

# The Use of Tablets in Elementary Education Attitudes and Reflections of Teachers

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**Abstract** – The paper presents the results of a research aimed at examining the attitudes and reflections of elementary school teachers regarding the use of tablets in the educational process. 447 respondents participated in the research and a survey questionnaire compiled for the purposes of this research, which was used to collect data.

The research results show that:

- the use of tablets in teaching contributes to student success;
- the tablet in teaching cannot replace classic textbooks;
- the responses of the study participants, due to the high values of the chi-squares, suggest that they are distributed significantly differently.

**Keywords** – teaching, elementary education, parent, tablet, student, teacher.

## 1. Introduction

The situation around COVID-19 has accelerated the information digitalization of schools. Due to this situation, all schools have “accepted” technology, so teachers are required to be educated in order to be able to properly select and use digital tools and e-learning systems.

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According to authors [1] distance learning should be exclusively an alternative in case of crisis situations, such as pandemics, earthquakes, wars and etc. Teachers should not have a stressful approach to their work and the current situation has shown that we are still not fully ready for this form of teaching.

With the advent of computers, tablets, Power Point and other digital aids, “everything around us” has taken on a more interesting and different form of learning and teaching. Digital technology has emerged in a variety of life areas, including education and personal use [2]. Technology serves as a complement to classic textbooks. The job of a teacher is becoming more and more demanding. But in today's world, not using technology in teaching is unthinkable. In the current situation, teachers are trying to find solutions in which they can apply technology in their work [3]. The goal of teachers is for their students to acquire knowledge and skills, but also habits that are crucial for their progress and lay the foundations for further learning. It is known that students in primary school learn most easily by observing objects and examples from the immediate environment and the real world [4]. If the learning content is presented to the students in a way that is unclear and uninteresting to them, they will not be able to successfully adopt it. Teaching can be a lot of fun if teachers, who know their class best, present the learning content in a new and more creative way, more interesting to students. That is why teachers, in addition to traditional teaching, are increasingly using digital and innovative educational forms of work so that students get all the necessary knowledge and have fun along the way.

Learning and teaching are two sides of a single process that are interdependent, intertwined, mutually supportive and complementary. Characteristics of modern teaching are the organization of learning that affects the development of cognitive, organizational and intellectual abilities of students. One of the key tasks of modern teaching is the discovery and acquisition of knowledge in a way that makes an overall and meaningful educational process. This can be achieved only if students use the process of cognition as the discovery

and adoption of scientific and theoretical thinking that is necessary to connect knowledge into a complete system [5].

Thus, modern teaching is the introduction of students to the “connection of the world”. According to authors [6], new approaches in the educational process i.e. in teaching, put students in the position of independent researchers using available sources of information. Therefore, the necessity of information and media literacy has emerged in support of new learning and teaching strategies. Students who manage their learning successfully choose and apply a variety of strategies in solving problem situations. They begin their learning with important assumptions about how they understand the environment or situation they are learning about, as well as knowledge that helps them share their experience. Quality teaching is one in which the conditions are created for the reorganization of the student’s personal understanding of the content based on reflection. In such learning, the student uses certain data as examples for further analysis and proof of his opinions, where he connects, generalizes and conceptualizes his own knowledge in relation to the previous one [7].

We have to consider the fact that we live in time where one of the prerequisites is the digital literacy of the individual, which means [8] that a person has the ability to find, analyze, (re) evaluate, use and create content using technology and the Internet. Furthermore, digital literacy and digital communication include knowledge of hardware and software solutions and the development of skills that include collaboration and communication in the online environment [9].

Peria [10] points out that in its relationship with digital technology, school emphasizes the polarization between unconditional blind rejections and “dangerous” optimism in ICT’s alleged ability to promote and automatically detect change by mere presence in classrooms. Such attitudes have not helped the school to take on its role as an educational institution and to manage and evaluate the encounter with technology that, with increasing pressure, has become part of the “didactic offer”. “That is why it is important that we immediately start to pedagogically and methodically design materials which will be suitable for teaching and through which young people will learn for the future based on information and communication technologies [11]. New media, new information and communication technology, miniaturization of mobile devices, availability of information “in the moment”, “all in one” devices are present in almost all generations [12].

Based on the views of authors [13], it can be concluded that information and communication technology can be applied anywhere and anytime,

from different places, using different digital media, facilitate and improve the dynamics of teaching. They can facilitate the overall learning process and interaction between people.

We are in an era of great digital revolution that imposes more and more modern ways of learning and teaching, communication and business. In the process of education, elementary schools are increasingly using digital textbooks, which are a serious competition to the printed, traditional textbook. However, it should be borne in mind that everything that appears on the screen of a tablet or other digital medium is not always didactically adapted to students for independent learning. This places special emphasis on the teacher and his preparation for new, modern ways of teaching as well as roles in the teaching process [14].

Electronic or e-book is an electronic or digital equivalent of a printed book. The overall content of the printed book is technologically adaptable to easy transfer via CD, DVD or USB. It is also possible to transfer via an online platform where the desired content for learning and reading is downloaded [14]. Internet has become [11] a motivation for pupils and students because it has unlimited potential and thus satisfies all or to a large extent their natural curiosity and desire for knowledge.

With proper and controlled use, the Internet has proven to be an exceptional tool in the process of learning and teaching, but also in science.

In the process of upbringing and education, teachers use computer technology and other innovative educational aids to present teaching content in a more interesting and creative way. In reality, there are almost no teaching contents that could not be shown to students and processed using computers [17].

When we talk about learning and teaching, we have to certainly think of students and develop divergent thinking in them. Divergent thinking “is a combination of originality, flexibility and sensitivity of the spirit to ideas, where divergent thinking allows both teacher and student to rise above the usual and molded thoughts and actions and seek their own ways to solve problems [18]”.

Also, when using technology, the teacher must be creative enough to create the conditions for students to think divergently and design creative attitudes.

## 2. Research Methodology

The aim of the research was to examine the attitudes and reflections of elementary school teachers regarding the use of tablets in the educational process.

The research was conducted during 2021. A measuring instrument compiled for the purposes of this research was used in the research. It consisted of

two independent and nine dependent variables on which the research participants expressed their opinions. A Likert-type assessment scale was offered for each dependent variable.

The results obtained from the research were processed using IBM SPSS Statistics 21.

The research sample consisted of 447 elementary school teachers: 146 or 32.7% were upper grades teachers and 301 (67.3%) were classroom teachers. The characteristics of the sample with regard to years of work experience are shown in Table 1. It can be seen that most respondents are in the range of 13 to 26 years of work experience, almost one fifth, i.e. 24.8%; the least of them are in the interval of more than 33 years: 3.4%.

Table 1. Characteristics of the sample with regard to years of work experience

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid less than 5 years	87	19.5	19.5	19.5
Valid from 5 to 12 years	109	24.4	24.4	43.8
Valid from 13 to 19 years	111	24.8	24.8	68.7
Valid from 20 to 26 years	63	14.1	14.1	82.8
Valid from 27 to 33 years	62	13.9	13.9	96.6
Valid more than 33 years	15	3.4	3.4	100.0
Total	447	100.0	100.0	

### 2.1. Research Results

The use of tablets in the teaching process is a very interesting topic, so we approached it with special interest and expectations.

Table 2. Children should not use the tablet as much in general as part of modern teaching technology

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid I don't agree at all	29	6.5	6.5	6.5
Valid I disagree	30	6.7	6.7	13.2
Valid I can't decide	141	31.5	31.5	44.7
Valid I agree	121	27.1	27.1	71.8
Valid I totally agree	126	28.2	28.2	100.0
Total	447	100.0	100.0	

$M = 3.64$ ;  $SD = 1.149$   
 $\chi^2 = 136.210^a$ ;  $df = 4$ ; *Asymp. Sig.* = .000.  
 a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 89.4.

The first item we gave to the participants of the research to express their opinion on was: *Children should not use the tablet as much in general as part of modern teaching technology*. The results of the respondents' answers are shown in Table 2.

Table 2 shows that almost one third of the respondents, 31.5% of them, *could not decide* on the set item; 28.2% of respondents *fully agree* with the particle, while 13.2% *fully disagree* with the item (6.5%) or *disagree* (6.7%).

The arithmetic mean is 3.64, while the standard deviation is 1.149. The size of the obtained chi-square ( $\chi^2 = 136.210$ ,  $df = 4$  and *Sig.* = .000) indicates that the answers of the research participants were significantly differently distributed.

Table 3. It is good to know how to use a tablet in the teaching process

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid I disagree	3	.7	.7	.7
Valid I can't decide	34	7.6	7.6	8.3
Valid I agree	122	27.3	27.3	35.6
Valid I totally agree	288	64.4	64.4	100.0
Total	447	100.0	100.0	

$M = 4.55$ ;  $SD = .664$   
 $\chi^2 = 438.843^a$ ;  $df = 3$ ; *Asymp. Sig.* = .000.  
 a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 111.8.

*It is good to know how to use a tablet in the teaching process* was the next item on which the research participants expressed their opinion. The results are shown in Table 3. It can be noticed that none of the respondents opted for the option *I fully disagree*, while only .7% of them stated that they *do not agree* with the set item. The vast majority of research participants, 91.7%, *agree* with the set item (27.3%) or *fully agree* (64.4%). This distribution of responses results in a very high arithmetic mean ( $M = 4.55$ ), followed by a standard deviation of  $SD = .664$ . The high chi-square ( $\chi^2 = 438,843$ ) shows that the answers of the respondents are significantly differently distributed.

Table 4. I consider myself computer literate

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid I don't agree at all	9	2.0	2.0	2.0
Valid I disagree	76	17.0	17.0	19.0
Valid I can't decide	208	46.5	46.5	65.5
Valid I agree	112	25.1	25.1	90.6
Valid I totally agree	42	9.4	9.4	100.0

Total	447	100.0	100.0
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$M = 3.23; SD = .909$   
 $\chi^2 = 262.497^a; df = 4; Asymp. Sig. = .000.$   
 a. 0 cells (0.0%) have expected frequencies less than 5.  
 The minimum expected cell frequency is 89.4.

Respondents' answers regarding the item *I consider myself computer literate* are shown in Table 4. It can be seen that almost half of the respondents (46.5%) could not decide on the set item. 19.0% of research participants fully disagree with the set item (2.0%), or disagree (17.0%), while 34.5% agree with the item (25.1%), or fully agree (9.4%). The chi-square is very high ( $\chi^2 = 262,497$ ), which means that the answers of the respondents are statistically significantly differently distributed. The arithmetic mean is  $M = 3.23$ , and the standard deviation is  $SD = .909$ .

The fourth item on which the respondents expressed their views and thoughts was: *I believe that the tablet can completely replace the classic textbooks*. The obtained data are shown in Table 5. As many as 86.4% of respondents believe that the tablet in teaching can completely replace the classic textbooks, while 13.0% could not decide on this item. Only .7% of them disagree with the set item. In this item, too, due to the high chi-square ( $\chi^2 = 250,119$ ), the answers of the respondents were statistically significantly differently distributed.

Table 5. *I believe that the tablet can completely replace the classic textbooks*

	Frequency	Percent	Valid Percent	Cumulative Percent
I disagree	3	.7	.7	.7
I can't decide	58	13.0	13.0	13.6
I agree	197	44.1	44.1	57.7
I totally agree	189	42.3	42.3	100.0
Total	447	100.0	100.0	

$M = 4.28; SD = .709$   
 $\chi^2 = 250.119^a; df = 3; Asymp. Sig. = .000.$   
 a. 0 cells (0.0%) have expected frequencies less than 5.  
 The minimum expected cell frequency is 111.8.

The next item on which the respondents expressed their views was related to: *I believe that children memorize contents better when they use a tablet while learning*. The obtained data are shown in Table 6.

Table 6. *I believe that children memorize contents better when they use a tablet while learning*

	Frequency	Percent	Valid Percent	Cumulative Percent
I don't agree at all	226	50.6	50.6	50.6
I disagree	109	24.4	24.4	74.9
I can't decide	62	13.9	13.9	88.8
I agree	30	6.7	6.7	95.5
I totally agree	20	4.5	4.5	100.0
Total	447	100.0	100.0	

$M = 1.90; SD = 1.144$   
 $\chi^2 = 314.756^a; df = 4; Asymp. Sig. = .000.$   
 a. 0 cells (0.0%) have expected frequencies less than 5.  
 The minimum expected cell frequency is 89.4.

Table 6 shows that 3/4 of the respondents fully disagree with the set item (50.6%) or disagree (24.4%), while only 11.2% of them agree with the particle (6.7%) or fully agree (4.5%). This is the reason for the low arithmetic mean: it is  $M = 1.90$ , with the standard deviation  $SD = 1.144$ . Even with this item, the obtained value of the chi-square is very high, which means that the answers of the respondents are statistically significantly different.

*It is more fun for children to learn with tablets* is the next item on which the participants of the research expressed their views and thoughts. The obtained data are shown in Table 7.

Table 7. *It is more fun for children to learn with tablets*

	Frequency	Percent	Valid Percent	Cumulative Percent
I don't agree at all	90	20.1	20.1	20.1
I disagree	101	22.6	22.6	42.7
I can't decide	193	43.2	43.2	85.9
I agree	50	11.2	11.2	97.1
I totally agree	13	2.9	2.9	100.0
Total	447	100.0	100.0	

$M = 2.54; SD = 1.025$   
 $\chi^2 = 204.219^a; df = 4; Asymp. Sig. = .000.$   
 a. 0 cells (0.0%) have expected frequencies less than 5.  
 The minimum expected cell frequency is 89.4.

Table 7 shows that only 14.1% of respondents were positive about the said item: 11.2% agree, and 2.9% of them fully agree with the set item. Almost half of the respondents (43.2%) could not decide, while 42.7% of them fully disagree with the set item (20.1%), or disagree (22.6%). The value of the chi-square is  $\chi^2 = 204,219$ ; therefore, the responses of the participants were statistically significantly different.

Table 8 shows the results related to the item: *In the teaching process, it is easier to teach using tablets.*

Table 8. *In the teaching process, it is easier to teach using tablets*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I don't agree at all	10	2.2	2.2	2.2
	I disagree	38	8.5	8.5	10.7
	I can't decide	171	38.3	38.3	49.0
	I agree	159	35.6	35.6	84.6
	I totally agree	69	15.4	15.4	100.0
	Total	447	100.0	100.0	

$M = 3.53$ ;  $SD = .929$   
 $\chi^2 = 233.391^a$ ;  $df = 4$ ; *Asymp. Sig.* = .000.  
 a. 0 cells (0.0%) have expected frequencies less than 5.  
 The minimum expected cell frequency is 89.4.

It can be seen (Table 8) that as many as 38.3% of respondents *could not decide* on the set item; only 10.7% of them *fully disagree* with the set item (2.2%), or *disagree* (8.5%). More than half (51.0% of them) of the research participants are of the opinion that it is easier to teach in the teaching process using tablets: 35.6% of respondents *agree* with the defined item, i.e. 15.4% of them *fully agree*.

With this item the arithmetic mean is  $M = 3.53$ , with the standard deviation  $SD = .929$ .

The obtained chi-square ( $\chi^2 = 233.391$ ;  $df = 4$ ; *Asymp. Sig.* = .000) indicates that the answers of the research participants were significantly differently distributed.

The next item given to the research participants to express their opinion on was: *Excessive use of tablets leads to vision problems or some other difficulties.* The data obtained with this item are shown in Table 9.

Table 9. *Excessive use of tablets leads to vision problems or some other difficulties*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I don't agree at all	358	80.1	80.1	80.1
	I disagree	89	19.9	19.9	100.0
	Total	447	100.0	100.0	

$M = 1.20$ ;  $SD = .400$   
 $\chi^2 = 161.881^a$ ;  $df = 1$ ; *Asymp. Sig.* = .000.  
 a. 0 cells (0.0%) have expected frequencies less than 5.  
 The minimum expected cell frequency is 223.5.

The data obtained are surprising. Namely, all research participants are of the opinion that excessive use of tablets does not lead to vision problems or other difficulties; 19.9% of respondents *disagree* with the set item, while 80.1% of them *fully disagree*. This is the reason for the low value of the arithmetic mean  $M = 1.20$ .

The chi-square is 161,881 ( $df = 1$ ,  $Sig = .000$ ), which leads to the conclusion that the answers of the research participants on this item are significantly differently distributed.

The last item given to the participants of the research to express their opinion on was: *Excessive use of tablets by students causes addiction.* The data obtained with this item are shown in Table 10.

Table 10. *Excessive use of tablets by students causes addiction*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I don't agree at all	15	3.4	3.4	3.4
	I disagree	7	1.6	1.6	4.9
	I can't decide	80	17.9	17.9	22.8
	I agree	122	27.3	27.3	50.1
	I totally agree	223	49.9	49.9	100.0
	Total	447	100.0	100.0	

$M = 4.19$ ;  $SD = 1.005$   
 $\chi^2 = 350.394^a$ ;  $df = 4$ ; *Asymp. Sig.* = .000.  
 a. 0 cells (0.0%) have expected frequencies less than 5.  
 The minimum expected cell frequency is 89.4.

Table 10 shows that more than 3/4 of the research participants, 77.2% of them, confirm the set item: 27.3% *agree* with the item, i.e. 49.9% *fully agree*; 17.9% of respondents *could not decide*. This is the reason for the high arithmetic mean of  $M = 4.19$ , with a standard deviation of  $SD = 1.005$ . As the value of the chi-square is very high ( $\chi^2 = 350.394$ ;  $df = 4$ ;  $Sig = .000$ ), it is concluded that the responses of the study participants are statistically significantly different, i.e. they are significantly differently distributed.

We were interested in the connection of all items, i.e. dependent variables. Therefore, we performed a calculation of Pearson correlation coefficients. The obtained coefficients are shown in Table 11.

Table 11. Lower triangular correlation matrix

Pearson Correlation	1								
Sig. (2-tailed)									
N	447								
Pearson Correlation	-.059	1							
Sig. (2-tailed)	.212								
N	447	447							
Pearson Correlation	.004	.113*	1						
Sig. (2-tailed)	.929	.017							
N	447	447	447						
Pearson Correlation	-.095*	.118*	.210**	1					
Sig. (2-tailed)	.044	.013	.000						
N	447	447	447	447					
Pearson Correlation	-.228**	.175**	.082	.175**	1				
Sig. (2-tailed)	.000	.000	.083	.000					
N	447	447	447	447	447				
Pearson Correlation	-.225**	.236**	.247**	.078	.418**	1			
Sig. (2-tailed)	.000	.000	.000	.099	.000				
N	447	447	447	447	447	447			
Pearson Correlation	-.215**	.310**	.142**	.188**	.351**	.496**	1		
Sig. (2-tailed)	.000	.000	.003	.000	.000	.000			
N	447	447	447	447	447	447	447		
Pearson Correlation	-.150**	.174**	.004	.199**	.278**	.300**	.262**	1	
Sig. (2-tailed)	.001	.000	.928	.000	.000	.000	.000		
N	447	447	447	447	447	447	447	447	
Pearson Correlation	.346**	-.123**	-.003	-.002	-.236**	-.236**	-.132**	-.244**	1
Sig. (2-tailed)	.000	.009	.952	.974	.000	.000	.005	.000	
N	447	447	447	447	447	447	447	447	447

\*. Correlation is significant at the 0.05 level (2-tailed).  
 \*\*. Correlation is significant at the 0.01 level (2-tailed).

Description:

1. Children should not use the tablet as much in general as part of modern teaching technology.
2. It is good to know how to use a tablet in the teaching process.
3. I think I am computer literate.
4. I believe that a tablet can completely replace classic textbooks.
5. I think that children remember better by using a tablet while learning.
6. It is more fun for children to learn with the help of tablets.
7. It is easier to teach in the teaching process by using tablets.
8. Excessive use of tablets leads to vision problems or other difficulties.
9. Excessive use of tablets by students creates addiction.

The analysis of Table 11 shows that the three correlation coefficients are significant at the .05 level and one of them is negatively directed. At the significance level of .01, there are 26 correlation coefficients and nine of them are negatively directed. The other seven correlation coefficients are not statistically significant.

3. Conclusion

It is still impossible to make judgments about students' educational achievements, but the use of tablets in everyday educational work has contributed to the automation of (boring and monotonous) content, such as multiplication tables. Although it is too early to talk about student achievements, it can be said that they are certainly excellent, which depends, of course, on the work of teachers, but the work is simpler, faster, more interesting for children. Teachers believe that students adopt contents faster than students of previous generations, so there is time for more creative activities, such as making their own assignments, making movies on a tablet, and etc.

Nowadays, technology is ubiquitous and an indispensable part of our lives (both for adults and students) and we use it every day for fun but also to communicate with others, even in the workplace to make it easier to solve tasks that we once wrote (worked) manually, making our work much easier. In addition to the positive implications of the use of electronic devices in teaching (especially tablets), we should consider the situation when literally in a very short time during the COVID-19 pandemic students switched to online teaching, using tablets as the main devices that allowed them to follow and actively participate in learning. However, the excessive use of technology leaves behind certain consequences. State that among children aged 6 to 12 [19], the use of electronic devices during pandemics was excessive in 76% of respondents. Excessive use of tablets and other electronic devices can result in many disorders such as mental disorders [20], depression, self-harm, low self-esteem in girls who overuse digital media [21], [22], [23], sleep problems [24], [25], [26].

A study [27], [28] conducted on a sample of 313 children obtained data indicating that more than half of the respondents (67.5%) were exposed to one of the electronic devices on a daily basis and this especially during meals or going to bed.

Special attention, especially in the EU member states, is paid to digital literacy at all levels. Digital literacy is very important. That is why the application of modern educational technology has been started since the child's early development and education. For this reason, tablets have been experimentally introduced in some elementary schools. The contents of the subjects should be interestingly presented to

the students in order to increase the motivation for further learning. It is the teacher who determines the choice of teaching means and aids, based on his own will and choice of content, which the school provides and which he can procure outside the educational institution.

There is a lot of free software that can be opened quickly and easily by simply clicking on the desired website. By using them, it is possible to process and repeat the teaching content that students will follow and learn through play. Every innovative and educational content is welcome to teachers and students, because then everyone can enjoy the teaching process together. As an example, we mention the Edutorij [16], a place that serves to store, publish, share, evaluate and retrieve digital educational materials, with the ability to search by author, title of material, collection, level of education and grade. Furthermore, there are many platforms for distance learning and teaching that are intended for educators, i.e. teachers, professional development services in schools and principals, but also students and all other interested parties. One of them is the Loomen, through which it is possible to participate in education in the virtual classrooms of the School for Life [15].

We analyzed the attitudes and reflections of teachers and parents of children from classes in which the tablet was used in the daily educational process and those who did not use it i.e., those who are more inclined to the traditional form of teaching. Teachers who have used the tablet in teaching are very satisfied with the effect of teaching, emphasizing that their students are delighted with such innovative teaching. Teachers who used the traditional form of teaching said that the use of tablets in teaching is desirable to some extent and that they would accept working with tablets. It is certainly important that students keep up with technology, but do not forget to play and socialize with other children, to engage in free and extracurricular activities in which they can freely express themselves and discover some of their hidden talents.

Parents of children who used the tablet daily during the teaching process are very satisfied with the innovative approach in teaching and would like their children to continue their education (secondary education) with the use of modern educational technologies and procedures. At the same time, the parents of children who attended classes organized in the traditional way, i.e. without tablets, believe that their children are not and will not be technologically deprived, and when enrolling children in school, did not think about financial unprofitability.

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