

Challenges of Using E-Textbooks Among Grades 9 and 10 Public School Students in Oman

Nabawiya Khamis Al Masuudi^{1*}, Haslinda Sutan Ahmad Nawi², Salyani Osman³,
Hilal Ali Al- Maqbali⁴

¹*Ministry of Education, Oman (nabawiya159@moe.om)*

²*Faculty of Communication, Visual Art and Computing, Selangor, Malaysia
(haslindasan@unisel.edu.my)*

³*Faculty of Communication, Visual Art and Computing, Selangor, Malaysia
(salyani@unisel.edu.my)*

⁴*University of Technology and Applied Sciences, Suhar, Oman(hilalmq.soh@cas.edu.om)*

Abstract– The use of technology in the education field is considered an effective method for motivating students. E-textbooks are replacing printed books as a popular educational strategy in some countries because of their benefits like being lighter to carry, portable, ease of use and storage capacity. Although it has many benefits, studies have shown that its adoption is challenging for students. This study aimed to investigate the challenges that ninth and tenth-grade public school students faced while using e-textbooks in the Sultanate of Oman during the COVID-19 pandemic. A questionnaire was conducted with 429 students. The findings show that the attitudes of students towards e-textbooks were negative, where over 94% of students prefer printed books because of their reduced eye strain. The study revealed ergonomics, technology, UX and finance barriers to e-textbook adoption. Based on these results, instructional designers should work to make e-textbooks more enjoyable and desirable for students.

Keywords–ebook issues, ebook barriers, e-textbook adoption

1. Introduction

Education is one of the most important sectors in any society, and it is vital to a country's development. In fact, education continues to be developed along with technology and science. Technology plays an important role in the education field to motivate students' learning. It also turned printed books into electronic ones (Asrowi et al., 2019). E-textbooks (electronic textbooks) is mainly known as digital versions of traditional printed books that are readable on a variety of computing devices, such as personal computers, tablets, and smartphones (Okocha, 2020). It is created in a range of different encrypted file formats, including plain text (TXT), PDF (for Adobe Reader), HTML/XML (for the Web), and more (Safar, 2020).

E-textbooks and printed books both present learning material to students and teachers. But e-books offer many advantages compared to printed books, like it is lighter to carry, easy to find a specific content/ text in the book, portability, navigation capabilities, ease of use and storage capacity (Halim & Widyanti, 2018).

The COVID-19 pandemic forced most educational institutions to either close or turn to online teaching (Slimi, 2020). The Omani government announced the closures of schools and universities to prevent the spread of COVID-19 (Cifuentes-Faura et al., 2021). In the following academic year (2020/2021), the Ministry of Education (MoE) responded to the instructions of the Supreme Committee, to move from a physical classroom to a virtual one. Furthermore, MoE emphasized the importance of developing e-learning technical infrastructure, as well as readjusting internal regulations to integrate semesters for all courses to meet quality standards (Slimi, 2020). During the pandemic, the printing sector was affected. So, e-textbooks are available on the MoE official website. Throughout the world, e-textbooks are replacing printed books as a popular educational strategy, but Arab countries haven't adopted them as widely as other countries (Almekhlafi, 2021). So, the pandemic was an opportunity to adopt an e-textbook.

Wang & Xing (2019) reported that most of the previous research has been conducted with undergraduate students, but that few studies have explored e-textbook use by school students. The purpose of this study is to investigate the challenges that ninth and tenth grade public school students faced while using e-books in the Sultanate of Oman.

As we enter the twenty-first century, the world has witnessed a rapid leap in scientific and technical development, which has affected every aspect of our lives, such as health, social, educational, political, economic, and others (Eltahir et al., 2019).

Educational technology is increasingly used in schools worldwide. E-books are one of the primary forms of electronic resources that facilitate quality learning in the 21st century (Oriogu et al., 2018). Because of COVID-19, the usage of e-books has become increasingly popular to continue the education system. Due to the pandemic situation, the traditional way of teaching and classroom learning are no longer relevant to the current generations (B. FARHAN & S. AASHA, 2020). However, today students are interacting more with technology, but most of them prefer to use printed books instead of e-books (Hadaya et al., 2018).

According to (Almekhlafi, 2021) a study of the effects of e-books on learning could enlighten and empower stakeholders to give this issue the importance it deserves even though e-books are not widely used in the education system in the Arab world. Alsadoon (2020) also suggests putting more effort into supporting students' enjoyment of reading from e-books and making them appreciate their advantages. More research must be conducted in order to explore ways in which students' expectations can be met and learning experiences made more enjoyable with e-book.

This study is important for the future of Oman because Omani strategy 2040 aims to establish high-quality and international standards education systems (Slimi, 2020). Additionally, MoE signed a contract with the Bahwan Information Technology Company to digitize grades 1-12's curriculum (Ministry of Education, 2022).

The purpose of this research is to answer the following research question:

- What are the challenges of using e-book among school students in Oman?

2. Methods

In this study questionnaire is viewed as a key tool for collecting data from respondents. A structured questionnaire was used in this study. The questionnaire contained both open-ended and closed-ended questions (yes/no). It is conducted to identify challenges that are faced by grade tenth and ninth during using e-books in the Sultanate of Oman. It consisted of 21 questions, which included the first part of 6 items about challenges that related to ergonomics. The second part consisted of 4 items about challenges that related to technology. The third part consisted of 9 items about challenges that related to user experience (UX). The fourth part consisted of one question about challenges that related to finance. The last part of the questionnaire consisted of one open-ended question, which asked the students if they prefer printed books or e-books. The questions of the questionnaire were adopted from the available literature (Srirahayu & Premananto, 2020; Daniel Oriogu et al., 2018; Alsadoon, 2020; Majid et al., 2019) and refined.

Survey data was collected from public schools in Oman. Students who participated in the survey were in grade tenth and ninth. The reason why students in these grades were chosen is that they have been experienced in using e-book (during pandemic COVID-19). The questionnaire was developed using Google forms and posted on social media after it was approved by the Ministry of Education (MoE) and the National Centre for Statistical Information (NCSI). The data were analyzed using the Statistical Package for the Social Sciences (SPSS). For the demographic analysis of participants, percentages and frequency counts were used.

3. Results and Discussion

A total number of 429 students participated in the survey. The participants' demographic information of the study by gender and grade is shown as table 1. Respondents were 353 (82.3%) females and 76 (17.7%) males. Most respondents were female, which is not surprising since females are more likely to take surveys than males, as previous studies reported (Wolbers et al., 2022; Smith, 2008);

Table 1. Demographic of participants

Characteristics	Number	%
Grade		
Ninth	171	60.1
Tenth	258	39.9
Gender		
Male	76	17.7
Female	353	82.3

There are four major challenges identified which are:

- Ergonomics challenges, which comprised six items.
- Technology challenges, which comprised four items.
- User experience (UX) challenges, which comprised nine items.
- Finance challenges, which comprised one item.

The main challenges are explained in detail in the later section.

a. Ergonomics challenges

Table 2. Challenges related to ergonomics

Questions	Options	Frequency	%
Reading from a computer screen for a long period may result in digital eye strain, which can include burning, itchy, or tired eyes.	Yes	392	91.4
	No	37	8.6
Reading from a computer screen for a long period causes problems of neck and back as well as injuries to the wrist, arm, shoulder, and hand.	Yes	384	89.5
	No	45	10.5
Sitting in front of a screen for longer periods of time for reading e-book can contribute to weight gain.	Yes	254	59.2
	No	175	40.8
I have difficulty using e-books because of poor presentation and screen resolution.	Yes	290	67.6
	No	139	32.4
Page and display layout arrangements, such as font type, font size, the order and alignment, are not suitable.	Yes	266	62
	No	163	38
I have difficulty while using e-book because of the font type and size and sometimes it is not suitable for my smartphone screen.	Yes	340	79.3
	No	89	20.7

The results of this study (as in Table 2) show that more than 91% of respondents mentioned they feel digital eye strain while using e-books for a long time. Which represents the highest percentage of challenges. This may be because of the contrast of the display and the accuracy of the e-book (Al-Qatawneh et al., 2019). In addition, 89.5% of the respondents mentioned that they have neck and back as well as injuries to the wrist, arm, shoulder, and hand. Thus, it is important to avoid reading for long periods without getting enough rest (Cheng et al., 2018). A frequent break while using a computer for a long period of time has been shown to reduce spinal stress (Shah & Desai, 2021). In this way, e-books can provide the potential benefits of supporting students' learning without causing physical harm. More than half of the respondents (62%) mentioned that page and display layout arrangements e-books are not suitable. However, Gong & Xie (2018) suggested that e-textbooks should have similar structures and layouts as printed books to be compatible with students' reading habits. More than half of the respondents (59.2%) mentioned they sitting in front of a screen for longer periods of time for reading e-book can contribute to weight gain. More than two-thirds (79.3%) of respondents mentioned they have difficulty while using e-book because of the font type and size and sometimes it is not suitable for my smartphone screen.

b. Technology challenges

Table 3. *Challenges related to technology*

Questions	Options	Frequency	%
I find it hard to download or open e-book due to poor Internet connection.	Yes	308	79.3
	No	121	20.7
E-book does not work with all browsers (e.g., google chrome, Firefox).	Yes	293	68.3
	No	136	31.7
Sometimes, the memory of my mobile phone is not enough to save e-book.	Yes	350	81.6
	No	79	18.4
E-books need a battery, which can discharge anytime during reading.	Yes	347	80.9
	No	82	19.1

Table 3 demonstrates the respondents' challenges related to technology. More than two-thirds of the respondents (79.3%) found it hard to download or open e-book due to poor internet connection. More than half of the respondents (68.3%) pointed that they do not work with all browsers (e.g., google chrome, Firefox). Items 3 and 4 showed that over 80% of the respondents found that the memory of mobile phones is not enough to save e-book and need a battery, which can discharge anytime during reading.

c. User experience (UX) challenges

Table 4. Challenges related to user experience (UX)

Questions	Options	Frequency	%
I find difficulty to access the e-book on the Ministry of Education website since I have no knowledge or experience with it.	Yes	266	62
	No	163	38
I find it difficult to browse the e-book.	Yes	242	56.4
	No	187	43.6
I think the e-book does not improve my learning performance.	Yes	327	76.2
	No	102	23.8
I face problems with writing notes or highlighting important information in the e-book and cannot flip pages easily.	Yes	345	80.4
	No	84	19.6
I feel bored, the digital illustrations used in e-books are not attractive. And it's hard to read an e-book on screen.	Yes	340	79.3
	No	89	20.7
Studying with an e-book distracts me.	Yes	367	85.5
	No	62	14.5
I cannot copy-and-paste e-book text into another app (e.g., MS. Word).	Yes	327	76.2
	No	102	23.8
I have difficulty finding specific information in an e-book.	Yes	341	79.5
	No	88	20.5
I cannot print e-books because of digital rights.	Yes	323	75.3
	No	106	24.7

Table 4 demonstrates the respondents' challenges related to user experience (UX) during e-book. More than two-thirds of the respondents (76.2%) agreed that e-books don't improve their learning process. However, several studies (Plangson et al., 2017; Alshaya & Oyaid, 2017) have found that the use of e-books has improved the achievement level of students. In addition, 80% of them found that taking notes, highlighting important information, and flip pages were difficult. Items 5 and 8 that over 79% of the respondents showed they feel bored, due to digital illustrations used in e-books are not attractive. And it's hard to read an e-book on a screen. Furthermore, 75% of the respondents studying with an e-book distract them. This challenge was cited in a previous study, too (Alsadoon, 2020).

d. Finance challenges

Table 5. Challenges related to finance

Questions	Options	Frequency	%
E-books are costly because I need to buy devices like tablets, internet lines and software licenses.	Yes	322	75.1
	No	107	24.9

Table 5 demonstrates the respondents' challenges related to finance. Most respondents (75.1%) mentioned that e-books are costly because they need to pay for devices like tablets, internet lines and software licenses. According to Wiese & du Plessis (2015), a wide range of electronic devices available at a reasonable price, makes it feasible and affordable for people to own smart devices.

Students were asked if they would prefer printed books or e-books, 94% responded mentioned that they would prefer printed books. The challenges which may negatively influence students' attitudes toward using e-books must be addressed.

According to the findings above, it can be concluded that the attitudes of students towards e-books were negative. The outcome of the data collected shows that the school students prefer printed books to e-books.

4. Conclusion

In conclusion, this study was conducted to investigate the challenges that are faced by ninth and tenth grade public school students while using e-textbooks in the Sultanate of Oman. The study surveyed a sample of 429 students. The findings stated students would prefer printed books and a small percentage (4%) prefer to use e-books. According to a previous study by Saadi et al. (2017) indicated that students need more time and motivation before switching to e-books. Based on the results of the current study, we suggest empowering stakeholders and instructional designers in MoE in Oman to design e-books more enjoyable and desirable for students' needs. In future work, we plan to use eye tracking technology to investigate Omani school students' engagement with e-book.

References

- Almekhlafi, A. G. (2021). The effect of E-books on Preservice student teachers' achievement and perceptions in the United Arab Emirates. *Education and Information Technologies*, 26(1), 1001–1021. <https://doi.org/10.1007/s10639-020-10298-x>
- Al-Qatawneh, S., Alsalihi, N., al Rawashdeh, A., Ismail, T., & Aljarrah, K. (2019). To E-textbook or not to E-textbook? A quantitative analysis of the extent of the use of E-textbooks at Ajman University from students' perspectives. *Education and Information Technologies*, 24(5), 2997–3019. <https://doi.org/10.1007/s10639-019-09912-4>
- Alsadoon, H. (2020). Obstacles to Using E-Books in Higher Education. *International Journal of Education and Literacy Studies*, 8(2), 44. <https://doi.org/10.7575/aiac.ijels.v.8n.2p.44>
- Alshaya, H., & Oyaid, A. (2017). Designing and Publication of Interactive E-Book for Students of Princess Nourah Bint Abdulrahman University: An Empirical Study. *Journal of Education and Practice*, 8(8), 41–57.
<http://ezproxy.lib.uconn.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1138827&site=ehost-live%0Ahttp://ezproxy.lib.uconn.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1138827&site=ehost->
- Asrowi, Hadaya, A., & Hanif, M. (2019). The impact of using the interactive e-book on students' learning outcomes. *International Journal of Instruction*, 12(2), 709–722.
<https://doi.org/10.29333/iji.2019.12245a>
- B. FARHAN, & S. AASHA. (2020). Role of e-books and e-learning. *INTERNATIONAL JOURNAL OF RESEARCHES IN SOCIAL SCIENCE AND INFORMATION STUDIES*, 8209(Iii), 315–319.
- Cheng, P. Y., Su, Y. N., Chien, Y. C., Wu, T. T., & Huang, Y. M. (2018). An Investigation of Visual Fatigue in Elementary School Students Resulting from Reading e-books. *Journal of Internet Technology*, 19(5), 1285–1292. <https://doi.org/10.3966/160792642018091905001>
- Cifuentes-Faura, J., Obor, D. O., To, L., & Al-Naabi, I. (2021). Cross-cultural impacts of covid-19 on higher education learning and teaching practices in Spain, Oman, Nigeria and Cambodia: A cross-cultural study. *Journal of University Teaching and Learning Practice*, 18(5).
<https://doi.org/10.53761/1.18.5.8>
- Daniel Oriogu, C., Idowu Oluwatola, K., Chima Oriogu-Ogbuiyi, D., & Enamudu, A. I. (2018). Awareness and Use of Electronic Books among Undergraduate Students: A Survey. In *Chuks Daniel*.

- Eltahir, M. E., Al-Qatawneh, S., & Alsalmi, N. (2019). E-textbooks and their application levels, from the perspective of faculty members at Ajman University, U.A.E. *International Journal of Emerging Technologies in Learning*, 14(13), 88–104. <https://doi.org/10.3991/ijet.v14i13.9489>
- Gong, C., & Xie, T. (2018). Exploring desirable features of e-textbooks for K-12 Classes: A case study. *Proceedings - 2018 7th International Conference of Educational Innovation through Technology, EITT 2018*, 123–127. <https://doi.org/10.1109/EITT.2018.00032>
- Hadaya, A., Asrowi, A., & Sunardi, S. (2018). Perception of Junior High School Students about the Use of E-books as Learning Sources. *Journal of Educational Science and Technology (EST)*, 4(1), 55. <https://doi.org/10.26858/est.v4i1.5219>
- Halim, F. S. S., & Widyanti, A. (2018). E-book in Indonesia: Reason to use and usability evaluation. *IEEE*, 154–158.
- Majid, S., Chenqin, Y., Chang, Y., & Zilu, C. (2019). Perceptions and E-book Use Behavior of University Students. *International Journal for Digital Society*, 10(4), 1534–1540. <https://doi.org/10.20533/ijds.2040.2570.2019.0190>
- Ministry of Education. (2022). <https://home.moe.gov.om/region/dakhliya/topics/1/show/7764>.
- Okocha, F. (2020). Determinants of the adoption academic electronic books by university students in a developing country. *International Journal of Information and Communication Technology Education*, 16(4), 111–121. <https://doi.org/10.4018/IJICTE.2020100108>
- Oriogu, C. D. O., Oluwatola, K. I., Oriogu-Ogbuoyi, D. C., & Enamudu, I., A. (2018). Awareness and Use of Electronic Books among Undergraduate Students : A Survey. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/libphilprac>
- Plangsom, B., Poopan, S., & Plangsom, B. (2017). Development of producing and using e-books competencies of teachers in Chachengsao. In *Chachengsao, Thailand. World Journal on Educational Technology* (Vol. 09, Issue 02). www.wj-et.eu
- Saadi, A., al Hafeedh, M., & al Sheithani Zainab Al Wishahi, A. (2017). Are We Ready for E-books? Omani University Students' Uses and Perceptions of E-books. In *TOJET: The Turkish Online Journal of Educational Technology* (Vol. 16, Issue 2).
- Safar, A. H. (2020). *Kuwait University Students' Awareness, Usage, Perceptions, and Satisfaction Pertaining to e-Books*.
- Shah, M., & Desai, R. (2021). Prevalence of Neck Pain and Back Pain in Computer Users Working from Home during COVID-19 Pandemic: A Web-Based Survey. In *International Journal of Health Sciences and Research (www.ijhsr.org)* (Vol. 11, Issue 2). <https://www.researchgate.net/publication/358367104>
- Slimi, Z. (2020). Online learning and teaching during COVID-19: A case study from Oman. In *International Journal of Information Technology and Language Studies (IJITLS)* (Vol. 4, Issue 2). <http://journals.sfu.ca/ijitls>
- Smith, W. G. (2008). Does Gender Influence Online Survey Participation? A Record-Linkage Analysis of University Faculty Online Survey Response Behavior. *ERIC Document Reproduction Service No ED501717*.
- Srirahayu, D. P., & Premananto, G. C. (2020). The Printed Book and Electronic Book (Ebook) Experiences of Digital Natives in Indonesia. *Journal of Southwest Jiaotong University*, 55(6). <https://doi.org/10.35741/issn.0258-2724.55.6.17>
- Wang, X., & Xing, W. (2019). Understanding Elementary Students' Use of Digital Textbooks on Mobile Devices: A Structural Equation Modeling Approach. *Journal of Educational Computing Research*, 57(3), 755–776. <https://doi.org/10.1177/0735633118758643>
- Wiese, M., & du Plessis, G. (2015). The battle of the e-textbook: Libraries' role in facilitating student acceptance and use of e-textbooks. *South African Journal of Libraries and Information Science*, 80(2). <https://doi.org/10.7553/80-2-1509>
- Wolbers, H., Ackerman, J., & Ready, J. (2022). The Role of Self-Control in Predicting Intimate Partner Violence Specialization in an Australian Community Sample. *Journal of Family Violence*. <https://doi.org/10.1007/s10896-022-00412-7>