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Evaluating the Effectiveness of Digital Inclusion at Private Educational Schools in Gaza Strip

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Abstract

The research aims to evaluate the process of digital inclusion and the usage of digital tools in the educational process at private schools in Gaza Strip - Palestine. Education is the beacon of knowledge and development that is accompanied by developmental processes aimed at rising and improving the quality of service through the use of digital tools in all aspects of the educational and administrative processes within a school. In this study, the research team sought to know the tools used in the process of digital integration, and the challenges and problems faced by teachers while using digital tools, in addition to providing recommendations to help solve or mitigate problems. The descriptive analytical method is adopted to carry out the research. The results of the study showed weakness in the effectiveness of the digital inclusion process and the use of digital tools in the educational process in private schools. Furthermore, recommendations to the schools' administrations, teachers and the Ministry of Education are stated in order to alleviate the problems and challenges of using digital tools.

Keywords: Digital inclusion; digital tools; technology adoption; education; private schools.

1. Introduction

The world has become a small village because of developing technology and communication over the 20th and 21st centuries. It has made the world developing fast in addition to connecting all countries in a simple and fast way. The life of people has become easier by integrating technology in their daily life, and the influence of technology on people's lives is growing with no ceiling to future. Therefore, the advantages of information and communication technology made it a strategic resource for development.

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For this reason, the world summit on the information society has recognized the ICT as a core for human progress [1-3]. Although ICT is increasingly available, there are significant differences between developed and developing countries, giving rise to a major gap in access known as the "digital inclusion" [4] . However, the need for digital inclusion is still a main priority for developing and even developed countries for the progress of development. Many countries have considered and mainstreamed the digital inclusion in their strategic plans, in particular their education plans. The Irish department for education and skills has published the 2015-2020 plan titled "Digital strategy for schools - Enhancing teaching, learning, and assessment". In addition, "ICT competency framework for teachers" was published by the united nations educational, scientific, and cultural organization [5]. This reflects the significance of digital inclusion for education, as it can play a central role in transforming teaching, learning and assessment practices for teachers and students [4, 6, 7].

In Palestine, some educational insinuations have integrated the digital tools in their educational system despite the political challenges and occupation. The digital inclusion in higher education institutions is present more than the primary and secondary education, in this regard, the Palestinian ministry of education and higher education has considered the digital inclusion in its educational sectorial plan (2017-2022) under the pillar of improving the quality of education in link with national policies agenda (2017-2022) [8]. On the other side, there are 55 private schools work in Gaza strip, and they did not wait for PMEHE to consider the digital inclusion, and started integrating the digital tools in different levels of education processes, few number of those private schools have succeeded to apply the digital inclusion [8]. The private education schools are considered among the most important education and knowledge sources due to few numbers of students in the class rooms. These schools support and fulfil some society educational needs that public education cannot do [9-11]. In general, education is very important in developing human beings, it produces well-cultured and wise people as children of today are the generation of tomorrow. Investment in education is very crucial and useful for global and people development [8, 12, 13], and Integrating digital technologies to education processes is playing a key role in teaching and learning development [4, 7]. several studies have stated clearly the importance of applying the digital tools in public schools. In addition, these studies have stated some challenges that face the integration process [10]. The current study aims to evaluate the effectiveness of digital inclusion at private schools, while the previous studies did not address this issue. Tarazi's study [11] has addressed the impact of using ICT on developing skills just for English teachers without addressing the effectiveness of the whole process of ICT or digital inclusion. The studies [11,14] have addressed the challenges of using the interactive smart board at UNRWA schools, the studies have addressed one tool of digital inclusion at UNRWA schools, while the current study addresses all tools could be used in digital inclusion at private schools in Gaza. Furthermore, Shaqour study [2] has addressed the reality of the use of technological innovations in Palestinian schools from the teachers' perspective, and the constraints faced by teachers in their use. This is different from this study as it targets the private schools, and takes in consideration the perspectives of school principals, teachers, students, and parents. Therefore, the importance of this study lies in:

- The importance of education generally, and at private schools as they support the education processes [10].
- The importance of digital inclusion, particularly at private schools in Gaza, and how it contributes in enhancing the teaching and learning methods.

- The lack of studies or researches focusing on digital inclusion at private schools.
- This study will benefit the private schools in addressing the effectiveness and challenges of digital inclusion at their school from different perspectives.

This study gains more importance if we know that many studies have indicated challenges on applying the digital tools to education processes in Palestine, and how these challenges affect the progress of digital inclusion, while the teachers of schools have faced difficulties and suffered during applying and using the digital tools. Furthermore, the parents of private school's students face difficulties and suffer from apply the digital tools due to different reasons [15]. Having these circumstances, this research has studied and evaluated the effectiveness of digital inclusion at private schools in Gaza. Therefore, the main goal of this study is "Evaluating the effectiveness of digital inclusion at private educational schools in Gaza strip". Specifically, the study aims to:

- identify the digital tools used in education or management process.
- identify the challenges faced in using digital inclusion by teachers.
- provide recommendation on alleviating the suffer and challenges resulted by using the digital tools in education process at private school in Gaza.

The research main question is "What is the level of effectiveness of digital inclusion at private educational schools in Gaza strip? This main question leads to the following sub-questions:

- What are the digital tools used in education or management processes?
- What are the challenges faced in using digital inclusion by teachers?
- What are the recommendation to alleviate the suffer and challenges resulted by using the digital tools in education processes?

In addition, below are three hypotheses of the research that assume that there are no significant relations between digital tools effectiveness and the characteristics of respondents. Specifically, these hypotheses are:

- There is no statistical significant relationship at ($\alpha \leq 0.05$) between digital tools effectiveness in education process at private schools and gender.
- There is no statistical significant relationship at ($\alpha \leq 0.05$) between digital tools effectiveness in education process at private schools and years of experience of school staff.
- There is no statistical significant relationship at ($\alpha \leq 0.05$) between digital tools effectiveness in education process at private schools and qualifications background of school staff.

2. Methodology

The descriptive analytical approach is adopted in carrying out this research. This approach is used to evaluate the effectiveness of digital inclusion at private schools using previous studies approach, quantitative and qualitative data collection approach through sample survey to answer the study questions. The descriptive

research is defined as "a research that describes group of characteristics or behaviors in numerical terms" [16]. In addition, the descriptive statistics are those statistics used to analyze descriptive research data, usually in terms of central tendency and dispersion, and descriptive research interprets data in words in case of qualitative data [17].

The study population is limited to the 55 private schools in Gaza strip. 40 private school teachers were approached. Tables 1,2 and 3 illustrate the characteristic of study population in terms of gender, years of experience in education, and qualification.

Table 1: Gender frequency among the study population

		Frequency	Percent %	Valid Percent	Cumulative Percent
Valid	Male	7	17.5	17.5	17.5
	Female	33	82.5	82.5	100.0
	Total	40	100.0	100.0	

Table 2: Qualification frequency among the study population

		Frequency	Percent %	Valid Percent	Cumulative Percent
Valid	Bachelor	36	90.0	90.0	90.0
	Master	4	10.0	10.0	100.0
	Total	40	100.0	100.0	

Table 3: Qualification and Gender cross tabulation among the study population

		Gender		Total
		Male	Female	
Qualification	Bachelor	6	30	36
	Master	1	3	4
Total		7	33	40

To achieve the study, the research team used the questionnaire, it consists of two domains; the first domain has three basic factors (Gender, qualifications, Experience). The second domain is the digital inclusion with 14 questions. The third domain is the challenges and problems with 4 questions.

In the questionnaire, Likert scale was used that represents the following scale of Table 4.

Table 4: Questionnaire Likert scale degrees

Item	Totally agree	Agree	Neutral	Disagree	Totally disagree
Scale	5	4	3	2	1

3. Results and discussion

The results and discussion have been built based on data collection from 40 teachers and followed by data analysis using computer software "SPSS 18" in order to achieve the study objectives about the effectiveness of using digital tools in educational processes at private schools. The collected data has been analyzed through 40 filled questionnaires by school teachers. The calculation included: means, standard deviation, and relative weight of both domains of the questionnaire and their total scores as shown in tables 5 and 6.

3.1. First Domain: Administration effectiveness to digital inclusion.

Table 5: Mean, Standard Deviation, Relative Weight of administration effectiveness to digital inclusion

No.	Administration effectiveness to digital inclusion	Mean	Std. Deviation	Relative Weight
1	School administration adopts Digital tools in educational process	4.0000	.78446	80%
2	School administration adopts Digital tools in management process	4.9250	.26675	99%
3	School administration encourages teachers and students using digital tools in management and Educational	1.8750	.85297	38%
4	School administration implements piloting for using digital tools.	1.7750	.86194	36%
5	School administration organizes capacity building programs for staff in using digital tools.	2.0750	.76418	42%
6	School administration organizes digital introduction sessions with parents to involve them in the process.	1.3250	.47434	27%
7	School administration organizes feedback sessions with teachers and parents to improve the process.	1.0500	.22072	21%
	TOTAL	2.1786	.18439	44%

The table above shows that the highest two items in relative weight are items (1 and 2) with relative weight 80% and 90%, which clearly indicates that the administration has adopted the digital tools in the education and management process. On the other side, the lowest two items are (6 and 7) with relative weight 27% and 21%, which reflects the lack of interests from school administrations toward the participation and feedback process.

The total weight of the entire domain is 44%, which is considered low and means that the school administration effectiveness to digital inclusion is low.

3.2. Second Domain: Effectiveness of digital inclusion

Table 6: Mean, Standard Deviation, Relative Weight of Effectiveness of Digital Inclusion

No.	Effectiveness of digital inclusion	Mean	Std. Deviation	Relative Weight
1	Uses as Teacher the digital tools in teaching.	4.05	1.13	81%
2	using the digital tools considered effective in Education process.	3.63	1.08	73%
3	using digital tools in education can replace traditional teaching tools.	1.95	.93	39%
4	using digital tools make the education easier.	3.83	.59	77%
5	Help me plan and conduct the lessons effectively.	1.75	.78	35%
6	using the digital tools save time and efforts.	3.95	.78	79%
7	There are benefits to you from using and developing the digital tools.	3.88	.97	78%
8	There are benefits to students from using and developing the digital tools.	2.90	.98	58%
9	There are benefits to school from using and developing the digital tools.	4.45	.68	89%
10	face troubles and challenges in applying digital tools.	1.58	.98	32%
11	Parents and students face troubles and challenges in using digital tools.	1.53	.85	31%
	TOTAL	2.64	.29	53%

Table 6 shows that the highest two items in relative weight are items (9 and 1) with relative weight 89% and 81%. On the other side, the lowest two items are (11 and 10) with relative weight 31% and 32%, which reflects

that the teachers and students' parents face troubles and challenges in applying and using the digital tools.

The total weight of the entire domain is 53%, which is considered moderate, which means that the effectiveness of digital inclusion at private schools is at average level.

3.3. Test of Hypotheses

The research has tested the hypotheses that assume that there are no significant relations between digital tools effectiveness and the characteristics of respondents. The first hypothesis is "There is no statistical significant relationship at ($\alpha \leq 0.05$) between digital tools effectiveness in education process at private schools and gender".

To identify the differences in digital tools effectiveness due to their gender, the research team used independent sample T. test as shown in table 7.

Table 7: First domain Independent Samples T-test Due to Gender

No.	Administration effectiveness to digital inclusion	Gender	N	Mean	Std. Deviation	P value Sig.
1	School administration adopts Digital tools in educational process	Male	7	4.0000	1.00000	1.000
		Female	33	4.0000	.75000	
2	School administration adopts Digital tools in management process	Male	7	5.0000	.00000	.420
		Female	33	4.9091	.29194	
3	School administration encourages teachers and students using digital tools in management and Educational	Male	7	1.8571	.69007	.952
		Female	33	1.8788	.89294	
4	School administration implements piloting for using digital tools.	Male	7	1.8571	.37796	.785
		Female	33	1.7576	.93643	
5	School administration organizes capacity building programs for staff in using digital tools.	Male	7	1.8571	.37796	.413
		Female	33	2.1212	.81997	
6	School administration organizes digital introduction sessions with parents to involve them in the process.	Male	7	1.0000	.00000	.044
		Female	33	1.3939	.49620	
7	School administration organizes feedback sessions with teachers and parents to improve the process...	Male	7	1.1429	.37796	.225
		Female	33	1.0303	.17408	
TOTAL		Male	7	2.1224	.15272	0.353
		Female	33	2.1905	.17738	

Table 7 shows the results of independent samples T-test for gender, the P-value (Sig.) is greater than the level of significance $\alpha = 0.05$ for each item, then there is no significant difference among the respondents toward items due to gender.

Table 8: Second domain Independent Samples T-test Due to Gender

No.	Item	Gender	N	Mean	Std. Deviation	P value Sig.
1	Uses as Teacher the digital tools in teaching.	Male	7	2.2857	.75593	.000
		Female	33	4.4242	.79177	
2	using the digital tools considered effective in Education process	Male	7	1.8571	.89974	.000
		Female	33	4.0000	.66144	
3	using digital tools in education can replace traditional teaching tools	Male	7	1.0000	.00000	.002
		Female	33	2.1515	.90558	
4	using digital tools make the education easier	Male	7	4.2857	.48795	.022
		Female	33	3.7273	.57406	
5	Help me plan and conduct the lessons effectively	Male	7	2.0000	.00000	.355
		Female	33	1.6970	.84723	
6	using the digital tools save time and efforts	Male	7	4.0000	.00000	.855
		Female	33	3.9394	.86384	
7	There are benefits to you from using and developing the digital tools	Male	7	2.8571	1.06904	.001
		Female	33	4.0909	.80482	
8	There are benefits to students from using and developing the digital tools	Male	7	3.0000	1.00000	.771
		Female	33	2.8788	.99240	
9	There are benefits to school from using and developing the digital tools	Male	7	4.7143	.48795	.261
		Female	33	4.3939	.70442	
10	face troubles and challenges in applying digital tools	Male	7	2.2857	1.25357	.034
		Female	33	1.4242	.86712	
11	Parents and students face troubles and challenges in using digital tools	Male	7	1.0000	.00000	.070
		Female	33	1.6364	.89506	
TOTAL		Male	7	2.2338	.15620	.000
		Female	33	2.7245	.23889	

Table 8 shows the results of independent samples T-test for gender, the P-value (Sig.) is less than the level of significance $\alpha = 0.05$ for total domain, so there is significant relationship difference among the respondents toward items due to gender.

Table 9: Total domains Independent Samples T-test Due to Gender

Item	Gender	N	Mean	Std. Deviation	P value Sig.
Administration effectiveness to digital inclusion	Male	7	2.1224	.15272	.35262
	Female	33	2.1905	.17738	
Effectiveness of digital inclusion	Male	7	2.2338	.15620	.00001
	Female	33	2.7245	.23889	
TOTAL	Male	7	2.1781	.10708	.00003
	Female	33	2.4575	.14694	

Table 9 shows the results of independent samples T-test with total score due to gender, the P-value (Sig.) is less than the level of significance $\alpha = 0.05$ for total domain, so there is significant relationship difference among the respondents toward items due to gender. Therefore, the personal characteristic "gender" has significant effect on digital inclusion effectiveness due to the gender.

The second hypothesis is "There is no statistical significant relationship at ($\alpha \leq 0.05$) between digital tools effectiveness in education process at private schools and years of experience of school staff". To identify the differences in digital tools effectiveness due to years of experience, the research team used (One Way Anova) as shown in table 10:

Table 10: ANOVA test Due to Years of Experience

Domains	Sum of Squares	df	Mean Square	F	P value Sig
Administration effectiveness to digital inclusion	.301	8	.038	1.334	.264
Effectiveness of digital inclusion	.840	8	.105	1.289	.285
TOTAL	.362	8	.045	1.654	.150

Table 10 shows that the result of One Way Analysis of Variance - ANOVA test for years of experience. The p-value (Sig.) is greater than the level of significance $\alpha = 0.05$ for each domain, then there is no significant difference among the respondents toward each domain due to years of experience. The research team concludes that the years of experience has no effect in digital inclusion effectiveness.

The third hypothesis is "There is no statistical significant relationship at ($\alpha \leq 0.05$) between digital tools

effectiveness in education process at private schools due to teacher qualifications". To identify the differences in digital tools effectiveness due to their qualifications, the research team used independent sample T. test as shown in table 11.

Table 11: Total domains Independent Samples T-test Due to Qualification

Item	Gender	N	Mean	Std. Deviation	P value Sig.
Administration effectiveness to digital inclusion	Bachelor	36	2.202381	0.165104	0.007427
	Master	4	1.964286	0.071429	
Effectiveness of digital inclusion	Bachelor	36	2.626263	0.290566	0.431158
	Master	4	2.75	0.343174	
TOTAL	Bachelor	36	2.414322	0.177682	0.544954
	Master	4	2.357143	0.176802	

Table 11 shows the results of independent samples T-test for qualification, the P-value (Sig.) is greater than the level of significance $\alpha = 0.05$ for total domain, so there is no significant relationship difference among the respondents toward items due to qualification.

The research concludes that teachers' qualification has no effect in digital inclusion effectiveness, while the overall discussion of the results shown in this section can be concluded in these points:

- There was a variance between teachers about the digital inclusion, but the majority of 85 % agree on using digital tools in education.
- It was clear that the school administrations have adopted the digital tools in both management and education and imposed the teacher to use it.
- 27 % of teachers see that the school administration does not encourage teachers to use the digital tools.
- Obviously, the school administration did not implement pilot before adopting the tools, and either did not organize any relevant capacity building programs for the teachers.
- 35 % of the teachers do not use the digital tools in their classroom due to different reasons.
- In terms of return benefits of using digital tools, 90 % of teachers agreed that the benefits will return to school, and 67 % agreed that there are benefits returned to teachers from using those tools, while they are divided if the benefit will return to students.
- The majority of teachers agreed that there are challenges and difficulties in using digital tools faced by both teacher and parents.
- In terms of digital tools for education process, 17.5 % of the teachers use Liquid Crystal Display (LCD), and 95 % use Tablet. Smart board is not adopted by schools. 25 % use computer or laptop during the education process, and 62.5 % use the internet.
- In terms of digital tools for management process, the schools adopted online system that includes: marks entry, monitoring and evaluation, email, and portal.

- Regarding the challenges and difficulties that face teachers, the main two problems were students are not committed to bring the tablets each day, and parents are not cooperative in supporting the usage of the tablets.
- Regarding the challenges and difficulties that face parents, the main problem was using the tablet for non-education process by students and followed by the damages or losses of the tablets.

4. Conclusion and Recommendations

Based on the research results, it is clear that the degree of the digital inclusion effectiveness at private schools is considered low and can be at 48 % as percentage of effectiveness. That was based on the following reasons:

- Problems and challenges face teachers and parents.
- Lack of piloting digital tools before adoption.
- Lack of feedback system.
- Lack of technical preparedness by school administrations.
- Lack of parents and teachers' participation in applying the digital tools.
- Lack of plan and policies of digital inclusion by school administrations.

Based on the research results, the research concludes the following recommendations:

4.1. Recommendations for School Administrations

- Conduct feedback workshops with teachers and parents in order to collect all comments and feedback, so they can improve the digital inclusion process.
- Conduct digital induction programs for teachers and parents.
- Improve the technical related issues regarding the digital education materials.
- Conduct continuous digital enhancing programs through workshops with teachers and parents.
- Make a policy to have all students keep their tablets in school.

4.2. Recommendations for Parents

- Provide more support and cooperation with teachers regarding using the digital tools.
- Make commitments that all their students bring the tablets on time manner.
- Keep the tablet for educational purposed and prevent any other disturbing apps or materials.

4.3. Recommendations for Ministry of Education

- Mainstream digital tools to all schools.
- Provide capacity building program for teachers in using various digital tools.
- Conduct workshops for teachers and students to practice using the technology before its application in education.

- Provide teachers with syllabus designs focusing on teaching by using digital tools.
- Provide the Palestinian schools with digital tools to facilitate and enrich the teaching learning process.

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