



Effects of Students Attitudes towards Using E- Books on Their Self-efficacy and Academic Motivation

Adel ElAdl

Sultan Qaboos University, OMAN

Ali Al Musawi*

Sultan Qaboos University, OMAN

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Abstract: This study aims to investigate students' attitudes towards e- book use, and its relationship to self-efficacy and academic motivation in Omani higher education institutions. The sample of the study, which was chosen based on the stratification random method, consisted of 200 students from both genders and different colleges and academic years. To achieve the aims of the study, a descriptive correlational approach was adopted using attitudes, academic motivation and self-efficacy scales developed by the researchers, and administered to the study sample after assessing their psychometric properties. Findings show generally a positive significant correlation between students' attitudes towards e-book use, self-efficacy, and academic motivation.

Keywords: E-book, Sultan Qaboos university, motivation, self-efficacy, attitude.

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Introduction

Reading is a crucial tool for lifetime learning, increasing the quality of life, and connecting people together (Igbokwe et al., 2012). It is an enjoyable experience as it enriches students' skills, knowledge, and understanding; and helps them to grow professionally. Wang and Guthrie (2004) report that motivation towards reading significantly enhances learner's comprehension skills.

Technology has become a useful and pivotal tool to acquire information, and e-books are one form of technology holding numerous features that can motivate students to improve their study skills. The E-book is a term coined to refer to a text-based manuscript that is comparable to a book, but in an electronic form, and can be displayed on a computer screen (Al-Arishi & Askool, 2003). An e-book can then be defined as an "electronic text that is available in a digitally encoded format readable via an electronic device" (Wexelbaum et al., 2011, p. 2) or an electronic version of a printed book (Siegenthaler et al., 2010).

The E-book is not controlled by any printing standards because electronic means can store large amounts of text-based data, along with digital images, dynamic animation, video sequences, audio records, and voices supplementary to a text. The cost of copying an e-book is negligible compared to printing and packaging a paper book. Nevertheless, to be able to read an e-book adequately, it is necessary to install the proper e-book reading devices such as e-readers as well as software that can conduct text searches and provide hyperlinks, expert guides, and online dictionaries (Al-Arishi & Askool, 2003). Although e-books have existed for several years, several factors contributed to the massive e-books possession nowadays; including quick enhancements in the usefulness, low prices of e-readers and mobile devices, and increased Internet broadband (Picton, 2014).

E-Book in Education

E-books play an important role in education. A learner can view and interact with electronic pages in a way similar to controlling paper books as e-book pages contain various multimedia clips and materials such as texts, images, audio, graphics, hyperlinks, and videos. Students interact with activities, solve problems through practical applications, and receive feedback.

* Corresponding author:

Ali Al Musawi, P.O.Box 32, P.C. 132, Al-Khodh, Oman. asmusawi@squ.edu.om

In comparison to traditional paper books, e-books can be highly beneficial in education. Although Bratanek (2013) finds that students and faculty prefer printed books, specifically for large size documents, and use them only when no other alternatives are available, Cassidy et al. (2012) summarize that most researchers do not essentially prefer e-books to printed ones; however, they do value the suitability of e-form. While traditional books can be only in one place at a time, e-books can be accessed instantly, either on the Internet or through other digital media formats. Besides, e-books can easily search for specific content or certain titles which can be highlighted and delineated. Moreover, Gundogmus (2018) finds that students' "expectations from books are influenced by contemporary technological changes and developments" (p. 248). Meanings of words and terminologies can also be explained in e-books. The most important feature of an e-book is its multimedia capabilities where students can watch videos, listen to audio clips, and get an in-depth understanding of new concepts. Additionally, e-books save financial and environmental costs, as no paper printing is involved in their production. Furthermore, authors can publish e-books directly through digital means or via the Internet. For visually disabled readers, e-books can be accessible using pre-recorded materials (Al-Arishi & Askool, 2003). In this context, Cakmak et al. (2017) point out that "color use, contrast use, font, layout use, and visual complexity are not appropriate for the low vision students" (p. 523).

Despite the stated e-book advantages, some disadvantages of using e-books were also identified, including the high cost of e-readers. Further, there are risks in purchasing an e-book reader in that they might become dormant after a short period. E-books are also long known for poor image resolution on mobile devices. Limited book titles on education are available electronically. Buying some books can be a complicated process as publishing houses dictate regulations and licensure to protect copyrights. Generally, e-books prices are relatively high considering annual renewal fees to update textbooks licensure subscription. Different hardware and software can be incompatible due to the operating systems' versions. Other issues include the inability to print some e-books that work for specific e-readers, and the limited rights to resell a purchased e-book by a local publisher (Al-Arishi & Askool, 2003).

To design an e-book for educational purposes, the designer should use multimedia augmentations to allow various reading tracks. The 'read aloud' narration feature should be added to the text to improve students' comprehension, and help the visually impaired. A dictionary that provides definitions for new terms should also be included. Moreover, the e-book designer should involve non-textual features carefully. Interactivity should be an essential part of e-books to make them enjoyable for students (Colombo et al., 2014). Studies indicate that it is important to put students' opinions in mind when designing e-books and selecting the features. Although research (Chong et al., 2009; Ciampa, 2012) found that students favor the added features of interactive e-books, they were unable to verify whether these features improve reading accomplishment over traditional textbooks.

E-book Use with Students' Attitudes, Self-Efficacy, and Motivation

D'ambra et al. (2013) explain that accepting e-books relies on how instructors view the extent of its convenience to implement their academic tasks, as well as the advantages of information technology through which they deliver their lessons or courses. Danielle and Anali (2008) reveal that the main important element that can boost instructors' consideration of using e-books is their confidence in relying on e-books and ease of access to e-books as perceived by them and their students as well. Downey et al. (2014) conclude that their research sample report that mobile e-books on Personal Digital Assistant is cost-effective, used more heavily than printed books, but the catalog as a discovery mechanism is not a reliable feature. Similarly, Folt et al. (2011) argue that respondents value e-books and consider them useful tools for quick reference and clinical care. McKiel (2011) finds that the survey sample prefers e-books to the printed, requested more improvements, and viewed e- and printed books' characteristics as important to students. In the same way, McLure and Hoseth (2012) examined students and staff attitudes towards e-books, in which the majority of respondents prefer e-books over printed books for their convenience, ease of searching for content and skimming, ease of constant access, lack of due dates, and availability of simultaneous user access. Mulholland and Bates (2014) suggest some recommendations based on their study. Their findings show that although academic staff is in favor of e-books, they are affected by inadequate reading practices and unfamiliar related titles. More titles, publicity, and better implementation in the instructional processes appear to be prerequisites for the efficient provision of services and e-books promotion, as well as the need for better mentoring and faculty professional development. Results from Richardson and Mahmood (2012) indicate that the features students most often reported appreciating about their e-book reader are portability, multiple books on a single reader, ease of downloading books onto the e-reader, built-in dictionaries, ease of navigation, and ease of initial setup. Rojeski (2012) suggests the addition of some features that are valuable to students, such as the ability to download texts, compatibility with e-book readers, searching within the text, unlimited simultaneous users, annotating/highlighting, interface, and presenting and referring to texts in class. Smyth and Carlin (2012) studied the use and perception of e-books and revealed that students under 24 years of age had a far greater interest in print over e-books than any other population. The most common e-book benefits they identified include suitability, accessibility from distance, and adaptability. On the contrary, the major weakness reported includes favoring paper books and finding online reading difficult. Shin (2014) investigated e-book usability in classroom learning. The findings show that graduate students were more positive about e-books in general, and were more concerned about privacy as well.

Self-efficacy represents self-assurance in students' ability to control their motivation, behavior, and social environment (Bandura, 1997). It exhibits students' convictions of their personal ability to perform a certain behavior that leads to specific results. It can be defined as individuals' general set of self-expectations regarding their ability to perform behaviors, achieve goals, and overcome obstacles in everyday life situations, including academia. Cowart et al. (2008) consider self-efficacy an innovation adoption factor. Furthermore, Jung et al. (2011) found that self-efficacy was one of the most important individual adoption variables of e-book readers' devices. Tsai and Yen (2014) corroborate this finding, explaining that self-efficacy positively affects the use of e-book reader devices. On the contrary, Carmen et al. (2013) found that perceived enjoyment, self-image, and perceived usefulness falsify individuals' attitudes towards e-book readers.

It has repeatedly been stated that e-books can be very stimulating to students (Collins et al., 1997; Glasgow, 1996). Short (2010) explored how e-books can be used to motivate and develop students reading. A study by Al-Astal and Zaydah (2015) revealed statistically significant differences in a mathematical thinking skills test between the experimental and control groups, in favor of the experimental that studied using e-books. The study results indicate the effectiveness of e-books on increasing students' thinking skills and acquisition of mathematical ideas, as well as motivating elementary students. In the same context, Wells's (2012) study shows no statistically significant differences in comprehension or motivation towards reading a printed book. On the other hand, Khalid (2014) found that students at all academic year levels are consistent in their preference for e-books use.

In the Omani context, Al Musawi et al. (2017) found no significant differences between the Omani young students' control and experimental groups on the motivation scale. Further, students who read using printed books received better grades on the reading comprehension test. Al Saadi et al. (2017) also found that students at Sultan Qaboos University (SQU) perform various practices on e-books, but do not favor e-books over traditional ones in their studies. Al Musawi and Ammar (2015) find that the majority of SQU students weekly utilize mobile devices for educational tasks and activities. Besides, findings show that this use is affected by gender and cultural factors, and improves students' technological skills.

The current study is conducted to investigate Omani higher education institution students' attitudes towards using e-books.

Methodology

Research Goal

This research aims to investigate students' attitudes towards using e-books, and its relationship to self-efficacy and academic motivation in Omani higher education institutions, particularly SQU. To achieve this goal, the following questions are formulated:

1. What are the Omani students' attitudes towards using e-books?
2. How do these attitudes affect students' academic motivation and self-efficacy?

Research Significance

The importance of the study stems from the importance of e-books as a mean to learn using the new technologies, specifically the portable and mobile devices, and applications. It also provides an insight into students' attitudes towards a technology tool that may provide solutions for traditional books' weight, storage space, and environmental risks.

Research Method

The descriptive method and correlational design were implemented in this study.

Sample and Data Collection

The population of this study comprises all students attending BA programs at the Colleges of Education, and Arts and Social Sciences at SQU, totaled at 4,595 in the academic year 2018-2019 when the study was conducted. The sample was chosen based on the stratification random method and consists of 200 male and female students, representing 4.35% of the main population from both genders and different colleges and academic levels. The final study sample includes 196 students, distributed as shown in Table 1.

Table 1. Sample Distribution by variables

Variable	Variable level	Number	Ratio
Gender	Male	96	49%
	Female	100	51%
Academic level	1st year	56	28.6%
	2nd year	48	24.5%
	3rd year	40	20.4%
	4th year	52	26.5%
	College	Arts & Social Sciences	104
		Education	92
	Total	196	100%

Research Hypotheses

1. There is no statistical correlation between students' attitudes towards e-book use, self-efficacy, and academic motivation.
2. There are no statistical differences between students' attitudes towards e-book use, self-efficacy, and academic motivation in terms of college, academic year, and gender.

Research Variables

Variables investigated in this study are divided as the following:

- Independent variables: gender, college, and academic year
- Dependent variables: attitudes, academic motivation, and self-efficacy

Research Instruments

Attitudes, academic motivation, and self-efficacy scales were developed by the researchers and administered to the study sample after assessing their psychometric properties. Forty-three students from the College of Education were surveyed to verify the psychometric properties of the study tools. The participants in this pilot study were not included in the main study as different participants were selected (see Sample and Data Collection section above).

Validity and Reliability

1. The Scale of Attitudes towards the Use of e-Books: this scale was designed by the researchers, comprising 27 statements on a four Likert's options (Completely agree, Agree, Disagree, Completely Disagree) and (4, 3, 2, 1) value scale consecutively; and vice versa for the negative ones. The latter includes statements number 4, 10, 11, 13, 16, 17, 19, 21, 23, 24, 25, and 27. Therefore, the score range was between 27 and 108. The psychometric properties of this scale were verified as follows:
 - Validity was ensured by the 'experts review panel' method as indicated by Dimitrov (2012), who states that the scale items should be rated by a panel of experts to check how favorable the items measure the construct. The scale was presented to six reviewers specialized in the fields of educational technology and measurement. Statements that obtained an agreement ratio of 80% were validated, whereas other statements were modified according to the panel's feedback. The correlation coefficient between each statement and the scale total score were calculated, ranging between (0.417-0.661).
 - Reliability was calculated using Cronbach's alpha coefficient and was found at (0.716), which is statistically acceptable.
 - Confirmatory Factorial Analysis (CFA): since the total points would be summed for the sample group, a two-level CFA was conducted. The fit indices obtained by the CFA were as follows: $X^2 = 1117.13$ ($sd = 327$, $p < .001$), $(x^2/sd) = 4.13$; the Root Mean Square Error of Approximation (RMSEA) = 0.075; the Goodness of Fit Index (GFI) = 0.85; the Normed Fit Index (NFI) = 0.92; the Comparative Fit Index (CFI) = 0.91 and the Adjusted Goodness of Fit Index (AGFI) = 0.93. These indices show that the scale has good fit values.
2. The Self-efficacy scale: this scale was designed by the researchers, consisting of 36 statements distributed over three dimensions (proactive behavior; in self-confidence, and perseverance to overcome obstacles), in which each dimension includes 12 statements. A three Likert's scale options (always, sometimes, not applicable) was used, where (3, 2, 1) represent the value scale consecutively. Thus, the score range was between 36 and 108. The psychometric properties of this scale were verified as follows:

- Validity was ensured by the 'experts review panel' method, whom, as a group of specialized reviewers were presented with the scale to verify. Statements that obtained an agreement ratio of 80% were validated, while statements that required modification were rephrased following the panel's feedback. The correlation coefficient between each statement and the scale total score were also calculated, ranging between (0.47-0.668).
 - Reliability was calculated using Cronbach's alpha coefficient and was found at (0.814), which is statistically acceptable.
 - Confirmatory Factorial Analysis (CFA): the results of the fit statistic obtained from the CFA were as follows: AGFI = 0.82, RMSEA = 0.067, NNFI= 0.89, RMR = 0.065, and SRMR =0.067, showing that the scale has good fit values.
3. Academic motivation scale: the researchers designed this scale, listing 39 statements on a three Likert's scale options (Exactly Applicable, Applicable, and Completely Inapplicable), having a value scale of (3, 2, 1) consecutively. Thus, the score range was between 39 and 117. The psychometric properties of this scale were verified as follows:
- Validity was ensured by the 'experts review panel' method where the scale presented to a group of specialized reviewers. Statements that obtained an agreement ratio of 80% were validated, and some statements were modified according to the panel's feedback. The correlation coefficient between each statement and the scale total score were also calculated, ranging between (0.418-0.630).
 - Reliability was calculated using Cronbach's alpha coefficient and was found at (0.804), which is statistically acceptable.
 - Confirmatory Factorial Analysis (CFA): the results of the fit statistic obtained from the CFA was conducted. The fit indices obtained by CFA were $X^2 = 537.79$ ($sd = 157$, $p < .001$), $(x^2/sd) = 3.74$, RMSEA = .067, GFI = .92, NFI = .96, CFI = .95, and AGFI = .93, showing that the scale has good fit values.

Data Analysis

To determine the statistical parameters of the study, and to analyze the results, the Statistical Package in Social Sciences (SPSS) was used. The following statistical measures were implemented: the Cronbach's Alpha coefficient, standard deviations and percentages, arithmetic means, Pearson correlation coefficient, T-test for two independent samples, and one-way ANOVA test.

Means and standard deviations of the study variables (academic motivation, attitudes towards e-book use, and self-efficacy) were calculated. Analysis indicates that the mean (M) score was between 2.29 and 2.91, the standard deviation (SD) was between 0.540 and 0.701, Skewness was between 0.118 and 0.189, and Kurtosis was between 0.207 and 0.273. The examination of normality assumption was conducted through Kolmogorov-Smirnov's test. The Normality assumption can be said as met if the p value result is greater than $\alpha = 0.05$. Through SPSS, results of the normality assumption test were obtained as shown in Table 2.

Table 2. Means, standard deviations, Skewness, Kurtosis and Kolmogorov-Smirnov Coefficient of Academic Motivation, Attitudes towards e-Book Use, and Self-efficacy

Variable	M	SD	Skewness	Kurtosis	Kolmogorov-Smirnov Coefficient	p-value	Note
Academic motivation	2.42	0.701	0.125	0.207	0.763	0.521	normal
Attitudes towards e-Book Use	2.91	0.545	0.189	0.273	0.870	0.435	normal
Self-efficacy	2.29	0.540	0.118	0.267	0.856	0.482	normal

Based on Table 2 above, the p-value was between 0.435 and 0.521, which is greater than $\alpha = 0.05$ ($p>0.05$). It can be concluded that the normality assumption was met.

Findings

Hypothesis 1. There is no statistical correlation between students' attitudes towards e-book use, self-efficacy, and academic motivation.

Table 3 shows the correlation between attitudes towards e-book use, self-efficacy, and academic motivation.

Table 3. Pearson Correlation between Attitudes towards E-Book Use, Self-Efficacy and Academic Motivation

Variable	Correlation	Academic motivation	Attitudes towards e-Book Use	Self-efficacy
Academic motivation	Pearson Correlation	1	0.735 **	0.699 **
	Sig.		.000	.000
	N		196	196
Attitudes towards E-Book Use	Pearson Correlation		1	0.546 **
	Sig.			.000
	N			196
Self-efficacy	Pearson Correlation			1
	Sig.			
	N			

**. Correlation is significant at the 0.01 level.

Table 3 shows a positive significant correlation between attitudes towards e-book use, self-efficacy, and academic motivation. This finding is supported by Table 2 results above, where means are high (2.91) compared to the highest value of 3, indicating that these variables are correlated to and dependent on each other; thus, the correlation between them is positive. Hence, it can be stated that these findings prove that the first hypothesis posed in this study is rejected.

Hypothesis 2. There are no statistical differences between students' attitudes towards e-book use, self-efficacy, and academic motivation in terms of gender, college, and academic year.

Results related to the second hypothesis are presented and discussed in the following section:

- Gender

Table 4 shows the differences between male and female students' attitudes towards e-book use, self-efficacy, and academic motivation.

Table 4. T-test of the differences between male and female students' attitudes towards e-book Use, self-efficacy, and academic motivation.

Variable	Gender	N	Mean	Std. Deviation	t	df	Sig.	Effect size η^2
Academic motivation	male	96	84.5833	7.93084				
	female	100	80.3600	9.14918	3.447	194	.001	0.057
Attitudes towards E-Book Use	male	96	78.9167	7.79158				
	female	100	73.9600	9.68381	3.938	194	.000	0.074
Self-efficacy	male	96	85.4583	8.28431				
	female	100	84.1200	9.40372	1.056	194	.292	

Table 4 indicates significant differences between male and female students' attitudes towards e-book use and academic motivation. This result denotes that both male and female students hold positive perceptions towards using e-books, and are academically motivated when using them. Therefore, this finding proves that the second hypothesis is rejected concerning these variables. However, Table 3 shows no significant differences between male and female students in terms of self-efficacy. Therefore, this finding proves that the second hypothesis is accepted in this aspect. The calculated effect size value for this research question also indicated the existence of a medium effect.

- College

Table 5 shows the differences between students from both Colleges (Art and Social Sciences, and Education) in terms of their attitudes towards e-book use, self-efficacy, and academic motivation.

Table 5. T-test of the differences between Arts and Social Sciences, and Education students in terms of attitudes towards e-book use, self-efficacy and academic motivation.

Variable	College	N	Mean	Std. Deviation	t	df	Sig.
Academic motivation	Arts and Social Sciences	104	83.5769	9.12129			
	Education	92	81.1304	8.30360	1.954	194	.052
Attitudes towards E-Book Use	Arts and Social Sciences	104	77.4615	9.81076			
	Education	92	75.1739	8.17744	1.965	194	.080
Self-efficacy	Arts and Social Sciences	104	85.5385	8.71214			
	Education	92	83.9130	9.02701	1.780	194	.077

Table 5 shows no significant differences between Arts and Social Sciences students and Education students about their attitudes towards e-book use, self-efficacy, and academic motivation.

- Academic year

Table 6 shows the differences between academic year and students' attitudes towards e-book use, self-efficacy, and academic motivation.

Table 6. One-way ANOVA test of the differences between academic years and students' attitudes towards e-book use, self-efficacy, and academic motivation.

Variable		Sum of Squares	df	Mean Square	F	Sig.
Academic motivation	Between Groups	544.193	3	181.398	2.387	.070
	Within Groups	14591.807	192	75.999		
	Total	15136.000	195			
Attitudes towards E-Book Use	Between Groups	628.266	3	209.422	2.573	.055
	Within Groups	15626.264	192	81.387		
	Total	16254.531	195			
Self-efficacy	Between Groups	321.968	3	107.323	1.370	.253
	Within Groups	15040.155	192	78.334		
	Total	15362.122	195			

Table 6 indicates no significant differences between students' academic years and their attitudes towards e-book use, self-efficacy, and academic motivation. Therefore, this finding proves that the second hypothesis is accepted for this variable.

Discussion

The usefulness of e-books stimulates learners' comprehension of ideas, enables effective learning experiences, and assists them to acquire certain skills, as some researchers agree (Al-Astal & Zaydah, 2015; Collins et al., 1997; Glasgow, 1996; Short, 2010), indicating that e-books boost students' motivation to learn. E-books offer portability, searching for content and continuous access features, making their use convenient for students and thus enhancing their role in the learning process (Cassidy et al., 2012; Gundogmus, 2018; Picton, 2014).

This study investigated students' attitudes towards e-book use and its relation to their self-efficacy and academic motivation at an Omani higher education institution (SQU). Findings show that students hold positive perceptions towards their use of e-books, as means are found to be high, indicating positive correlations between the three variables. This finding can be interpreted by SQU students' tendency to use mobile devices in their learning (Al Musawi & Ammar, 2015). Further, it explains that university students seem to be more responsive about using e-books in their studies than students in Omani early school stages, whose motivation was not positively affected by e-book use (Al Musawi et al., 2017). Al Saadi et al. (2017) predict an increasing need for using e-books at SQU throughout the years. Similarly, and consistent with this finding, several researchers (Smyth & Carlin, 2012; Folb et al., 2011; McKiel, 2011; McLure & Hoseth, 2012; Rojeski, 2012; Shin, 2014) report preference of e-books over paper books among the surveyed students. Moreover, this finding corroborates with findings from Carmen et al. (2013), Jung et al. (2011), and Tsai and

Yen (2014), which indicate that self-efficacy is one of the most important individual adoption variables for e-book readers, positively affecting their use. In conclusion, the research result is significant and, thus, the first hypothesis is rejected.

Gender wise, results point out significant differences between male and female students' attitudes towards e-book use and academic motivation, revealing that both male and female students positively perceive their e-book use, and are more academically motivated when using them. This finding can be attributed to the availability of e-books to both genders on campus, and the high value they report in of using e-books as a learning motive. On the contrary, this study reveals no significant differences between male and female students in terms of their self-efficacy. This is perhaps due to the frequent use of technology by Omani male and female students which is affected by cultural factors and led to expressing similar perceptions towards e-book use behavior patterns (Al Musawi and Ammar, 2015). Therefore, the second hypothesis is partially accepted for the motivation variable, while it is not supported for the self-efficacy variable.

In terms of the college variable, findings show that students from both college groups hold similar attitudes towards using e-books. This finding can be attributed to the humanities background of both colleges, where the electronic textbooks used are similar in content and quality. Therefore, this finding proves that the second hypothesis is accepted for this variable.

Concerning the academic year variable, students at all year levels unequivocally use e-books to fulfill similar purposes including learning purposes, adoption, and increasing their motivation. This finding is consistent with findings from Khalid (2014), in that students across academic levels use e-books similarly. Therefore, this finding confirms the second hypothesis related to this variable.

Conclusion

An e-book is one of the effective educational technologies that provides learners with an interactive environment that further improves content presentation using multiple media. The findings of this study show students' willingness to use e-books as it contributes to making the subject more interesting and enjoyable, and enables learners to learn at any time and in any place. It can be logically concluded that using e-books generally point toward a positive significant correlation with students' self-efficacy as well as learning motivation. These findings substantiate previous research evidence in that students enjoy e-books, for they simplify the learning material by depicting abstract scientific concepts and simulating the reality of processes.

Suggestions

This study suggests conducting further research to probe the effectiveness of using e-books in developing problem-solving and critical thinking skills in other SQU colleges and higher education institutions. In light of the above findings, the study recommends activating e-books use in the Omani higher education system, and diverse its use across the curriculum, along with conducting training workshops on the effective use and design of e-books.

Limitations

While the study attempted to offer an understanding of how Omani students at a university level perceive e-books use, and its relation to some variables, the authors acknowledge that, more research needs to be conducted, investigating its relation to other variables that may affect e-books use. For example, other colleges, specifically in the science field, should explore e-books use on larger sample size, applying experimental research methods.

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