studying 12th grade classes, respectively. Group I included 8 participants, Group II included 13 participants, and Group III included 32 participants.

Figure 1 below depicts the percentage analysis for number of students participated from 10th grade, 11th grade and 12th grade students



Selection Criteria

All students participating in the present study were pursuing higher secondary school education (10th, 11th, and 12th). Students who completed their 12th grade were not included in the study.

Phase 1

Development of the questionnaire

The first phase of the study involved the development of a questionnaire for the survey. The questionnaire was developed after a review of various studies on the challenges and opportunities of e-learning. For ease of data collection through social media platforms such as "WhatsApp," the questionnaire was constructed as an online Google Form.

The online questionnaire was divided into two parts: Section I, Section II, and Section III. Section I included an introduction to the study, the participant consent process, and demographic information such as current class, age, gender, educational board, medium of education, parents' occupation, and annual family income. Section II consisted of 13 questions that assessed the overall satisfaction with e-learning experiences. Section III contained eight questions that addressed the technical challenges faced during e-learning.

Some questions in the general satisfaction section used a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree'. In the technical domain, the questions were nominal type scale response anchors, which included three response choices: 'Yes', 'No'. For all other questions, the response options were based on the question. Some questions also allowed participants to choose multiple answers for a given question. (Appendix 1)

Content validation

The content validation of the questionnaire was conducted by three specialists who had expertise in the fields of audiology and speech-language pathology. Every professional had a Master's degree in Audiology and/or Speech Language Pathology, or both, and had a minimum of three years of work experience in the related sector.

Phase II

Administration of the questionnaire among students

To reach students studying upper secondary school education in government and private institutions, an online questionnaire in the form of a Google Form link was sent by email and WhatsApp. Upon accessing

the hyperlink, the participants would be presented with a permission form, to which they provided their agreement by selecting the 'Yes' option. Subsequently, they would continue to respond to a series of 21 questions pertaining to the overall satisfaction and technical excellence of e-learning. (Appendix I)

Statistical analysis

All the data were documented in an Excel spreadsheet for statistical analysis. The collected data will be analyzed using appropriate statistical tests with the Statistical Package for the Social Sciences (SPSS) version 22. Descriptive statistics, such as measures of central tendency (percentage analysis).

Results

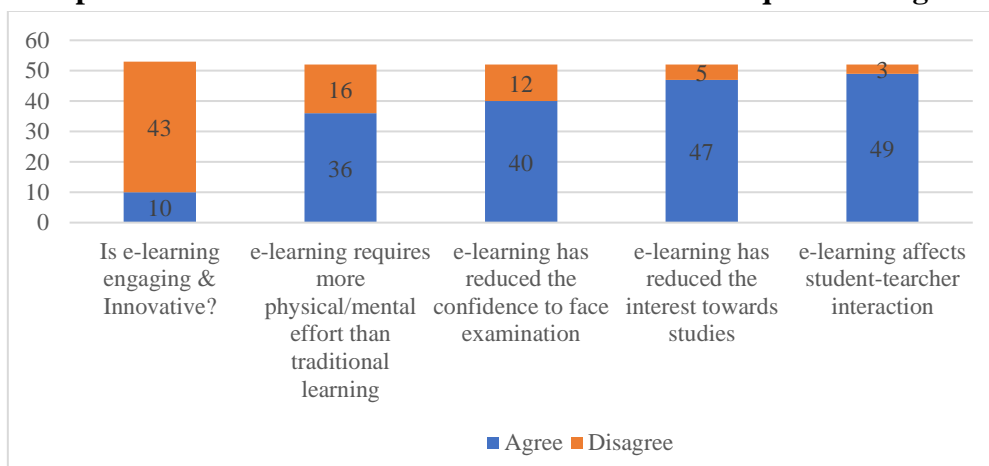
The study adopted descriptive research methods for the analysis of the obtained data, and its findings focus on three main factors: The challenges and obstacles encountered during online learning classes. General satisfaction with virtual learning. Technical aspect affecting the e- learning.

General satisfaction

The first research question was, "Is e-learning engaging and innovative?" The results revealed that 43% of students reported disagreeing, stating that e-learning does not engage students properly, and only 10% of students reported finding it innovative. Statement 2 is, "Does e-learning require more physical and mental effort?" Where the majority of students, 72% (n=36), reported it to be stressful and requiring more mental effort than traditional learning methods. The third statement is, "Does e-learning reduce confidence to face examinations?" The results suggested that 66.7% (n=40) of students agreed with the statement, while only 20% of students disagreed, suggesting that the majority of students felt their confidence being reduced. The fourth statement is, "Does e-learning reduce interest in studies?" Results suggested that 79.2% (n=47) of students agreed, while only 20% of students disagreed, indicating that the majority of students have reduced interest in studies during virtual learning. The fifth statement inquires about the effect of e-learning on interaction with other student and teachers.

The findings suggest that 81.7% (n=49) of students reported e-learning as affecting their interaction with teachers and other students. These results suggest that the general satisfaction of high school students during e-learning is overall reduced. Mental effort (stress, tension) was comparatively higher followed by students lacked in practical experience and confidence from learning though online medium of teaching. These findings are supported by challenges and problems that encountered English learners [13].

Figure 2 below depicts the mean values of number of individuals in question in general satisfaction

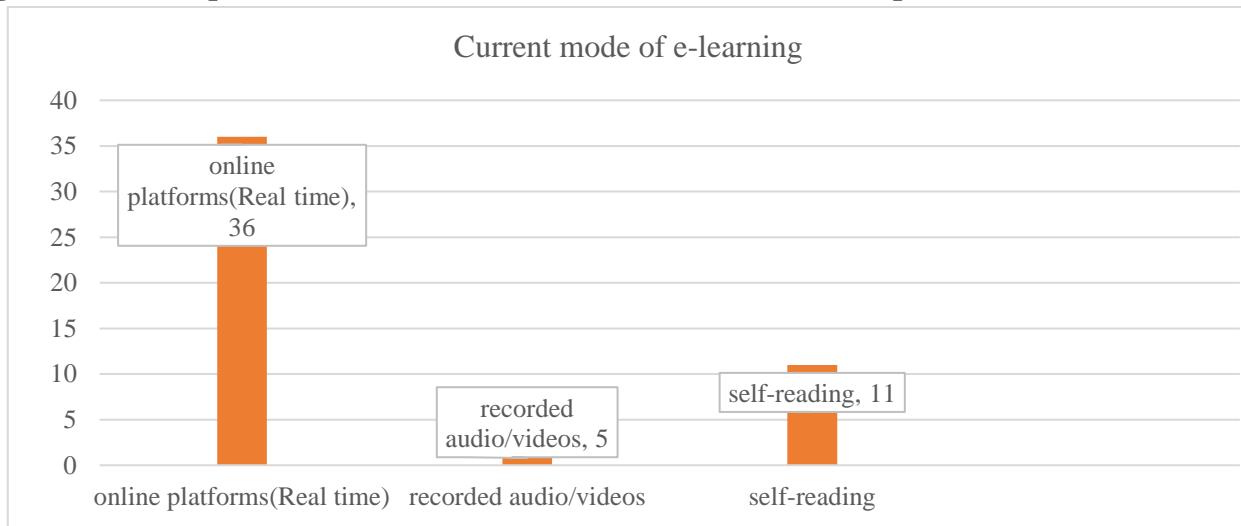


Technical aspects

The first question was, "Which device do you use for e-learning?" Only 23% of individuals use laptops and desktops, while the majority of students (77%) use mobile phones for attending classes. The availability of mobile phones helped online learning succeed because most students used their mobile phones in this context. The results of this study agree with (Kaid & Bin-Hady 2019) observation, which supported the impact of using social media applications in learning. The duration of online classes suggested that 85% of students had classes for 1-5 hours per day, while 12% of students had classes for less than 1 hour per day. Additionally, 3% of the total population had e-learning for more than 5 hours a day. The current mode of e-learning was assessed, with the majority of students (n=36, 75%) using online (real-time) platforms such as Zoom and WhatsApp calls, whereas a very small number of students (n=5, 10.4%) use pre-recorded videos for learning. Additionally, 11 students in the population (22.9%) did not receive any e-materials for reading.[10,13]

The findings of this study align with previous research on online learning during the COVID-19 pandemic, indicating widespread dissatisfaction among students and numerous encountered obstacles (Bataineh et al., 2020; Rajab et al., 2020). It highlights the critical need for technical support to ensure the reliability of online education. Teachers and students were compelled to explore alternative online platforms to maintain uninterrupted learning during the crisis. They utilized email for assignment submissions, while turning to platforms such as Microsoft Teams, Google, and Zoom for conducting lectures. Additionally, WhatsApp emerged as a popular communication tool among students during online learning. These adaptations underscored the resilience and flexibility demonstrated by both educators and learners in navigating the challenges posed by the sudden shift to e learning [11,12,13].

Figure 3 below depicts the mean values of number of individuals responses for mode of e learning

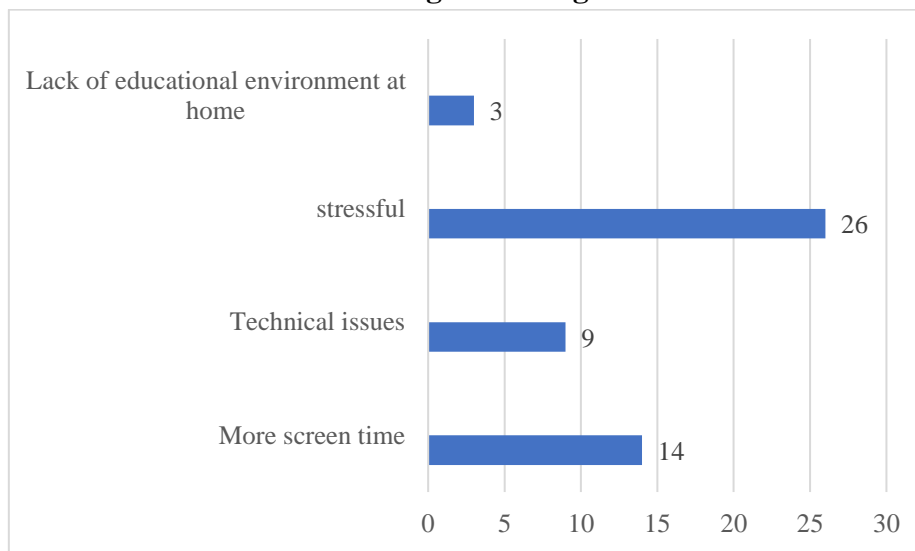


Why e-learning is more challenging than traditional classroom

There are various reasons why e-learning is more challenging than the traditional classroom. Major reasons include it being stressful (n=23, 47.9%), lack of educational environment at home (n=3, 6.3%), technical issues (n=9, 18.8%), and increased screen time (n=14, 29.2%). Learners confronted some difficulties accessing online lessons, materials downloading, online exams conducting, etc., students reported these issues as the most significant issue. Challenges in e-learning with regards to studies reveal that the majority of students find e-learning reduces practical knowledge (n=27, 56.3%), while (n=12,

25%) find it hard to understand the concepts. Additionally, 13 students (27.1%) find difficulty in understanding both concepts as well as experiencing reduced practical knowledge. Overall, while e-learning offers numerous benefits, including flexibility, accessibility, and scalability, addressing these challenges is essential to ensure that all students have equitable access to quality education in digital environments. By proactively addressing technical issues, promoting effective instructional strategies, and fostering a supportive learning community, educators and policymakers can mitigate the challenges associated with e-learning and create engaging and inclusive online learning experiences for all students

Figure 4 below depicts the mean values of number of individuals response to changelings faced during e-learning



Conclusion

Study reveals the complex landscape of e-learning among high school students in India. Despite significant challenges such as reduced engagement, increased stress, and technical obstacles, there are also notable opportunities for enhancing learning outcomes through flexible access and innovative methodologies. By addressing these challenges and capitalizing on opportunities, educational institutions and policymakers can optimize e-learning experiences and ensure equitable access to quality education for all students. Additionally, the findings underscore the critical need for ongoing evaluation and enhancement of digital learning environments to adapt to the evolving needs of students and educators. Ultimately, this research contributes to the broader discourse on e-learning by providing insights into the experiences and perceptions of high school students, guiding efforts to improve educational outcomes in the digital age. The study seeks to delve into the challenges and issues surrounding online learning, particularly examining their adverse effects on learners' performance and outcomes. It identifies that learner struggled with grasping the taught concepts, indicating a significant obstacle to effective learning. Technical issues emerged as the primary challenges faced by school students engaged in online learning. These encompassed difficulties with internet connectivity, accessing classes, and downloading course materials. The study underscores the importance of further research to delve into teachers' perspectives and experiences regarding online teaching methodologies. Such exploration could provide valuable insights into addressing the complexities of remote education and enhancing its effectiveness.

Abbreviations

e learning- electronic based learning

Appendix I

Questionnaire

A. Background Information (Please check the appropriate box)

Name: _____ Age: _____

Gender: Male/Female

1. Your education qualification:

- <10th Std
- 11th Std
- 12th Std

2. Parents Occupation:

- Daily wages
- Part time
- Full time

3. Please mention your family income per annum:

- Less than 2 lakhs
- 2-10 lakhs
- > 10 lakhs

B. General satisfaction

1. e-Learning is engaging and innovative

- a. Agree
- b. Disagree
- c. Neither agree and disagree

2. e-Learning is more challenging than traditional classroom, due to

- a. Stress
- b. More screen time
- c. Family / personal issues
- d. Technical issues (poor internet connection)
- e. Lack of educational environment at home

3. e-Learning has requires more mental/physical effort than traditional learning

- a. Agree
- b. Disagree
- c. Neither agree and disagree

4. e-Learning has reduced the confidence to face the examination

- a. Agree
- b. Disagree
- c. Neither agree and disagree

5. e-Learning has reduced the interest toward studies

- a. Agree
- b. Disagree

c. Neither agree and disagree

6. Challenges in eLearning with regards to studies

- a. Reduced the practical knowledge
- b. Hard to understand the concepts taught by teacher
- c. Unable to clear the doubts
- d. Lack of study material

7. e-Learning affects the interaction with other students and teachers

- a. Agree
- b. Disagree
- c. Neither agree and disagree

8. e-Learning has reduced the individual attention given by the teacher

- a. Agree
- b. Disagree
- c. Neither agree and disagree

9. Whether you are satisfied with the study material available for e-Learning

- a. Yes
- b. No

10. If you are differently abled (hearing impaired/visual impaired) e-Learning makes it hard for you to follow the classes

- a. Agree
- b. disagree
- c. Neither agree and disagree

11. Do you need more parent support on e-Learning

- a. Yes
- b. No
- c. others specify

C. Technical aspects

1. Which device do you use for e-learning?

- a. Laptop/ computer
- b. Smart phone
- c. Others

2. What is the type of internet connection used?

- WiFi Mobile data Broadband

3. e-Learning make you to spend more money on Internet

- a. Agree
- b. disagree
- c. Neither agree and disagree

4. What is the data speed on your device?

- a. -5Mbps
- b. 15-25 Mbps
- c. 40-100Mbps
- d. 200+Mbps

5. Were you able to hear and see the teacher?

Yes No

6. How was the audio quality?

Audio quality was good Voice breaks was present but speech was understandable Voice breaks was present but speech was not understandable I had to disconnect because there was no audio output

7. How was the video communication?

Video quality was good Video was paused frequently Video was paused rarely I had to disconnect because there was no video output

8. For how long do you have online classes per d

- a. <1 hour
- b. 1-5 hours
- c. >5 hours

9. Lack of familiarity of the electronic device and apps, has created e-Learning more difficult.

- a. Agree
- b. Disagree
- c. Neither agree and disagree

10. Please mention the current mode of e-Learning

- a. Real time (zoom, google meet etc.)
- b. Recorded video and audio material
- c. Self-reading
- d. others

11. The recurrent usage of headphone/ ear buds/ loudspeaker has caused

- a. Itching sensation
- b. Recurrent wax formation
- c. Ear pain
- d. Head ache
- e. Ear block
- f. None
- g. Others (specify)

Conflict of Interest

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

Authors' contributions

First author: Data collection, writing—original draft, writing—review and editing; corresponding author:

conceptualization, writing—review and editing. Third author: writing—review and editing.

Informed consent

Patient assessment was carried out according to the protocol, and informed consent was obtained for publication after suitable anonymization was obtained.

Acknowledgment

We would like to express our gratitude to the HOD and in-charge head of department ASLP at SRM Institute of Science and Technology.

Reference

1. Alam, G.M., Forhad, A.R. and Ismail, I.A. (2020), “Can education as an ‘international commodity’ be the backbone or cane of a nation in the era of fourth industrial revolution? – a comparative study”, *Technological Forecasting and Social Change*, Vol. 159, p. 120184, doi: [10.1016/j.techfore.2020.120184](https://doi.org/10.1016/j.techfore.2020.120184).
2. Haveman, R., & Smeeding, T. (2006). The role of higher education in social mobility. *The Future of children*, 125-150.
3. Alam, G. M., & Parvin, M. (2021). Can online higher education be an active agent for change? — Comparison of academic success and job-readiness before and during COVID-19. *Technological Forecasting and Social Change*, 172, 121008.
4. Alam, G. M., & Forhad, M. A. R. (2022). What makes a difference for further advancement of engineers: socioeconomic background or education programs?. *Higher Education*, 83(6), 1259-1278.
5. Tomlinson, M. (2008). ‘The degree is not enough’: students’ perceptions of the role of higher education credentials for graduate work and employability. *British journal of sociology of education*, 29(1), 49-61.
6. Alam, G. M., & Asimiran, S. (2021). Online technology: Sustainable higher education or diploma disease for emerging society during emergency—comparison between pre and during COVID-19. *Technological Forecasting and Social Change*, 172, 121034.
7. Bulturbayevich, M. B. (2021). Challenges of digital educational environment. *Academic Journal of Digital Economics and Stability*, 4, 54–60.
8. Asvial, M., Mayangsari, J., & Yudistriansyah, A. (2021). Behavioral intention of e-learning: A case study of distance learning at a junior high school in Indonesia due to the covid-19 pandemic. *International journal of technology*, 12(1), 54-64.
9. Fauziah, G. (2020), “The implementation of e-learning in the time of the covid-19 pandemic as a current reality [WWW document]”, Kompasiana, available at: www.kompasiana.com/gitafauziah/rhm/5eb0feacd541df67866d5cf2/penerapan-e-learning-di-masa-pandemi-covid-19-sebagai-realitas-saat-ini (accessed 3 July 2020)
10. Kaid Mohammed Ali, Jamal and Rashad Ali Bin-Hady, Wagdi, (2019). A Study of EFL Students’ Attitudes, Motivation and Anxiety towards WhatsApp as a Language Learning Tool Arab World English Journal (AWEJ) Special Issue on CALL Number 5. July 2019. ,Available at: SSRN: <https://ssrn.com/abstract=3431782> or <http://dx.doi.org/10.2139/ssrn.3431782>
11. Bataineh, K. B., Atoum, M. S., Alsmadi, L. A., & Shikhali, M. (2020). A Silver Lining of Coronavirus: Jordanian Universities Turn to Distance Education. *International Journal of Information*

and Communication Technology Education (IJICTE), 17(2), 1-11.

12. Rajab, M. H., Gazal, A. M., & Alkattan, K. (2020). Challenges to Online Medical Education During the COVID-19 Pandemic. *Cureus*, 12(7), e8966. DOI:10.7759/cureus.8966
13. Mahyoob, M. (2020). Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners. *Arab World English Journal*, 11 (4) 351-362. DOI: <https://dx.doi.org/10.24093/awej/vol11no4.23>