



Journal of University Studies for inclusive Research (USRIJ)  
مجلة الدراسات الجامعية للبحوث الشاملة

ISSN: 2707-7675

**Journal of University Studies for Inclusive Research**  
**Vol.4, Issue 10 (2022), 7920 - 7939**  
**USRIJ Pvt. Ltd.,**

## **Teachers' perceptions of the digital divide in public schools**

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ISSN: 2707-7675

### Abstract

Recently, during the Corona pandemic, the digital divide has come into focus. Therefore, the purpose of this study was to investigate how teachers perceive the digital divide in public schools. The study employed the four levels of access: motivational access, material access, skills access, and usage access from van Dijk's (2005) access model as a theoretical framework to address the research questions. Semi-structured interviews and online surveys were the tools to collect data. The findings showed that while most teachers enjoy using computers and feel at ease doing so, most of them are not particularly interested in using them for educational purposes. Additionally, the use of ICT in schools is not permitted by the budget. The participants' levels of ICT proficiency were disparate, with some having an advanced understanding while others having no experience at all. The participants also believed that the schools lacked the most fundamental skills.

**Keywords:** *ICT; digital divide; public schools; teachers.*



## **Introduction**

Our daily lives involve information and communication technology (ICT) (Wu et al. 2014). About 4.1 billion individuals, according to recent estimates published in 2017, used the Internet (Warf, 2018). ICT is therefore a driving force behind government, education, work, and communication in our day-to-day lives (Alaleeli and Alnajjar, 2020; Grishchenko, 2020; Sumarmi, Aliman and Mutia, 2021). Teaching and learning are expanded outside of the classroom when ICT is used, thus teachers need to have proper access to ICT (Chisango and Marongwe, 2021).

The digital divide, which is "the social inequality between persons regarding access to ICT, the frequency of technology use, and the capacity to use ICT," is becoming more pronounced with the growing use of ICT (Ercikan, Asil, and Grover, 2018). Although the digital divide and rapid technological advancements are constants, there are also inequalities in the educational system (Centeio, 2017). Van Dijk, on the other hand, broadened the definition of the digital divide to encompass motivation, resources, expertise, and ICT usage (van Dijk, 2012). In the absence of our essential physical presence, we teachers in Palestinian schools found ourselves in the clamor of these virtual educational platforms by entering the e-learning virtual world. The Corona pandemic exposed a weakness in the professional structure of school employees, particularly teachers, who steadfastly opposed any reforms to the educational system. We must comprehend the issues behind the digital divide by utilizing the van Dijk access model (motivation, material, skills, and usage) to promote equity in ICT access and usage (van Dijk, 2005). The primary goal of this study is to investigate teachers' opinions of the digital divide in public schools.

## **ICT in Education**

ICT has developed into a crucial component of education. It supports teachers in delivering content, enhancing students' abilities, and developing fresh teaching strategies (Ertmer et al. 2012). One feature of technology is collaboration. It transforms education into a fun experience (Goh and Kale, 2015).



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## **Digital Divide**

The rapid advancement of ICT has caused several digital divisions to appear. The digital divide has taken on new shapes. Access is no longer the issue; rather, the issue now is how frequently, intensely, and objectively people use the Internet (Araque et al. 2013). The Research Institute for the Development and Promotion of Digital Access asserts that users' access to contemporary technology varies depending on a variety of factors, including social, economic, and demographic factors. Thus, the digital divide is a sophisticated social phenomenon (Hargittai and Hinnant, 2008).

By incorporating ICT into the educational system, schools can open up new access points for socially vulnerable groups and eliminate long-standing educational and social inequities (Fearn, 2008). According to teaching practices, the use of specialized technologies by teachers and contemporary cognitive obstacles in successful learning experiences determine the rise in students' interest (Lupu and Laurentiu, 2015). Teaching techniques are better integrated when teachers have positive attitudes about ICT (Mama and Hennessy, 2013). In this study, the digital divide in Palestinian schools will be addressed using van Dijk's Access Model. The motivational access, materials access, skills access, and usage access components of Van Dijk's (van Dijk, 2005) access model for the digital divide are the foundation of his analysis (Chisango and Marongwe, 2021).

## **Motivational Access**

Those who are convinced of ICT's usefulness in our lives are more likely to buy it. This population needs to be inspired to use the right kinds of technologies (van Dijk and Hacker, 2003). However, spending a lot of time in front of computer screens has a psychological impact on motivational access, including social factors, technophobia, anxiety, and stress (Spelman and Newlin, 2018).



### **Material Access**

According to several studies, a user's social and economic position and their ability to acquire material resources are related. His choice of gadget, such as a computer or tablet, is determined by that. High-income persons are more likely to own a range of high-quality devices, while low-income people are more likely to own low-quality devices (van Deursen and van Dijk, 2018). Additionally, those with high incomes and a variety of gadgets can readily access the Internet, whereas others with low incomes might only have access to it via a smartphone (Tsetsi and Rains, 2017).

### **Skills Access**

ICT accessibility does not imply that individuals can utilize it. The majority of users' abilities, especially technology literacy, need to be enhanced. In the information era, teachers must possess a high level of digital proficiency to be effective citizens. This primarily calls for the ability to use ICT to assist learners in developing their creativity, collaboration, problem-solving, and knowledge (Krkli and Tang, 2011). ICT training is essential, thus. For students to receive lasting ICT training, teachers must deliver successful lessons and expand on the ICT concept (Chisango and Marongwe, 2021). Additionally, a variety of elements, such as ICT attitudes and environmental factors like curriculum requirements, have an impact on digital competences (Benali, Kaddouri, and Azzimani, 2018).

### **Usage Access**

ICT use is influenced by internal and external variables. The availability of infrastructure, access to ICT, technical assistance, time to prepare for classes, frequent use, and the quantity and diversity of apps are examples of external variables. However, internal elements, such as views, attitudes, willingness to

utilize ICT and related abilities, and confidence in using them, can be summed up (Chisango and Marongwe, 2021). According to studies by Seraji, Ziabari, and Rokni (2017), younger and less experienced teachers exhibited a more favorable attitude toward using ICT in the classroom than more experienced teachers (Inan and Lowther, 2010). Van Dijk's idea of the digital divide is based on four levels, which give a paradigm of escalating ICT availability (see Fig. 1).

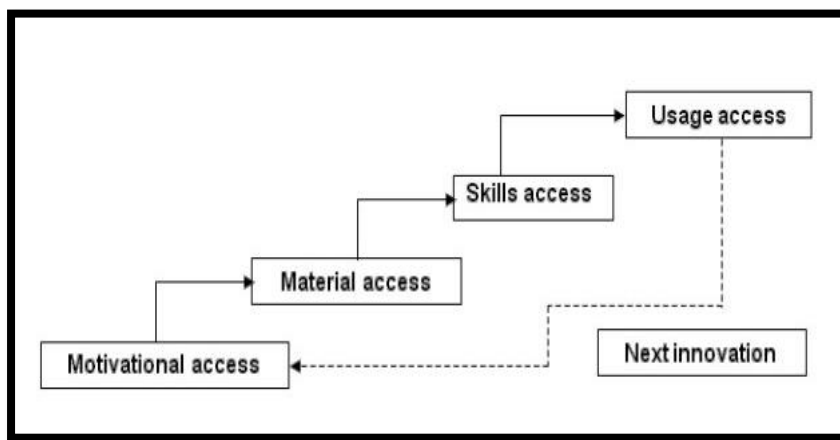


Figure 1. A model of access to digital technologies (van Dijk, 2005)

## Research Goals, Rationale, and Questions

Online learning in particular (e.g., Abuzant et al. 2020; Daher and Shahbari, 2020), educational technology in general (e.g., Daher et al. 2020; Baya'a and Daher, 2010), and online learning in emergency education (e.g., Abukhalil, Halawani and Daher, 2021; Daher, Sabbah, and Abuzant, 2021) are attracting the attention of teachers and education researchers. The main topic of this attention is the digital divide. This study intends to offer insight on how teachers perceive the role of the digital divide in public school education. The study focuses on the motivational access, material access, skills access, and usage access levels of the digital divide. We hope to address the following general research questions in this study:

- (1) How do you describe teachers' motivation toward using technology in education?



- (2) What do you think about the economic situation related to adopting technology in education?
- (3) How, in your opinion, do technological skills impact the use of ICT in education?
- (4) How do you think the ICT infrastructures are prepared for usage in education?

Understanding teacher experience with the digital divide can help national initiatives to demand computer science and digital literacy as core academic subjects, the absence of research on the digital divide in Palestine, as well as the need for professional development, which can need significant funding.

## **Materials and methods**

### **Research Context and Participants**

We adopted a qualitative research methodology in this study to explore the digital divide in select public schools in order to achieve our goal. The digital divide has widened as a result of the e-learning shift brought forth by the Corona pandemic, which demonstrated that schools are not equipped for digital learning. Due to its importance for integrating digital learning in the classrooms, we wanted to look at the teachers' readiness. Investigating the digital divide in Palestinian classrooms was how the researchers accomplished this. Public schools with teachers with more than three years of experience make up the research context. For the academic year 2021, the teachers were chosen from four public schools in Palestine's Nablus and Tulkarm governorates. The digital divide in these public schools was examined from the perspective of the teachers using Model van Dijk's access model. 42 teachers who worked in public schools met the requirements for participation (male and female).

In this study, teachers were purposely sampled. Teachers from disadvantaged schools are likely to have experienced the digital divide. Purposeful sampling is a widely used technique; it is used in qualitative research with participants likely to be information-rich about the point of interest (Patton, 2002).



## **Data Collection Tools**

Two methods of data collecting were used in this exploratory qualitative study: Semi-structured interviews and online surveys. The period of data gathering was just one month, from late June to early July 2021. The interviews were conducted online on the Zoom platform; a 40-minute recorded interview with the participants.

### **Interview**

An interview is a flexible tool in data collection. It can be verbal, non-verbal, audible, and spoken. The interview order can be controlled while still allowing for spontaneity. The interviewer asks many questions, and the interviewee can be pressed for complete answers or may respond to complex and deep issues (Cohen, Manion, and Morrison, 2007).

### **Survey**

In order to define the nature of present situations or establish benchmarks against which current conditions can be evaluated, surveys collect data at a specific time, according to Cohen et al. (2007). Therefore, a van Dijk access model-based online survey of public school teachers was done to determine the digital divide.

## **Data Analysis Tools**

Thematic analysis employing deductive reasoning, which is a way of finding, analysing, organizing, characterizing, and reporting the themes in a data collection, was thought to be the most appropriate for this research (Braun and Clarke, 2008). Based on the conceptual framework, the transcribed data from interviews and surveys were divided into various themes. Here, the conceptual framework was developed by van Dijk (2005). This model is somewhat idealistic because, after a series of operations, the getting to use stage creates another innovation. Based on the literature, Table 1 shows the procedural definitions of the categories.



Table 1. Procedural definitions.

| Code                | Description   | Example  |
|---------------------|---|--|
| Motivational access | The teacher has positive feelings about using the computer, but she does not want to use it and she is not satisfied with using it. | "The computer is important to me and I like it. I think it's a beautiful thing, but I don't want to use it. As a teacher, I was not pleased with remote learning."   |
| Material Access     | The teacher considers the socio-economic situation is extremely poor.   | "The father is struggling with poverty. There are too many kids in the house, and things are not going well. A parent who has four or five children is unable to offer four or five devices for them, as well as an Internet connection for his home." |
| Skills Access       | The teacher notes the lack of ICT training courses and the disregard for proper procedures in their administration.                 | "I did not gain 50% as a teacher with a master's degree from these courses. After a tough day of work, the officials used to send us to the training courses. Due to these courses, teachers will leave work weary and arrive late at home".           |
| Usage Access        | The teacher describes the schools' infrastructure as unprepared and weak due to their lack of the most important resources.         | "The environment of my school is quite terrible; the computer systems are underpowered, and even the electricity is underpowered."   |



## **Validity and Reliability**

To ensure the validity and reliability of the study, each researcher worked independently, transcribed 25% of the interviews, and coded them. Holsti's method, which is a variation of percentage agreement, gave a percentage agreement of 89%, which is a good score for qualitative research (Cohen et al. 2007).

## **Results**

The study sought to investigate teachers' perceptions of the digital divide in public schools. Data was collected from the teachers' interviews and surveys. Our conclusions were based mostly on the four van Dijk's access models. The levels of the digital divide that were sparked by teachers' experiences are described below:

### **Motivational Access**

In discussions with school teachers, it became evident that while most of them enjoy using computers and feel at ease doing so, most of them are not interested in using ICT tools. Some of them view it as a useless instrument that makes them feel burdened when they use it and stresses them out. Additionally, from their perspective, parents and kids lack the motivation to use ICT.

In the interview, the teacher, "Eman" said: "I care about the computer and I appreciate it. I feel it's a lovely thing, but I don't want to use it. I was not pleased with distance learning as a teacher." When asked about her child's motivation at home, she responded, "When nothing is engaging, he gets bored. You're talking about children; they have no motivation."

In survey, the teacher, "Ahmad" said, "I feel using ICT is a stress for me", in reference to the other teachers he said: "we experience work pressure, particularly during scheduled working hours."

At the beginning of new technologies spread, motivational issues were the main factors stimulating or inhibiting the adoption of it. Motivational access is impacted by a variety of factors, including an unwillingness to purchase ICT devices,



dissatisfaction with distance learning, student boredom, and emotions of tiredness. The stress due to using ICT will also limit access to motivation and, as a result, a motivational divide, which will result in the existence and widening of a digital divide even in the presence of desire.

### **Material Access**

Surveys and teacher interviews revealed that school budgets do not support the use of ICT. Teacher "Yahya" emphasized that "schools suffer from low budgets, and their financial situations are really dismal." Teacher "Mahmoud" remarked that "the funding in schools is not enough to employ what is new in technology." Teacher "Mona" warned, "the financial situation of schools is severe, so there will be no opportunity to use ICT." Additionally, teacher "Eman" noted that "not everyone has a computer. I have a computer and the Internet as a teacher, but not all of my students have computer devices."

The high cost of ICT devices, which restricts their ownership, is caused by the weak socio-economic situation, this results in a lack of material access. Due to a scarcity of computers, the usage of ICT by teachers and students has deteriorated, which has hampered their access to materials. In addition to the poor socio-economic situation of the Palestinian people, which worsened significantly as a result of the lockdown, the effect of all this is a growing of the digital divide.

### **Skills Access**

Teachers demonstrated that there is a disparity in the possession of ICT skills among them, as some of them have advanced knowledge while others have no experience at all. The lack of digital competence of teachers in schools has also been noted. In addition to training courses to acquire skills that are rejected by the majority of teachers, especially the elderly ones.

In the survey, teacher "Alaa" said: "the majority of teachers do not wish to enroll in training courses." Teacher "Mayson" added that "teachers are reluctant and unwilling



to learn new skills because they are happy with the knowledge, skills, and traditional educational techniques they already possess."

In the interview, teacher "Eman" said in reference to the curriculum requirements "I want to finish the lesson at the end, I have a plan that I want to follow up."

Digital illiteracy is exacerbated by factors such as a lack of ICT skills and a resistance to receiving the necessary training. For teachers to become collaborative, creative, educated, and capable of using ICT to address problems, it was necessary to provide good training across multiple stages. Teachers that are unable to use ICT are unable to motivate students to acquire digital access and abilities. This contributes to the widening of the digital divide.

### **Usage Access**

The thoughts of the teachers regarding the infrastructure were in agreement. They referred to it as feeble and unprepared. The schools lack the most fundamental amenities, such as electricity. In addition to that, most schools struggle with a deficit in technical maintenance. Most teachers excuse their resistance to adopting ICT because it takes a lot of time to prepare lessons. According to their age, it revealed that most elderly teachers refused to use ICT or acquire new competences.

In the interview, teacher "Mahmoud" stated that "most schools suffer from weakness and delays in their technical preparation." While teacher "Eman" described her school by saying: "My school is in a very poor environment; the capabilities of computers are limited; even the electricity in the school is weak, it is an ancient school, a 100-year-old school, and its infrastructure needs updating.

In the survey, the teachers "Ameer, Jamal, Reem, Ahmad, etc." remarked that "the teachers are classified into three age categories: young age, middle age, and elderly age. The elderly teachers outright reject using ICT."

The participants find it frustrating that there isn't enough access inside the school. Existing resources and shoddy infrastructure, which affect usage access, frequently cause this frustration. Accessibility is also impacted by age; elderly teachers decline



to use ICT. This can be as a result of the fact that they lack the youthful excitement and motivation. A digital divide is created by limited usage access.

## **Discussion**

The purpose of the study was to investigate the teachers' experiences with the digital divide in public schools. According to the results of the current study, not everyone has equal access to ICT resources. The findings showed that there were disparities in access that led to a widening of the digital divide in public schools. The four levels of the digital divide are covered below.

### **Motivational Access**

Reduced readiness to use or access ICT resources is associated with a lack of motivation for technology access (Shin, Kim, and Chun, 2021). Therefore, many people who have lived on the left side of the digital divide are doing that out of intrinsic motive. Our study showed that few teachers discussed the value of employing ICTs in the educational process; instead, they concentrated on the advantages linked to other areas of daily life besides education. This finding suggests that these teachers were unwilling to learn more about technology in the classroom and were not aware of its significance.

Van Dijk and Hacker (2003) claim that those who believe possessing ICT is not important are reluctant to purchase it. However, this can be accounted for by the heavy workloads and the stress experienced as a result of using ICT. According to AlSadrani et al. (2020), teachers' workloads had an impact on how motivated they were to use ICT in the classroom. Even if the desire is there, all of this has an impact on motivation access. As a result of everything said above, the digital divide is widening.



### **Material Access**

The price of ICT devices was characterized by van Dijk (2005) as material access. According to Chisango and Marongwe (2021), who also noted that material access is directly tied to the socioeconomic situation of an individual, family, school, or place, their study highlighted how material access is broadly related to people's socioeconomic status. For people to have material access to ICT, they must own a computer or tablet.

Teachers who lacked access to ICT opted using conventional means in the educational process. Due to the corona pandemic, these conventional techniques are no longer an option. Azubuike, Adegboye, and Quadri (2021) underlined this point by pointing out that public school students, who are more likely to come from low socioeconomic situations, have fewer possibilities to complete their education and are more likely to reject access to digital technologies. The extent of the digital divide was made clear by this study.

### **Skills Access**

Motivation is insufficient to justify the use of technology in the classroom. Teachers must have the skills to use ICT in original ways and must understand why, when, and how to apply it (van Dijk, 2017). According to van Dijk (2005), possessing digital skills is a requirement for effectively using ICT. According to this study, the majority of teachers have just rudimentary ICT skills.

Throughout the lockdown, distance learning was used for the first time to train teachers. These courses have not been as beneficial to teachers who lack ICT skills as they should have been. Due to this, some digital competencies that UNESCO deemed vital are lacking (Chisango and Marongwe, 2021). Digital abilities are influenced by a number of variables, including ICT attitudes and environmental variables like curriculum requirements (Benali et al. 2018). According to Chigona (2018), in order for teachers to use technology in their classrooms effectively, they need additional ICT training. The respondents make it obvious that there is a greater digital divide than ever in public schools.



## Usage Access

Our study revealed that most teachers were unable to use the technology due to the inadequate ICT infrastructure that was available, and that neither teachers nor students had access to the necessary ICT infrastructure. Chisango and Marongwe (2021) claim that ICT adoption and usage are hampered by insufficient ICT infrastructure. The findings indicated that younger teachers used ICT more frequently than more experienced ones. According to Seraji et al. (2017) young teachers were more supportive of the use of ICT in the classroom than elderly teachers were.

Programs to encourage digital literacy can be used to create accommodating conditions for elderly teachers (Grishchenko, 2020). The findings also indicated that teachers are hesitant to use ICT since creating computerized lessons takes a lot of time and has an impact on how the lesson is taught in class.

## Conclusions and Recommendations

Researchers examined the digital divide issues as part of the research on how schools readiness for the digital age (Mustapha et al. 2021). This study investigated the potential digital divide in public schools, as these schools constitute the largest proportion of the community. The findings demonstrated that there is a significant digital divide in public schools despite the quick advancements in technology. The digital divide is present among public school teachers at the four access levels of motivation, material, skill, and usage, according to the van Dijk model. All of these point to an actual digital divide. The study's findings were comparable to those of another study (Chisango and Marongwe, 2021).

Based on the study's findings, we recommend that relevant institutions, including the Ministry of Education, the Ministry of Communications, and the government -which is the top institution- provide a sufficient ICT infrastructure in public schools. Redesigning curricula to accommodate ICT applications and educating teachers on how to use ICT in the educational process, and educating parents, children, and teachers about the value of using ICT.



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Journal of University Studies for inclusive Research (USRIJ)  
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ISSN: 2707-7675

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