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THE VOICE OF TEACHERS IN A PAPERLESS CLASSROOM

Miri Shonfeld * Kibbutzim College of Education Technology and Arts, Tel-Aviv, Israel mirish@macam.ac.il
Hagit Meishar-Tal Holon Institute of Technology (HIT), Holon, Israel hagitm@hit.ac.il

* Corresponding Author

ABSTRACT

Aim/Purpose This study took place in a school with a “paperless classroom” policy. In this school, handwriting and reading on paper were restricted. The purpose of this study was to gain insights from the teachers teaching in a paperless classroom and to learn about the benefits and challenges of teaching and learning in such an environment.

Background In recent years, many schools are moving towards a “paperless classroom” policy, in which teachers and students use computers (or other devices such as tablet PCs) as an alternative to notebooks and textbooks to exchange information and assignments electronically both in and out of class. This study took place in a school with a “paperless classroom” policy. In this school, handwriting and reading on paper were uncommon.

Methodology This qualitative study involved semi-structured interviews with 12 teachers teaching in a paperless school. The research questions dealt with the instructional model developed, the various ways in which the teachers incorporated the technology in their classrooms, and the challenges and difficulties they encountered.

Contribution This study provides important advice to the way teachers have to work in paperless classrooms.

Findings It pointed out the contribution to students in three ways: preparing students for the future; efficiency of learning; empowerment of students. The teachers presented a variety of innovative methods of using the laptops in class and described a very similar structure of the lesson. The teachers described the difficulties involved in conducting a paperless classroom instruction and emphasized that despite the efficiency of the computer and its ability to support the teaching process, they used technology critically. The findings also indicate that

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	some teachers were concerned that the transition from the regular classroom to a paperless one may negatively impact students' reading and writing skills.
Recommendations for Practitioners	Teaching in a paperless school is challenging. On the one hand, going paperless contributes to active and adaptive learning, efficiency, and the acquisition of 21 st -century skills or, as they described their main goal, to prepare students for the future. On the other hand, computers in class cause problems such as distraction and disciplinary issues, information overload, and disorganized information as well as technological concerns.
Impact on Society	Teachers in the paperless school develop a solid rationale relying on ideas for teaching and learning in a paperless environment, and use varied technologies and develop innovative pedagogies. They are aware of the challenges of this environment and concerned about the disadvantages of using the technology. Thus they develop a realistic and critical view of the paperless classroom.
Future Research	Future studies investigating the teachers' voice as well as the pupils' aspect could help guide schools in preparing teachers for the paperless classroom.
Keywords	paperless classroom, teachers, K-12, BYOD, laptops

INTRODUCTION

In recent years, many schools are moving towards a “paperless classroom” policy, in which teachers and students use computers (or other devices such as tablet PCs) as an alternative to notebooks and textbooks to exchange information and assignments electronically both in and out of class. This approach is based on the concept that each student brings a personal laptop or iPad to school (BYOD: bring your own device) and uses it throughout the day as part of his/her personal equipment (Arney, Jones, & Wolf, 2012; Duncan, 2012; Ferguson, 2017; Shepherd, & Reeves, 2011; Wang, 2010).

This study took place in a school with a “paperless classroom” policy, which means that each student used a laptop as a replacement for books and notebooks and managed his or her learning assignments via a laptop, which was part of their personal school equipment. In this school, handwriting and reading from paper were rare. The purpose of this study was to hear from the teachers teaching in a paperless classroom and to learn about the benefits and challenges of teaching and learning in such an environment.

The following sections will describe the literature review for learning in a paperless environment, the methodology, findings regarding the contribution to the students, methods used by teachers and the challenges of the paperless classroom. It will conclude with discussion about the pros and the cons of such a classroom.

THE PAPERLESS CLASSROOM

The primary rationale for the paperless classroom is to promote a more efficient and organized classroom while preparing students for the practical world outside school walls (De Bonis & De Bonis, 2011; Slowinski, 2000; Wang, 2010). It is apparent that over the last ten years, the internet and ICT tools have changed the amount of accessible information, the ease of communication, and the learning methods using digital devices. The workplace becomes paperless and more schools include virtual classes (Capek & Hola, 2015). It is not just a new tool or a method of teaching and learning but a new paradigm of learning (Yuniarti, 2014). Paperless pedagogy aims to improve the learning experience and help students develop electronic skills and competencies (De Bonis & De Bonis, 2011; Suhr, Hernandez, Grimes, & Warschauer, 2010). Studies have also found that the paperless classroom improves the students' engagement and motivation (Ferguson, 2017; Teeter, Madsen, Hughes, & Eagar, 2007) as well as higher order thinking skills and collaboration (Kashtan, Ram, Forkosh & Ran,

2016). It can also enhance the instructor's ability to solicit active participation from all students during class, conduct immediate and meaningful assessment of student learning, and provide needed real-time feedback and assistance to maximize student learning and enhance performance (Enriquez, 2010; Watfa, & Audi, 2017). According to Hetzroni and Shrieber (2004), students with disabilities, especially dysgraphia, benefit even more from a paperless classroom policy. They can type instead of handwrite, and this tends to improve their academic performance.

Researchers have shown that in general students respond positively to the paperless classroom (Ferguson, 2017). They express a high level of satisfaction and have no desire to return to a paper system (Arney et al., 2012). Several researchers (Bebell, & O'Dwyer, 2010; Hofstein et al., 2013; Lei & Zhao, 2008; Suhr et al., 2010) reported that students experienced the paperless classroom as a more personalized, interactive, effective, and enjoyable learning environment. On the other hand, students also expressed some frustration in regard to specific issues such as delivering online testing and writing formulas with text and numbers digitally (Shepherd & Reeves, 2011). Studies conducted in paperless classrooms have reported that the level of satisfaction was not equal among students. According to Ferguson (2017) and Keane, Lang, and Pilgrim (2012), younger students were significantly more positive about using iPads than older students in the same school. Gender differences were also found, with boys being more positive in their attitudes towards using iPads and laptops than girls (Ferguson, 2017; Shonfeld & Meishar-Tal, 2016). It was also found that the satisfaction of students with learning in a paperless classroom decreases somewhat over time (Berger-Tikotsky, Zion, & Spektor-Levy, 2016; Shonfeld & Meishar-Tal, 2016).

From the teachers' point of view, a paperless policy suggests a change in teaching methods, from a teacher-centered approach to a learning environment in which students explore and structure their knowledge through interaction with other students. Teaching in a paperless classroom can employ constructivist pedagogies that place students and learning at the center (Anderson, Mitchell, Thompson, & Trefz, 2014). Similarly, Harasim (2012) claimed that changes in the way we acquire knowledge, in particular through the Internet, will lead to teachers developing a different epistemology about knowledge. It is not only about the access to different techniques and instruments, but also the need for the competence to deal with technology and make appropriate decisions about technological instruction that can have significant impact on students (Grigoryan, & Babayan, 2015). Part of the rationale for our study was to explore whether teachers in our school indeed changed their views of knowledge or simply used the same pedagogy as before, enhanced by digital technology.

Previous research has focused mainly on learning processes and students learning in a paperless classroom (Berger-Tikotsky et al., 2016) and less on teachers and the challenges they face in moving towards a paperless classroom. This study aims to illuminate the perspective of the teachers by presenting the voices of those who taught in a school where a paperless classroom approach had been implemented.

CONTEXT

This study took place in a school in Israel with a "paperless classroom" policy. It was a new "growing" school in which each year a new grade was added. The study was conducted during the third year of the school's existence. The junior students were in 7th grade and had been at the school for one year, while the senior students were in 9th grade and had three years' experience in the school. The students and teachers brought their own laptops to school. Instead of notebooks, they used the OneNote application. They did not carry printed books but used digital books and other digital materials that made the school's Learning Management System (LMS) accessible to them. The classrooms were equipped with smartboards or projectors to project digital materials in the classroom. The entire school had broadband Wi-Fi, and students as well as teachers could access the Internet at any time and from any location in the school.

METHODOLOGY

The research was conducted using qualitative methods. The main questions were the following: What methods do teachers in a paperless classroom use? What is their attitude toward the paperless classroom policy? What are the challenges they encounter? The open-ended questionnaire was administered by the researchers only after it was discussed with the school pedagogical advisor, an external school advisor, and the educational consultant. This team of the research advisors helped the researchers to formulate the questions for the research and choosing the teachers for the interviews. Twelve teachers were interviewed using a semi-structured interview approach. The teachers were from different disciplines, and one was an educational advisor. Most were young (30-40 years of age) with only 1-5 years teaching experience. Most had masters' degrees.

The semi-structured questionnaire included 16 open-ended questions in four areas: personal details, attitudes to technology in education, attitudes to the paperless classroom policy, and the application of this policy in class. The interviews were transcribed and then analyzed based on grounded theory. Bottom-up content analysis was conducted to identify themes. Narralyzer software was used to create the categories and the themes (Shkedi, 2014).

FINDINGS

The analysis of the interviews produced the categories and themes. These results are the answer to the research questions. The results are presented schematically in Table 1 and in a broader form with citations in the following section.

Table 1. Numbers of teachers related to each of the categories and themes

Category	No. of teachers related to the category	Theme	No. of teachers related to the category
1.The rationale of learning in a paperless classroom	11	Preparing students for the future	7
		Efficiency of learning	4
		Empowerment of students	4
2. Methods used by teachers to implement a paperless classroom	10	Similar model of a lesson	8
		Media-enriched learning	4
		Adaptive Learning	3
		Group learning	7
		Flipped Classroom	3
3. Challenges related to teaching and learning in a paperless classroom	12	Varied technological environments	6
		Distraction and discipline problems	7
		Information overload	4
		Technological problems	6
		Underdeveloped skills:	
		Social skills	4
Reading skills	5		
Writing on paper	5		

As can be seen from Table 1, all 12 interviewees related to the third category of the challenges of the paperless classroom. However, not all of them mentioned the rationale of the paperless classroom

(11) and only 10 of them spoke about their lesson methods. The majority of teachers (7) emphasized the importance of preparing their students for the future, the unified structure of the lesson on one hand (8) and the variety of technological tools they used on the other. Seven of them mentioned the group work they do in their classes. They emphasized distraction and discipline problems (7) as well as technological problems (6) as their main challenges. Underdeveloped skills were also emphasized but were divided to subthemes (14 altogether).

As shown in Table 1, categories were derived from the interviews dealing with the teachers' perspectives in the following areas:

- a. The rationale of learning in a paperless classroom
- b. Methods used by teachers to implement a paperless classroom
- c. Challenges related to teaching and learning in a paperless classroom

A. THE RATIONALE OF LEARNING IN A PAPERLESS CLASSROOM

It was found that learning in a paperless school contributed to students in three ways:

1. **Preparing students for the future** - Learning in a paperless classroom is perceived by the teachers as a means of preparing students for the future world and for the job market. The digital skills that the students acquire during classes are part of training them to develop real-life skills such as self-learning, information gathering, and collaboration. This view was reflected by one of the teachers in the following statement: *"It's not a choice, it's a reality of our lives."*
2. **Efficiency of learning** - Teachers said that learning in the paperless classroom was more efficient in two ways. First, it was more efficient in terms of time and accessibility to and organization of information. As one of the teacher stated, *"As far as I'm concerned, what is really optimal here is that they have everything here. I can send them a message. If there is a test, I can put the material for the test here. There is no, I can't find it."* Second, the technology improved communication among students and teachers. The online environment offered new means of interaction between them, contributing to the transparency of the learning process and the effectiveness of assessment. As one of the teachers noted, *"It is possible to track who entered, who did what, and the student receives the grade immediately."* Nevertheless, it should be noted that the teachers did not view technology as the main issue; one commented, *"I do not have enough experience to tell you if the computer makes them better students. But I think the computer is a very simple tool, very convenient and suitable for this time and age. If my lesson is not good ... then the computer will not help make it better."*
3. **Empowerment of students** - The pedagogical rationale that emerged from the teachers reflected the perception that students' needs must be put at the center. According to the teachers, the technology enabled them to design lessons that focused on active and meaningful learning and contributed to the enjoyment of learning, as expressed in the following statement: *"The Internet came to our advantage, in reading real materials, learning English by actual activity, communicating with the world Create the activities, let them create things in general, give them challenges."* Some teachers emphasized the experience of self-regulated and personal learning as central to the learning experience in a paperless classroom. As one said, *"The materials are available on the computer, and the student has a responsibility to learn, to progress, and to fulfill the tasks."* In the case of students with special needs, the special-education teacher emphasized the advantages of the paperless classroom in enabling *"everyone to connect and work on his assignment and in his own pace."*

B. METHODS USED BY TEACHERS TO IMPLEMENT A PAPERLESS CLASSROOM

During the interview, teachers were asked how the vision of the paperless classroom was reflected in their teaching. Despite differences among teachers in terms of seniority, disciplines, teaching experience in schools, and educational philosophies, they described a similar model of a lesson. An ordinary lesson had the following structure:

1. Opening the lesson with presenting the material for 10-15 minutes. During this stage, computers were closed and the students' full attention was on the teacher.
2. Students were given a task and began to work independently, in pairs, or in groups.
3. Subsequently, the students were brought together for discussion and lesson closure.

Teachers described diverse teaching methods and strategies such as media-enriched, independent, collaborative, individual, remedial, and adaptive learning, and the flipped classroom.

Media-enriched learning: Some teachers described how they integrated online video and prepared recorded lessons for their lessons. As one of the teachers said, *"I can prepare a lesson while I sit at home and record a YouTube video. I already have more than a hundred videos...."*

Adaptive Learning: One way to use technology in teaching is through personalized learning and individual learning, especially for students with special needs. As the Special Education Teacher explained, *"The advantages are reading with a reading software.... The computer allows us to give customized instructions, everyone can connect and work on his/her assignment"*

Group learning: The teachers employed collaborative learning as well as individual learning in their classes. In their opinion, collaboration enabled higher-order thinking and gave students a sense of knowledge of the material. Collaborative learning encouraged students to explore multiple aspects in situations, develop social skills, and foster leadership. As one of the teachers noted, *"This is the most fun. You go around the groups It's as if you look at how they've advanced."*

Flipped Classroom: Use of videos by teachers and students is not only taking place in class but also at home. It promotes the flipped classroom approach (Flipped Learning Network, 2014), in which students learn about a subject at home and use the face-to-face lesson to clarify questions and delve into the material with the teacher. One of the teachers noted, *"There can be a lesson in which I sit at home and record a YouTube video related to an assignment.... I solve only the question one and two in the video... and then they come to class, I say, 'You've seen the video, great, here are exercises, start working.'"*

Varied technological environments: The teachers' best-practice lesson descriptions show a variety of technology environments used during the year. The environments mentioned in the interview were simulations, games, smart board, work pages, videos, digital books, 3D, Google Maps, and OneNote. The diversity of tools and techniques is part of a wider understanding of the schools' role: *"I think we here at school try to implement a lot of things that do enhance the optimal experience, which breaks the limits of a classroom with four walls, just to get out of this space, getting into other learning spaces."*

C. CHALLENGES RELATED TO TEACHING AND LEARNING IN A PAPERLESS CLASSROOM

Alongside the benefits the teachers recognized in teaching in a paperless classroom, they also pointed to some difficulties and disadvantages. The disadvantages can be divided into four primary categories: distraction and discipline problems, information overload and disorganized information, technological problems, and underdeveloped skills.

Distraction and discipline problems: Most teachers claimed that the computer distracted many children by popup messages, online communication with friends, and distracting games, all of which

required the teachers to supervise the students when they were working on their computers. Teacher M noted, “*You see students sitting with an open computer and playing solitaire and on Facebook*” One of the methods teachers found useful in reducing distraction was to limit the use of the computer at the beginning and the end of the lesson, during classroom discussions, or in cases of whole-class teaching. As this teacher said, “*When I teach, I teach. While having a discussion, while there is brainstorming, the computer is closed.*”

Information Overload: One of the perceived advantages of the paperless classroom is that the online environment in general and the digital notebook in particular invite new possibilities for accessing and handling information. However, some teachers perceived this as a challenge. Maintaining order and managing information in the digital environment was not so easy for the students, as one of the teachers explained: “*The truth is that when working with a portable computer one must teach a child how to organize his information There is this difficulty of knowing to manage information because it is a lot of information.*”

Technological Problems: Although teachers and students had appropriate training, there were still problems in operating and managing the technology. The problems related to maintenance of infrastructure and personal devices, operation of applications and internet sites, and the need for further technological training. Teacher M said, “*There are technical problems, you know, which you do not have with paper. It’s annoying.... I go into a site, it just crashed.... There are PC problems.... They don’t recharge the computer at home and there aren’t enough outlets. There are web crashes, and it is difficult to activate the task.*” Some teachers said that it took them a long time to train the student to make proper use of the technology and “*even after a long period of intensive learning of new tools, gaps still exist.*” According to the teachers, there were problems with the students’ keyboarding competence; one noted that there were “*students’ typing problems. They need to improve their typing; some students have problems with computer control.... Students do not have enough...computer skills.*”

Underdeveloped Skills: The teachers noted three types of skills that the paperless classroom policy may damage and expressed their concern regarding them:

1. **Social skills:** Teachers were concerned that the students’ social skills were in retreat. As online space becomes a more significant place for interaction, social skills are reduced accordingly and social anxiety rises. As one teacher put it: “*What we hear from a lot of parents, also a lot from children, they go home to play with their friends through the net. That is to say, they meet much less....*” The same concern was also expressed by another teacher: “*Today we need to make an effort to cut off the children from the computer. Students who do not have friends ... find refuge on the computer.*” Teacher D also commented on social issues. She claimed that the lack of social skills was very clear in the classroom dynamics and added, “*I would not want to lose the social skills required in face-to-face meetings.*”
2. **Reading Skills:** Some teachers believed there was a problem with the reading of texts, mostly long texts. In their opinion, reading for a long time from a computer screen, mobile phone, or tablet is more difficult than reading from printed materials. Teacher Y claimed, “*It’s hard to do much reading of long texts. I think long texts should be read on paper.*” Some teachers felt that reading on the computer adversely affected reading comprehension, compared to reading on paper, so they preferred to print the text.
3. **Writing on Paper:** Some teachers believed that word processing affected writing skills. In teacher Y’s opinion, writing skills such as summarizing were absent: “*[H]ere another big part falls through: first of all summarizing skills, the skill of writing a summary.*” Teacher T thought that in situations where empirical and experiential methods are required, the notebook was missed: “*[T]hose who learn biology at least, should have a notebook. I feel that they suffer from not writing, don’t draw things, no longer do things through other senses.*” Another issue of concern to the teachers was that in the national matriculation exams handwriting is required, and students in this school did not use handwriting, which could harm their performance. As teacher D com-

mented, “*The strategies of reading a text and labeling and highlighting and writing next to the text, that we don’t have on the computer, I mean, we do but it ... it’s different. The writing is disappearing, and then on the exam [matriculation] suddenly they are asked to write, so where’s the daily use compared to the exam?*” Teacher D continued, “*The Ministry of Education still requires the students who learn in a digital environment to take the written matriculation examinations and not digitally.*” In other words, there is a gap between national requirements and what takes place in the school.

Some teachers did not use only a digital environment but gave their students tasks to perform on paper. Some believed that it was important to maintain the skill of writing on paper. Teacher I said, “*Paper is not a dirty word. I want to see them express themselves, I want to see them writing ... from start to finish. With a sketch, I do use paper. I often encourage the children during the lesson as well, to scribble a sketch in a notebook. It’s okay.*” The use of paper from time to time does not express opposition to the idea of a paperless school or to the integration of technology in teaching, but it stems from specific pedagogical needs. Teacher L summed up her personal philosophy and the importance of using paper in the classroom: “*There are activities that go better with paper and one should use them. There are activities that are better on the computer....I think a lot of things go into your head, through physical writing.*”

The challenges as described in Table 1 were important and mentioned by all interviewees. The themes derived from this category were more detailed concerning learning, writing and reading in class. Table 2 presents these aspects schematically.

Table 2. Paperless Classroom Challenges

Long Texts	Writing	Pleasure
<ul style="list-style-type: none"> • Long text- Uncomfortable to read • Harms understanding 	<ul style="list-style-type: none"> • Typing problems • Disparity between pupils • Disparity between pupils and teachers 	<ul style="list-style-type: none"> • Missing the sense of touching the book • Digital books vs. printed books
Distractions	Information Overload	Technology Problems
<ul style="list-style-type: none"> • Popups • Chats with friends • Enticing games • Computer supervision 	<ul style="list-style-type: none"> • File organization • Retrieving information • Managing information 	<ul style="list-style-type: none"> • Laptop problems • Infrastructure – Sockets, Charging, Internet • Sites and apps – installation and setup

The challenges presented in Table 2 emphasize issues around the absence of paper and the difficulties of managing the new tool, i.e., the computer. It is important to mention that all these categories were derived from the teachers’ interviews.

The results pointed out that that the teachers rationalized the reality of the paperless classroom by claiming that it prepared the children for the future, added to efficiency of learning, and empowered their pupils. They used a similar structured lesson but employed different technology and pedagogy for their classes. They were aware of the challenges such as distraction and discipline problems, technological problems and underdeveloped skills, especially reading and writing skills.

DISCUSSION

In recent years, many schools have moved towards a “paperless classroom” policy, in which teachers and students use computers (or other devices such as tablet PCs) as an alternative to notebooks and textbooks and exchange information and assignments in and out of class electronically. This is be-

cause the internet and ICT tools have changed the amount of information accessible, the ease of communication and the learning methods using digital devices (Capek, & Hola, 2015). This research aimed to discover the rationale of learning in a paperless classroom, the methods used by teachers to implement it and the challenges related to teaching and learning in a paperless classroom.

From the interviews with the teachers, it is clear that teaching in a paperless school is challenging. On the one hand, going paperless contributes to active and adaptive learning, efficiency, and the acquisition of 21st-century skills or, as they described their main goal, to prepare students for the future. This is in line with other research that points out that paperless pedagogy improves the efficiency of the learning experience and contributes to developing electronic skills and competencies (De Bonis & De Bonis, 2011). In addition, technology improves learning-process transparency and engagement in learning; order and organization also improve, helping to assess student learning. These advantages were also mentioned by Enriquez (2010) and the Edudemic staff (2014) as being important in preparing students for the real world. On the other hand, computers in class cause problems such as distraction and disciplinary issues, information overload, and disorganized information as well as technological concerns. These might change according to age and gender differences (Ferguson, 2017; Keane et al., 2012; Shonfeld & Meishar-Tal, 2016).

The teachers used the computers in class mostly as a digital notebook and for access to the school's online learning environment. In addition, new and innovative possibilities and pedagogies were observed, such as the Flipped classroom approach and group work that rendered the class more active, making the work meaningful and contributing to the enjoyment of learning. It seems that the results of this research support the view that teachers who work in a paperless classroom school are more likely to use innovative pedagogy and employ constructivist epistemology and theory (Anderson et al., 2014; Harasim, 2012). Studies have also found that the paperless classroom improves the engagement and motivation of students (Ferguson, 2017; Teeter et al., 2007) as well as higher order thinking skills and collaboration (Kashtan et al., 2016).

Most previous studies (Enriquez, 2010; Watfa & Audi, 2017) emphasized the benefits of learning and teaching in a paper less classroom, stressing the contribution of the paperless classroom to the enhancement of the instructor's ability to solicit active participation from all students during class, conduct immediate and meaningful assessment of student learning, and provide needed real-time feedback and assistance to maximize student learning and enhance performance. The teachers interviewed in this research acknowledged these benefits, however, they also were critical and aware of the challenges that the paperless classroom brings about. The teachers expressed their concern about distraction and discipline issues (Fried, 2008) that the paperless classroom may cause, as well as information overload (Roda & Thomas, 2006) and technical problems that are inherent in the teaching and learning digital environment. They were also concerned about the social skills as online space becomes a more significant place for interaction, probably at the expense of face to face interactions.

The issue of reading and writing was stressed. Some teachers claim that the fact that students don't read and write on paper adversely affects those skills. They believe that there is a problem with the reading and understanding of texts, particularly long texts. These findings add to Liu's (2005) claims that students tend to develop strategies of skimming and not intensive reading and that writing requires keyboarding skills that are not natural and easy to achieve (Barkaoui, 2014). It also strengthens previous studies reporting that students are reluctant to read long texts from screens and preferred handwriting (Shonfeld & Meishar-Tal, 2016). However, pen-based computers might change these attitudes (Koile & Singer, 2006). It is also important to look at differences between the teachers perspective on distractions. Teachers were complaining on popups screens, games and chats, while pupils were not aware of those distractions (Shonfeld & Meishar-Tal, 2016). It seems that there is more research to be done on the benefits and the challenges and to find the best way to teach and employ reading and writing in a paperless classroom.

CONCLUSION

In conclusion, this study shows that teachers in the paperless school develop a solid rationale relying on ideas for teaching and learning in a paperless environment, and use varied technologies and develop innovative pedagogies. They are aware of the challenges of this environment and concerned about the disadvantages of using the technology. Thus they develop a realistic and critical view of the paperless classroom.

This study is relevant to the growing number of schools developing paperless classes (Capek & Hola, 2015). However, it relies on the results of one school in a specific area and on 12 teachers' interviews. Thus the results cannot be generalized. Other future studies investigating the teachers' voice as well as the pupils' aspect could help guide schools in preparing teachers for the paperless classroom.

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BIOGRAPHIES



Miri Shonfeld (PhD) is the head of the Technology, Education, and Cultural Diversity (TEC) Center at Mofet Institute and a faculty member of the graduate program in Technology in Education at Kibbutzim College of Education in Tel-Aviv. Her research deals with learning in digital environments, collaborative work, intercultural links and faculty development. She received award from the Ministry of Education for the unique pedagogical initiative and a prize for outstanding educational project for tolerance.



Hagit Meishar-Tal (PhD) is the head of BA program in Instructional Technologies in The Instructional Technologies Faculty in Holon Institute of Technology. Her main fields of research are mobile learning, collaborative learning, distance learning, game and gamification of learning and digital culture.