

The impact of using digital books on the level of motivation of teachers and students to teach and learn mathematics in elementary schools in Palestinian Arab society in Israel

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Abstract

The present study examines the impact of using digital books. Both on the effectiveness and efficiency of teachers' work in the teaching process and on students' motivation and involvement in the learning process in mathematics in elementary schools in Palestinian Arab society in Israel. Various studies have shown that using digital books to learn new content and ideas affects both the effectiveness and efficiency of teachers' work in the teaching process and the level of motivation of students and their involvement in the learning process. This issue has not been studied before among Palestinian Arab society in Israel, hence the uniqueness of this study. The case conducted using a quantitative methodology, in which 100 teachers and 270 students from elementary schools in Palestinian Arab society in the North of the country participated. The researchers used two questionnaires used to collect data pics related to the use of digital books in teaching and learning, the first of which was distributed among teachers and included four sections. The second questionnaire was distributed among the students and included six sections. The study's findings give an attitude towards using digital books and a positive contribution to the effectiveness and efficiency of the teachers' work in the teaching process. In addition, the study findings showed that the average level of motivation and involvement in the learning process among students who studied through digital books is higher than the average level of motivation and involvement in the learning process among students who did not study at all through digital books.

Keywords: Digital Book, Motivation, Mathematics

Introduction

Since the 2009-2010 school year, the Director of Science and Technology at the Ministry of Education has implemented a program to adapt the education system to the 21st century. It intends to bring an innovative pedagogy in schools while assimilating information and communication technologies (ICT) (Ministry of Education, 2012) and perceived as an approach to teaching and learning where the content and knowledge learned are relevant to the changing reality and adapted to the diversity of the students (Ministry of Education, 2014).

In recent years, the use of digital books has gradually increased in the world of books in Israel and the reading habits of Israelis (Man, 2015). The need for this use began to emerge in the 1990s in the Israeli education system, including the Arab education system in Israel. It should be noted that the digital tools in Arab education are relatively innovative compared to their use in the general Israeli education system (Mawasi and Abu Asba, 2015). Digital content and textbooks are becoming an integral part of the content infrastructure among education systems in different countries worldwide. In Israel, the first classroom experiment in teaching was conducted using tablets in 2011, and since then, the assimilation of digital books in the education system has been expanded; the level of assimilation and scope varies from one school to another (Efron and Ezekiel, 2009).

The digital book is supposed to drive the learning process and increase the motivation of both the teacher and the student. The digital platform is designed to actively increase student participation in the learning process to achieve the set learning outcomes. It also contributes to a different design of teaching activities, enabling flexible application of digital learning (Ministry of Education, 2014).

On the other hand, teachers' effectiveness and efficiency are not just a function of innovation. Some various aspects and criteria can affect the effectiveness of teachers' work. The extent to which the school adapts itself to changes in its environment as expressed in the introduction and implementation of changes. The degree of achievement of goals is expressed in the achievement of social and organizational educational goals and the cohesion and integration of system components such as teachers, students, an open climate, and an atmosphere that encourages creativity, commitment, and motivation in both teachers and students (Friedman, 1990).

Hence and in line with what has been mentioned above, there is likely to be a link between the use of digital books and teachers' work and their implications for students' level of motivation. In light of this, this type of research is essential in schools in Palestinian Arab society in Israel, in order to examine teachers' perceptions of using digital books as a teaching tool and their impact on both the contribution to the effectiveness and efficiency of teachers' work in teaching and the level of students' motivation. To examine the subject of the study, several hypotheses were established: A. a positive relationship will be found between the use of digital books and the level of motivation for learning among students. B. a positive relationship will be found between the use of digital books and student involvement in the learning process. C. There will be a

positive relationship between the use of digital books and the effectiveness and efficiency of teacher work in the teaching process.

In light of the existing research literature on the impact of using digital books on the contribution to the effectiveness and efficiency of teachers' work in the teaching process and on the level of students' motivation and involvement in the learning process. It is interesting to explore these connections in mathematics learning in Palestinian Arab society in Israel. Therefore, the questions at the heart of this study are: Does the use of digital books in elementary schools affect students' level of motivation? Does the use of digital books promote students' involvement in the learning process? Is there a difference in students' level of motivation when learning is based on the use of digital books? Does the use of digital books have an impact on the effectiveness and efficiency of the teacher's work in the teaching process? Is there an impact on teachers' attitudes impacts digital books?

This pioneering study examines the perceptions of teachers and students regarding the use of digital books and how this use affects motivation and involvement in the learning process. The importance of investigating this topic stems from various factors, including 1. Interest in the change taking place in innovative teaching methods in general and the use of digital books in particular in teaching and learning. 2. The need to examine the integration of digital books in teaching among Arabic-speaking students and examine its impact on motivation and involvement in the learning process.

Review of the Literature

Digital books

Digital Books (such as; E-Books, Electronic Books, Dynamic-book) are defined as digital objects containing text or other types of content, created to combine the traditional concept of the book with features of the electronic environment. The research literature defines *digital books* as an electronic text for reading accessible in digital coding through a computer or any other electronic device. There are two main types of digital books: the first is a digital book related to the printed version. The second is a flexible, independent digital version that can be changed, with dynamic and interactive content (Rockinson-Szapkiw et al., 2013).

Digital books combine features of the printed book such as; table of contents, page numbers, titles, also adds technological applications, such as; information search, links, dynamic text, interactive tools for working with the content, multimedia integration, and external links that expand the learning experience in the book. An advanced digital book may summon layers of the information displayed in a three-dimensional space that produces a new learning experience inaccessible to information and learning opportunities (Tanner, 2014).

In recent years, the use of digital books has gradually increased in the domain of books in Israel and the reading habits of Israelis (Man, 2015). The need for this use began to emerge in the 1990s in the Israeli education system, including the Arab education system in Israel. It should be noted that the digital tool in Arab education is relatively innovative compared to its use in the general Israeli education system (Mawasi and Abu Asba, 2015). Digital content and textbooks

are becoming an integral part of the content infrastructure among education systems in different countries worldwide. In Israel, the first classroom experiment in teaching was conducted using tablets in 2011, and since then, the assimilation of digital books in the education system has been expanded; the level of assimilation and scope varies from one school to another (Efron and Ezekiel, 2009).

The various uses of digital books can be integrated into a formal curriculum of the Ministry of Education in various subjects. Another use of digital books is to enhance the learning experience because as well as being a digital book edited in a similar way to a printed book (table of contents, number of pages and titles). It also contains various media and web-related activities (multimedia, interactive tools, and more), which increase the learner's involvement and empower him or her in thought and learning processes. The third use of digital books is the personalization of the student's learning under the teacher's guidance. It also makes it possible to control the learning process by monitoring and feedback. Finally, digital books can be used intelligently by applying contemporary learning strategies: critical thinking, higher-order thinking, collaborative learning, project-based learning, and more (Weiss, 2010; Ministry of Education, 2014). Comparing the book in the digital format with the printed book, it was found that the digital book includes textual and visual information that can be read using a stationary or mobile computer, tablet, smartphone, or a dedicated device developed for this purpose. While the printed textbook contains regular content, allows for reading text and images, and does not allow for interaction and experience (Man, 2015).

The digital book and the motivation of students to learn mathematics.

As mentioned, the digital book enriches the contents of the printed book with digital strategies and possibilities (Turel& Sanal, 2018). The informative layers on the textbook, the audiovisual components, and multimedia elements make the digital book different (in comparison to the printed book) and more interactive. Additionally, digital books usually include simulations, videos, and other electronic features, such as embedded hyperlinks, bookmarks, annotation, and text searching, that could enrich the student's learning experience (Gu, Wu & Xu, 2015; Azura, 2014). Robin (2008) states that these digital features could increase attention when presenting new ideas, which may increase students' interest, involvement, and motivation in the learning processes.

Few researchers focused on examining the effects of using the digital book on students' motivation even though much research was given to investigate different outcomes, for example, achievements, literacy acquisition, and personalized learning, relatively Among the few studies on motivation, Hakkari, Yeloglu, Tuysuz and Ilhan (2017) showed that digital books contributed to student's enjoyment and attitudes towards Chemistry. Interestingly, in the previous research, digital books were not found to affect the students' attitudes towards technology. Kao, Tsai, Liu, and Yang (2016) also showed that digital books with high interactivity – in comparison to low interactivity- highly affected students' motivation to read and comprehend a story. Aedo et al.

(2000) pointed that digital books could support students' motivation. Overall, we can see that digital books might affect motivation, but more studies are needed to explore.

Focusing on mathematics, where motivation could play a crucial role in maintaining students' learning, digital resources provided by the digital book might be of particular importance. Mathematics is considered an essential school subject, challenging for students. Therefore, researchers and educators are interested in examining how such a technology use could facilitate students' understanding (Viberg et al., 2020)—integrating digital technology in mathematics education: a Swedish case study. *Interactive Learning Environments*, 1-12., 2020) and develop their skills, for example, in problem-solving (Viberg & Mavroudi, 2018). Another focus is on enhancing non-traditional learning, such as collaborative learning (Bray & Tangney, 2017). Attention was also targeted to examine self-efficacy, interest, and enjoyment (Chao et al., 2016). Ketelhut et al. (2010) found that students who learn mathematics in the digital environment are more self-efficacious at inquiring scientifically. However, even though many educators consider technology a helpful way to spark students' interest in learning mathematics and develop greater confidence in mathematical problem solving, the evidence about the effectiveness of technology in mathematics is still sparse (Chen et al., 2016)

As is implied earlier, many researchers point to challenges and obstacles that face technology integration in mathematics. Bray & Tangney (2017) stress the difficulties of transforming the teachers' role from an instructor to facilitator. Denoél et al. (2017) emphasized the need to combine healthy technology with the curriculum and design practical learning activities (Svela et al., 2019). To sum, Drijvers (2013) concluded that the success of technology integration is mainly related to the following three factors: technology design and learning tasks, teachers' role, and the educational context.

In this research, we sought to investigate how and to which extent digital books in mathematics lessons could affect the students' learning, achievements, and motivation. We also sought to explore ways that teachers could adopt digital books, which may affect their work effectiveness.

Effectiveness and efficiency in teachers' work

'Effectiveness' is the ability to achieve the desired goal without wasting time or energy, and it brings resources for fruition in the old environment and allows for better placement in the new environment (Efron and Ezekiel, 2009). Some various principles and criteria can indicate effectiveness, sometimes the choice of criterion indicates certain theoretical perceptions, and sometimes it is performed according to the convenience of operational measurements such as performance and innovation. The issue of effectiveness and efficiency and their measurement consists of several dimensions: the extent to which the school adapts itself to changes in its environment as expressed in the introduction and implementation of changes. The degree of achievement of goals is expressed in the achievement of social, organizational, and educational goals and the cohesion and integration of system components such as teachers, students, an open climate, and an atmosphere that encourages creativity, commitment, and motivation in both teachers and students (Friedman, 1990).

In the professional literature dealing with teaching effectiveness, one can find different definitions, which stem from the different meanings given to the concept of teaching and its purposes by the various researchers (Ferreira and Taurus, 1990). According to Davidovich and Milgram (2010), effective and efficient teaching is also related to lesson clarity, learning diversity, teacher-oriented orientation, commitment to the learning process, and student success rate, all of which are the teacher's responsibility. Efficiency and effectiveness characteristics are related to efficient use of time, good interactions with students, satisfaction with positive feedback, and support for students.

In Biddle's view, to define teacher outputs, it is necessary to define according to which purposes his teaching should be evaluated (Biddle, 1964). Other studies dealing with the effectiveness of teaching indicate that the main criterion for characterizing a teacher's practical teaching is the academic achievement of his students (Rosenshine and Stevens, 1984).

In this study, we are interested in estimating the impact that digital books can have on the effectiveness and efficiency of the teacher's work.

Methodology

The research method

The study was conducted according to the quantitative method because the premise of the quantitative paradigm is that the best way to understand phenomena is through a broad sample and numerical measurement.

The sample

The sampling of the participants in the study was done using non-probability sampling by using the randomized method due to the difficulty in locating teachers and students who can participate in this type of study. The current study involved mathematics teachers in fifth and sixth grades and elementary school students in Palestinian Arab society in Israel.

(1) The demographic characteristics of teachers

The current study involved 100 teachers: 50 male teachers (50%) and 50 female teachers (50%). The age range was between 30-50 years, so the average age was 37.50 years. The average seniority of the teachers who participated in the study is 15.51 years. 60% of the teachers who participated in the study have more than a year of experience using digital books.

(2) The demographic characteristics of the students

The current study involved 270 students: 140 boys and 130 girls. The distribution of research participants by grade and gender is shown in Table 1.

Table 1: Distribution of research participants by grade and gender (N = 135)

Grade	Gender				
	Girls		Boys		N
	%	N	%	N	

5th	17.77	48	21.48	58	(39.25%) 106
6th	30.38	82	30.37	82	(60.74%) 164
Total	48.15	130	51.85	140	270

Research tool

Two research tools were used: the first was a questionnaire distributed among teachers, and the second was a questionnaire distributed among students on topics related to the use of digital books in teaching. Based on (Brislin 1970).

(1) The teachers' questionnaire

The questionnaire was made up of four parts. The different parts of the questionnaire were designed to measure: the demographic variables of the respondents, the attitudes of the teachers towards the use of digital books, the degree of use of digital books, and the level of priority of the teacher to use digital books.

The first part of the questionnaire - the demographic variables

The first part of the questionnaire measured the background variables of the study participants. This component included the following variables: gender, age, classes in which the teacher teaches, the teacher's roles, years of teaching experience, do you use a digital book today?

The second part of the questionnaire - the teachers' attitudes towards the use of digital books

This part of the questionnaire examines the teachers' attitudes towards using digital books and consists of 27 statements that describe the teachers' attitudes towards the use of digital books. The responses were rated according to the Likert scale from 1 to 4 when 1- do not agree at all, while four strongly agree. The part was developed by Schwimmer and Guttman (2006). Questionnaire developers reported high Cronbach alpha values ($\alpha = 0.87$), indicating high internal reliability.

The third part of the questionnaire - the effect of using digital books on the teaching process

This part of the questionnaire consists of six statements that examine the extent to which the use of digital books affects five factors: the degree of the teacher's interest in what is learned, the degree of discipline in class during lessons, the degree of student success, the degree of students' willingness to invest in their studies. Responses were rated according to the Likert scale from 1 to 5, with 1- not improving at all, while five improves significantly. This section of the questionnaire was developed by Schwimmer and Guttman (2006). Questionnaire developers reported high Cronbach alpha values ($\alpha = 0.82$), indicating high internal reliability.

The fourth part of the questionnaire - the degree of preference for the use of digital books

Respondents were asked to rate using a Likert scale from 1 (much more using regular books) to 5 (much more using digital books) to answer the following question: Do you prefer to teach through digital books or regular books?

(2) The student questionnaire

The questionnaire distributed among the students included six parts. Below are the different parts of the questionnaire.

The first part - demographic variables

The variables were defined operatively (gender, grade)

The second part - the degree of use of a digital book

This part of the questionnaire measures the degree of use of a digital book, using three questions:

1. Are you studying through a digital book this year?
2. How many times have you been active with the digital book during the last week?
3. Do you participate more actively in a class with a digital book than a regular class book?

The answer to the first question was measured using five possibilities: 1. yes, 2. no, 3. do not know, 4. refuse, 5. irrelevant. At the same time, the answer to the second question was measured according to the Likert scale from 1 (not at all) to 4 (four times or more). In the context of the third question, the respondent was asked to indicate one of the following three possibilities: 1. Yes, 2. Same thing, 3. No.

The third part of the questionnaire - the level of motivation for learning

A motivation questionnaire constructed based on two existing questionnaires by Smith, Garcia, and Harter was used (Smith, Garcia, 1987; Harter, 1981). This part of the questionnaire includes eight items. The questionnaire is a self-report, which includes 5-1 rating scales, with 1 = very little and five = very much. Questionnaire developers reported high internal consistency measured using Cronbach's alpha value ($\alpha = 0.77$).

The fourth part of the questionnaire - the contribution of the use of digital books to the learning process

This part of the questionnaire examines the degree of contribution of digital books and consists of 25 statements that describe the students' attitudes towards the contribution of digital books. The responses were rated according to the Likert scale from 1 to 4 when 1- do not agree at all, while four strongly agree. The questionnaire was developed by Schwimmer and Guttman (2006). Questionnaire developers reported high Cronbach alpha values ($\alpha = 0.87$), indicating high internal reliability.

The fifth part of the questionnaire - the effect of using digital books

This part of the questionnaire consists of six strands that examine the extent to which the use of digital books affects five factors: the student's interest in what is learned, the degree of discipline in class during lessons, the degree of academic success, the degree of willingness to invest in studies and the ability to understand the material studied. Respondents were asked to rate the position on the Likert scale from 1 not improving at all to 5 improving significantly. This section of the questionnaire was developed by Schweimer and Guttman (2006). Questionnaire developers reported high Cronbach alpha values ($\alpha = 0.82$), indicating high internal reliability.

The sixth part of the questionnaire - the degree of preference for the use of digital books

Respondents were asked to rate using a Likert scale from 1 (much more using regular books) to 5 (much more using digital books) to answer the following question: Do you prefer to study through digital books or regular books?

Findings

Calculation of averages and standard deviations in the student questionnaire

Details of the averages, standard deviations for the research variables in the student questionnaire are shown in Table 2.

Table 2: Averages and standard deviations of the study variables by students

Variable	scale	Standard deviation	Average
Extent of use of digital books	1- 5	0.80	3.08
Level of motivation for learning	1- 5	0.92	3.52
The contribution of the use of digital books to the learning process	1- 4	1.01	3.25
The effect of using digital books	1-5	0.87	3.55
The degree of preference for the use of digital books	1-5	0.91	3.41

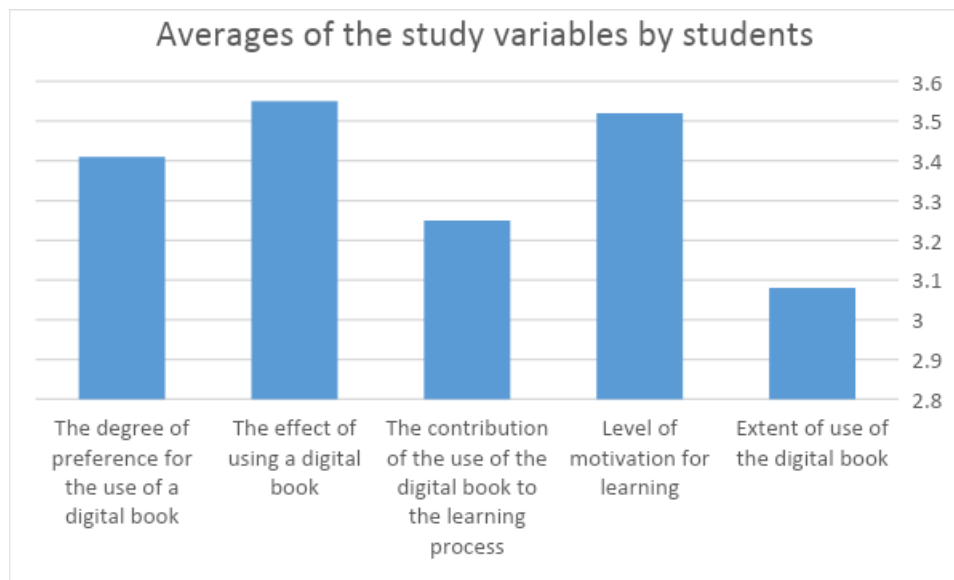


Figure 1: Graph of averages of the study variables by students

Table (2) shows that the averages of all study variables reported by the students who participated in the study are high ($M = 3.36$, $SD = 0.90$). The table shows that the degree of use of digital books is high ($M = 3.08$, $SD = 0.80$). In addition, the table shows that the mean motivation level of the students who participated in the study is high ($M = 3.52$, $SD = 0.92$). Also, the table shows that the degree of student involvement in the learning process is high ($M = 3.25$, $SD = 1.01$).

Calculation of averages and standard deviations in the teachers' questionnaire

The list of averages, standard deviations for the research variables in the teachers' questionnaire is shown in Table 3.

Table 3: Averages and standard deviations of research variables by teachers

Variable	Scale	Standard deviation	Average
Teachers' attitudes towards the use of digital books	1- 5	0.50	3.28
The degree of preference for the use of digital books	1- 5	0.52	3.02
The effect of using digital books	1- 4	0.36	3.65

80% of teachers who have expressed a positive attitude towards the use of digital books do indeed use digital books in their classes.

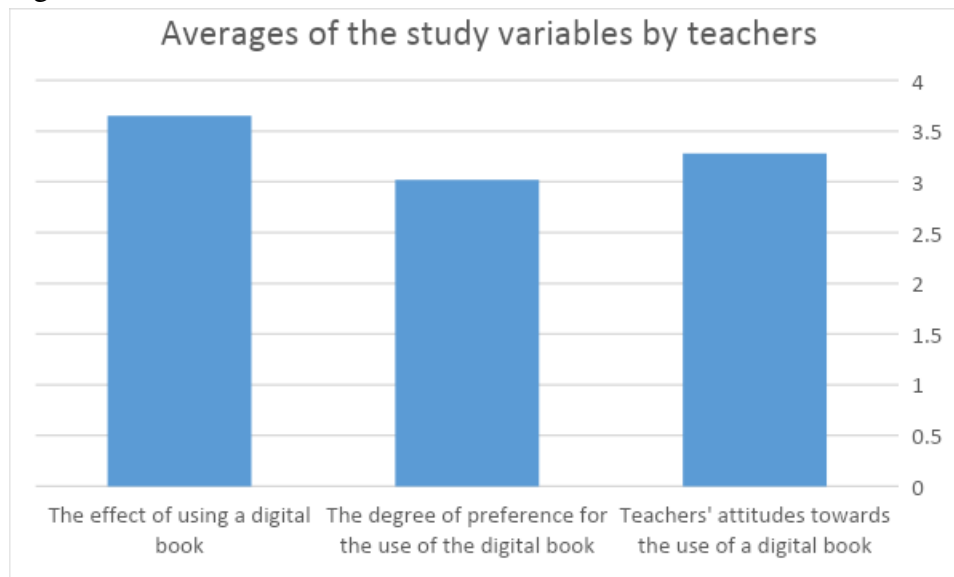


Figure 2: Mean graph of the study variables by teachers

Table (3) shows that the average of teachers' attitudes towards using digital books is high ($M = 3.28$, $SD = 0.50$), meaning that the teachers who participated in the study express a very positive attitude towards the use of digital books.

The table shows that the same attitudes are also translated into action in the field so that the average degree of preference for using a digital book is high ($M = 3.02$, $SD = 0.52$), and all this comes from the teachers' belief that using the digital book can contribute to their work efficiency. ($M = 3.65$, $SD = 0.36$) of using a digital book on the effectiveness of teacher work.

Pearson correlation coefficient for Examining Research Hypotheses

In the present study, three hypotheses were tested. The hypotheses were tested using the Pearson correlation coefficient. The findings of the examination of the hypotheses will be presented below in order:

1. The first research hypothesis was: A positive relationship will be found between digital books and the level of motivation for learning among students.

Table (4) shows the Pearson correlation values between the degree of use of digital books and the level of motivation for learning among students.

Table 4: Pearson correlation values between the degree of use of digital books and the level of motivation for learning among students

variable	Extent of use of digital books
Level of motivation for learning among students	***0.35
Student involvement in the learning process	***0.42

$p^{**} < .01$, $p^{***} < 0.001$

The table shows a statistically significant positive relationship between the degree of use of digital books and the level of motivation for learning among students ($r = 0.35$, $p < 0.001$) according to the study participants' perception. As the degree of use of digital books increases, so does the level of motivation to learn among students. Accordingly, the first research hypothesis was confirmed.

2. The second research hypothesis was: A positive relationship will be found between digital books and student involvement in the learning process.

Based on the findings of the table above, it can be concluded that there is a statistically significant positive relationship between the level of student involvement in the learning process and the degree of use of digital books ($r = 0.42$, $p < 0.001$). The higher the level of use of digital books, the higher the level of student involvement in the learning process, and the conclusion is that the second research hypothesis was confirmed.

3. The third research hypothesis was: A positive relationship will be found between digital books and the effectiveness and efficiency of the teacher's work in the teaching process.

Table (5) presents the Pearson correlation values between the degree of use of digital books and the effectiveness and efficiency of the teacher's work in the teaching process.

Table 5: Pearson Correlation Values between the degree of use of digital books and the effectiveness and efficiency of teacher work in the teaching process.

variable	Extent of use of digital books
Effectiveness and efficiency of teacher work in the teaching process	***0.52

$P^{*} < .05$, $P^{**} < .01$, $P^{***} < .001$

The table shows that the teachers who participated in the study believe a statistically significant positive relationship between the degree of use of digital books and the degree of effectiveness and efficiency of the teacher's work in the teaching process ($r = 0.52$, $p < 0.001$). Teachers

believe that the more teachers use digital books, the higher the effectiveness and efficiency of the teacher's work in the teaching process.

Regression calculations to examine research questions

1. The first research question was: Does the use of a digital book in elementary schools affect students' level of motivation?

In order to examine the level of impact of digital book use on students' level of motivation, a simple regression analysis was performed. The results of the regression analysis are shown in Table 6.

Table 6: Regression analysis results

Variable predictor	Explained variance (R^2)	t	β	B
Extent of use of a digital book	0.24	***2.98	0.87	2.12

$P^* < .05$, $P^{**} < .01$, $P^{***} < .001$

The regression analysis shows that there is an effect on the degree of use of digital books on the level of motivation of the students (2.98, $p < 0.001 = (F(1, 269))$. This shows that an increase in one standard deviation in the level of the use of digital books will lead to an increase of 0.87 units in the level of motivation of the students ($\beta = .87$), i.e., there is a positive effect of the degree of use of digital books.

2. The second research question was: Does using a digital book promote student involvement in the learning process?

In order to answer the second question, a simple regression was used, where the predictive variable is "the degree of use of a digital book" and the predicted variable is "the degree of student involvement in the learning process." Table (7) shows the simple regression findings.

Table 7: Simple regression

Variable predictor	Explained variance (R^2)	t	β	B
Extent of use of a digital book	28	***3.69	0.80	2.12

$P^* < .05$, $P^{**} < .01$, $P^{***} < .001$

Table 7 shows that there is a positive effect of learning the use of digital books on the level of student involvement in the learning process (3.69, $p < 0.001 = (F(1, 269))$). The variable use of a digital book explained 28% of the variance in the level of student involvement in the learning process. In addition, the table shows that an increase in one standard deviation in the level of the degree of use of digital books will lead to an increase of 0.80 units in the level of motivation of the students ($\beta = .80$). There is a positive effect of learning the digital book on student involvement in the learning process.

3. The third research question was: Is there a difference in the level of motivation of students when learning is based on the use of digital books?

To test this question, a t-test was conducted for independent samples between students studying with the help of digital books and students studying in the regular book. The findings are presented in Table 8.

Table 8: T-test for independent samples between students studying in a regular book versus students studying using a digital book

	T (269)	Study in a regular book (Did not study at all in a digital book) (N=120)	Study in a digital book (N=150)
average	***5.21	3.01	3.92
Standard deviation		0.08	0.10

$P^* < .05$, $P^{**} < .01$, $P^{***} < .001$

The table findings indicate a significant difference in the mean of the level of motivation between students who studied mathematics through a digital book and those who did not study at all through a digital book ($t(269) = 5.21$, $p < 0.001$). The average level of motivation among the students who studied through a digital book is higher than the average level of motivation among the students who did not study through a digital book.

4. The fourth research question was: Is there an impact of using a digital book on the effectiveness and efficiency of teacher work in the teaching process?

In order to examine whether there is an effect of using a digital book on the effectiveness and efficiency of the teacher's work in the teaching process, a simple regression analysis was performed. The results of the regression analysis are shown in Table (9).

Table 9: Regression Analysis Results

Variable predictor	Explained variance (R^2)	t	β	B
Extent of use of a digital book	0.18	***4.89	0.65	2.12

$P^* < .05$, $P^{**} < .01$, $P^{***} < .001$

The analysis of the regression shows that there is an effect of the degree of use of digital books on the effectiveness and efficiency of the teacher's work in the teaching process (4.89, $p < 0.001$ = $F(1, 269)$). The variable use of a digital book was able to explain 18% of the variability in the effectiveness and efficiency of teacher work in the teaching process. In addition, the Table shows that an increase in one standard deviation in the level of the degree of use of the digital-book will lead to an increase of 0.65 units in the effectiveness and efficiency of the teacher's work in the teaching process ($\beta = .65$). There is a positive effect of the degree of use of digital-book on the effectiveness and efficiency of the teacher's work in the teaching process.

5. The fifth research question was: Is there an impact on teachers' attitudes about the degree of use of the digital-book?

To examine whether there is an influence on the teachers' attitudes about the degree of use of the digital-book, a simple regression analysis was performed. The results of the regression analysis are shown in Table (10).

Table 10: Regression analysis results

Variable predictor	Explained variance (R^2)	t	β	B
Extent of use of a digital book	0.75	***5.98	0.85	2.12

$P^* < .05$, $P^{**} < .01$, $P^{***} < .001$

The analysis of the regression shows that there is an effect on the teachers' attitudes towards the degree of use of the digital-book (5.98, $p < 0.001 = (F(1, 269))$). A single standard deviation in the level of teachers' attitudes towards the degree of use of the digital-book will lead to an increase of 0.85 units in the degree of use of the digital book ($\beta = .85$), i.e., there is a positive effect on teachers' attitudes towards the degree of use of the digital-book.

Summary of findings: There is a positive effect of learning the use of the digital book both on the level of student motivation for learning, the degree of student involvement in the learning process, and the level of effectiveness and efficiency of teacher work. Therefore, based on the findings, a model can be proposed for the study shown in Figure (3).

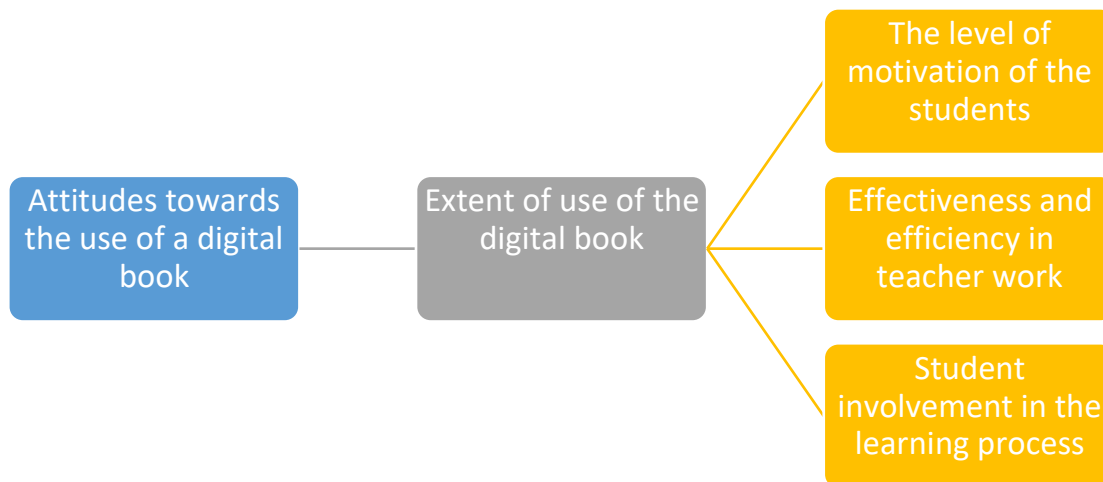


Figure 3: Summary of the study findings

Discussion

The study's findings showed that the teachers who participated in the study expressed a very positive attitude towards using digital books, so that there is a positive effect on the teachers' attitudes about the degree of use of digital books. These findings are consistent with Weiss and

Bitan's (2017) findings, who found a positive relationship between teaching through digital tools and student achievement. Their research found that teachers perceive digital tools such as the computer as essential in the modern age for success.

In addition, the findings showed that there is a positive effect of the degree of the use of digital books on the level of motivation of the students according to the perception of the students who participated in the study. Thus, the research hypothesis that a positive relationship exists between the degree of use of digital books and the motivation among students has been confirmed. These findings are consistent with the findings of Robin's research (Robin, 2008), which showed that using digital books to present content and increase students' attention when presenting new ideas may increase students' interest, involvement, and motivation in the learning process.

The findings also showed that the average level of motivation among students who studied through digital books is higher than the average level of motivation among students who did not study through digital books. This relationship is not directly supported in previous studies. However, findings from previous studies have explained this by presenting the contribution of digital books in teaching among students, such as: the study by Segal-Drori, Koret, and Shamir (2010), who found that e-book activity improved children in phonological awareness, the ability to recognize written words, the ability to read fluently and accurately, and also the ability of children to retell the story presented to them and their knowledge of the pattern. In addition, according to Mann (2015), digital learning is dynamic and relevant, enables rich media accessibility, and provides an interactive experience for the learner that encourages active reading that includes adding highlights, links, the possibility of collaborative reading, and more. Therefore, the findings regarding attitudes toward digital books versus printed ones indicate the following benefits regarding digital books: connectivity, data multiplicity, linear, custom, wide distribution (Weiss and Bitan, 2017).

Furthermore, the findings confirmed the research hypothesis that there is a positive relationship between the use of a digital book and student involvement in the learning process so that there is a positive effect of learning the use of the digital-book on the level of student involvement in the learning process. As an explanation of the student's involvement in the learning process, previous studies have referred to the study of Abu Qashq, Myodoser, and Oren (2008), who mentioned in the context of an e-book, which invites active, dynamic, and active interaction between the learner and the text, which improves the learner's knowledge. Using these tools enhances the reader's ability to process, interpret, summarize and build his knowledge (Ben Har, 2011).

Moreover, the teacher teaches through digital tools, the more independent the student becomes and the more easily able to acquire the knowledge. Therefore, digital textbooks are designed to provide materials and present opportunities for the students they have studied by making the goals and ideals of the curriculum more visible and understandable to them (Yerushalmy, 2016). Nevertheless, this finding contradicts the study of Ben Har (2011). He found that there is a danger of profound change beyond the digital learning environment that can lead to

"technocratization" of education, impairing student creativity and criticism and reducing teacher-student interaction.

In addition, the findings showed that there is a positive effect of the degree of use of digital books on the effectiveness and efficiency of the teacher's work in the teaching process. These findings are explained in detail by the study of Weiss and Bitan (2017), which summarizes the benefits and emphasizes that the literature is replete with insights into the benefits of the new medium over the printed, from low degrees and ease of carrying, to the ability of digital textbooks to assist students in complex academic assignments. Other studies point to the benefit of encouraging active reading within the digital book, such as adding highlights, links, the possibility of collaborative reading, and more. The findings regarding attitudes toward digital books versus printed ones indicate the following benefits regarding digital books: connectivity, the multiplicity of data, linear, customized, widespread.

Conclusions and recommendations

This study shows that using a digital book increases students' motivation and increases the efficiency and effectiveness of the teaching process among teachers. Hence there is a crucial importance in couraging the teacher to invest more in choosing the appropriate lessons for the digital book. Digital book-based learning has the potential for learning to research and promote students' independent learning, compared to traditional learning, where the student absorbs the information from the printed book passively without significant intervention. It should be noted that the use of a digital book during lessons requires time and organization. Therefore, intelligent use of the digital-book requires proper preparation that includes providing explanations and guidance from the teacher and solving exercises.

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