THE SIGNIFICANCE OF DIGITAL PEDAGOGY: TEACHERS' PERCEPTIONS AND THE FACTORS INFLUENCING THEIR ABILITIES AS DIGITAL PEDAGOGUES

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ABSTRACT

Information and Communication Technologies have brought widespread changes in all aspects of contemporary society and culture. Most scholars believe that the assimilation of processes of change in schools and the entire Educational system depends on the abilities and perceptions of teachers in the system. The present study examines how Graduates of the Master's degree program, Technology in Education, perceived the significance of digital pedagogy (pedagogy in an Information and Technology-rich learning environment), in relation to three different aspects such as role of the teacher, role of the student and technology's contribution to the teaching/learning processes.

According to the graduates, teachers should develop student-centered teaching serving as facilitators, create personal and caring relationships with the students and stay updated, constantly deepening their professional knowledge. The students should be the initiative for learning, be independent, curious, and work out of interest and inner motivation to achieve meaningful learning, through collaborative learning and also be familiar with digital environment. Use of technology should help to create a supportive environment, enabling demonstration of phenomena and processes, increase the range of learning possibilities, help to provide an answer to variance of students and the narrow gaps between them.The graduates believed that a supportive Principal, committed teachers and supply of adequate instruction to the teachers can help them apply the digital pedagogy. A policy of learning evaluation by measuring achievement and lack of support at the school level can render the application more difficult. The findings showed that most of the Graduates had an actual experience of introducing digital pedagogy in their classrooms as part of their studies in the program.

Keywords: Technology In Education, Digital Pedagogy, Factors, Application, Professional Development, Teachers' Perception, Technology.

INTRODUCTION

1. Digital Pedagogy

1.1 Theoretical Background

In recent decades, Information and Communication technologies have undergone profound changes in all aspects of our society and culture (Bonk, 2009; Kozma,2003). Educational systems have to connect schools to the new reality to lead perceptive-pedagogical and organizational changes in schools and in the educational system (Fullan, 2011).

The school is a complex system comprised of the teaching staff, the teaching system, the curricula system and the system of students and classes, all of which forms the organizational and educational core of the institution, (Kozma, 2009). The school functions as a system only when there is a high level of coordination and connection between all of these sub-systems, as well as between them and various factors, internal and external, that influence its ability to assimilate changes (Kozma,2008).

1.2 Factors that Influence the Assimilation of Conceptual Pedagogical Changes in the School

1.2.1 Motivation for change

The motivation for change stems from the intensity of the internal needs of the entire educational institution as a

system and those of the teacher, as an individual acting within it. The motivation for change, on the system and personal level, is influenced by the expectations the individual has of himself and of other factors in the system, as well as from the anticipated results of the change (Hargreaves et al., 2010). A high level of expectation and the sense that the changes are necessary and will contribute to the institution, the teachers and the students, increase the chances that the process of change will succeed (Fullan, 1992, 2011).

1.2.2 Characteristics of school culture

The characteristics of school culture create conducive conditions and an atmosphere that induces the entire teaching staff and students (Dede, 2007; Salomon, 2000).

If the school's organizational culture fosters innovation, encourages updatedness, and rewards creativity, it is far more likely that changes will be successfully integrated than in schools whose organizational culture promotes conservatism (Fullan, 2012). An organizational climate that fosters teachers' commitment to the students and positive attitude of students towards the changes, greatly influence the successful assimilation of changes (Clarke et al., 2008).

a) The school's Principal plays a key role in introducing or rejecting change. His/her support, leadership in introducing change and involvement in its application, determines its fate and continuity. If the Principal is involved in the process of change and provides the staff with practical and psychological support that enable it to acquire the necessary skills, there is a better chance that the change will be successful (Fullan, 2011).

b) The teachers in the school are the most important component in the introduction of change and it is impossible to circumvent them in the process (Darling-Hammond et al., 2005; Fullan, 2011; Wadmany, 2012). The teachers' educational concepts and their personal beliefs regarding teaching and learning, whether conscious or unconscious, have a decisive influence on their conduct in the classroom (Albion & Ertmer, 2002; Clark & Peterson, 1986; Ertmer, 2005; Lim & Khine, 2006; Park & Ertmer, 2008; Scrimshaw, 2004). The teachers' concepts also influence the way innovations are applied; they determine the degree to which teachers adopt new teaching methods and how they adapt to a new technology-based learning environment (Clarke, Dede & Dieterle, 2008).

c) The students in the school must also change their perceptions and attitudes towards the processes of learning and teaching in the school, and towards the objectives and meaning of learning. Hence, the greater the extent of their participation in the process of change, the greater the chance that it will succeed (Wadmany 2012a).

1.3 How Teachers Perceive the Role of Technology

Studies on the use of technology and its assimilation in learning environments have shown that there is a link between the teachers' concepts and lesson planning (Cuban, 1986; Park & Ertmer, 2008) and the teachers' conduct in a technology-rich classroom (Ertmer & Ottenbreit-Leftwich, 2010).

Many teachers have a superficial, traditional-conservative attitude towards ICT (Bauer & Kenton, 2005). In most cases, then, the use of ICT does not lead the teacher to reexamine and change teaching and learning processes in order to take advantage of the new opportunities offered by the technological tools (Bonk, 2009; Scardamalia & Bereiter, 2008; Salomon, 2000).

In contrast, those teachers whose pedagogical concepts place the student in the center, adopt constructivist teaching methods focused on the student, tend to adopt technology and new media for teaching and learning purposes (Bauer & Kenton, 2005; Ertmer, 2005; Ertmer & Ottenbreit-Leftwich, 2010; Judson, 2006; Kozma, 2003; Totter, Stutz & Grote, 2006; Zhao, Pugh, Sheldon & Byers, 2002).

The teachers' concepts are a basis for educational reforms and it will be only partially successful when the reform is not compatible with their educational beliefs. (Lim & Chai, 2008).

1.4 Educational Systems Prepare to Integrate ICT in the Schools

In recent years, there has been widespread readiness to acknowledge that significant change in educational systems calls for fresh approaches, radical systemic changes (Kozma, 2003) and the development of

pedagogical approaches suitable for a changing reality (Clarke-Midura & Dede, 2010; Dede, 2009).

In Israel, much effort has been invested in introducing computers and technology into schools from 2008. These efforts have evoked hopes that they will stimulate radical processes of change in teaching and learning. These hopes have been only partially fulfilled, among other reasons, because there is a shortage of technology-literate teachers, digital pedagogues, who can help lead the organizational, ideological, pedagogical and curricular change required for a successful assimilation of innovative educational technologies. The present study follows the perceptions of Graduates of the Technology in Education Masters degree program at a Teacher Training College.

1.5 Description of the Technology in Education Master's degree Program at a Teachers Training College

Teachers with a B.A. degree are accepted into the Technology in Education program, which is intended to deepen and expand their knowledge in the areas of technological literacy and digital pedagogy. The program's main goal is to instill in-depth thinking about the use of varied, innovative educational technologies, suitable for teaching and learning in the digital age.

The program provides the students with the knowledge and skills to serve as leaders in assimilating educational technologies in educational systems and as consultants in the development and advancement of teaching and learning in information-and-technology-rich environments.

1.6 Objective and focus of the present study

The objective of the present study is to examine how graduates of the Master's degree program, Technology in Education, perceived the significance of digital pedagogy (pedagogy in an Information and Technology-rich learning environment).

1.7 Research Questions

The present study focuses on the following questions:

1. How do the graduates of the Technology in Education program understand the meaning of digital pedagogy, at the conclusion of their studies?
2. What actions do Graduates take in order to apply digital pedagogy, based on their approach, and what plans do they have to expand its application in the near future?
3. What are the factors that support or inhibit the application of digital pedagogy, based on the graduates' reports?

2. Methodology

The present study is a qualitative research. This research approach was selected in order to examine the research questions in-depth and to obtain significant replies that can provide a better understanding of the needs of the students in the program and the degree to which the program meets these needs in the dynamic, changing environment in which they work in the school and in the educational system.

2.1 The Research Population

Eleven graduates of the first class of the Technology in Education program participated in the research.

These graduates represent a cross-section of the students in the program where they teach various subjects in the Jewish and the Arab sectors. They fill varied roles in the schools: computers and ICT coordinator, general teacher, subject teacher, instructor, grade level coordinator.

2.2 Research Tools and Data Analysis

- Semi-open interviews that included guiding questions and allowed the graduates to express themselves freely, were conducted.
- Examination of the applied research that the students presented in their thesis as part of the requirement for a Masters degree. The purpose of the examination was to see whether these graduates were actually practising in their classrooms the approaches they described when interviewed.

To analyze the data, the authors used the phenomenographic method (Marton, 1986) and categorized statements based on an ongoing comparison and search for similarity, disparity and complementary between them. In the present research, all the responses of the graduates to the questions were analyzed in order to find similarities between them. The categories were determined according to the educational concepts of the graduates relating to the topics being

examined.

The significance of digital pedagogy based on the graduates' perception was examined in three different aspects:

(1) The roles of the teacher were examined on the basis of the following categories:

- The patterns of work required from teachers.
- The teaching approaches teachers should adopt.
- Nature of the connection between teacher and student.

(2) The roles of the student were examined according to the following categories:

- The roles: internal motivation, taking the initiative, self-experimentation, use of technology.
- Modes of learning: self-learning, shared learning, colleague learning.

(3) The contribution of technology was examined according to the following categories:

- Variety in learning, flexibility and ease of demonstration
- Inquiry learning and team work
- Shared learning and colleague learning
- Dialogue and brainstorming
- Internal motivation
- Response to differentness and closing of gaps
- Transcending frameworks of time and place
- Technology as a tool

Application of Digital Pedagogy's principles was examined according to the following categories:

- Actual application - what the students were already doing in their school, based on their reports and interviews.
- Future plans - what the students want or plan to do in the near term.

Factors influencing the application of Digital Pedagogy were examined according to the following categories:

- Supporting factors – which help the students or which they believe can help them to assimilate digital pedagogy.
- Inhibiting factors – which make it difficult for the students to apply the principles of digital pedagogy.

2.3 Methods of validating

In the present study, the following methods of validating findings were selected:

- Each of the two researchers independently analyzed data collected in the field. They then discussed the controversial statements and analyses in order to reconcile the inconsistencies.
- External validation: The findings were cross checked against findings in the research literature, and the generalizations made by the researchers were examined.

2.4 Ensuring the rights of the researchers

All the graduates selected for the study were asked to explicitly agree to take part in the research after its aims and the planned mode of its execution were explained to them. None of the students' names or any other identifying details will be published.

3. Findings

3.1 The significance of digital pedagogy

The significance of digital pedagogy based on the graduates' perceptions was examined in three aspects - roles of the teacher, of the student and contribution of technology.

3.1.1 Roles of the teacher

A central feature in the perception of digital pedagogy stated by the graduates was the need to change work patterns of teachers. They should work in a more open, transparent manner and in team work: *"…I feel that I flourish in team work, I believe strongly in dialogue, cross-fertilization and thinking outside the box…"*

The teachers should invest efforts in changing their own learning processes and adopt several approaches: Colleague learning with experts and teachers everywhere in the world as well as with students: *"..I am prepared to develop learning with another group of people who will think with me …a group that will lead good processes, a group that has power…"; "I have had wonderful dynamics with experts in the world …."; "I teach the students how to*

conduct research and progress alone. The students naturally accept that we, the teachers, learn together with them".

Collaborative learning: *"We need to find a place for discussion and discourse, for shared learning, and to construct joint projects."*

Self learning: *"What they demand of the students, the teachers have to know themselves".*

The Graduates' statements indicated that teachers who apply digital pedagogy must change the nature of their interaction with their students. They have to develop an experiential mode of teaching that will evoke the students' interest and is learner-centered, so that it can meet the needs of each of them: *"We need to teach interesting, relevant things so they'll enjoy learning."; "We need to develop adventurous, challenging learning in the classroom processes that create experiential learning."*

The Graduates believed that adopting approaches of inquiry and problem solving arouse students' interest and enable them to express their areas of interest and capabilities:"*With the approach of inquiry work, the students can connect and do good work. We need to learn how to do that."*

The findings also reveal some hesitation in relation to the application of these teaching-learning approaches: *"We should teach inquiry approaches, but I myself also have to learn how to carry that out and how to integrate it."*

The graduates' statements show that the nature of the connection between teacher and student should change. A personal, caring relationship should be encouraged and the teacher should be more accessible to the students: *"A personal contact and a face-to-face discourse are essential for learning"; "what contributes to students' achievements is attitude; we need to show them a warm, caring attitude."*

The findings indicate that the teachers should relinquish control over the learning processes, serve as facilitators and guides: *"The teachers and the students are one circle. I am not in front of them but with them."; "We have to be freer, to present the objective to the students and to let them get there on their own, to be independent."*

Summary :

The graduates believed that the significance of digital pedagogy from the standpoint of the teacher's role is the ability to develop student-centered teaching that enables the students to control their learning processes with the help of the teacher who serves as a facilitator. The teachers should create a personal, caring relationship with their students and develop learning that is experiential and arouses interest. The teachers should stay updated and constantly deepen their professional knowledge through self-learning, team work and colleague learning with other teachers in their school, in other schools in the country and elsewhere in the world.

3.1.2 Roles of the Student

According to the teachers, today's students are much livelier, want lots of stimuli and don't have the patience to sit and wait. They want immediate gratification. Therefore, they had to find a solution that traditional pedagogy could not provide.

The students' role have to change and digital pedagogy should arouse internal motivation, not an external motivation for achievements. Teachers should encourage students to take the initiative, to enable them to show their ability and to think together with them about what tools to use in order to achieve different goals in learning.

The graduates attributed much importance to the student's experiences:

"The kids have to undergo the experience that cannot be replaced by a demonstration. The experience also helps to develop self-learning, because independent students undergo significant learning. That happens when the learner is independent, curious, creative".

The statements also indicate that the use of digital tools should emerge out of explicit teaching and guidance.

The graduates' statements show that their opinion about the mode of learning required for the students was the same as their view regarding the teachers, i.e., they had to engage in shared learning and colleague learning*:*

"Collaborative learning is essential. It is a microcosm of the world Group work that takes effort and reflects exactly who you are. What is better and what needs to be improved.

The group will tell everything."

In collaborative learning, the main thing was not the outcome but the process.

"The main thing was not the outcome but the collaboration between the students. They all listened to one another. Their learning capability was not important and they contributed a lot."

However, they thought that "Collaborative learning also has drawbacks, because sometimes teachers and students get less out of it because of their personalities. There are some who make partial progress but do not take in everything*".*

There is also the cost of time.*"collaborative learning is a complex process that requires resources of time".*

Peer Learning, in which students teach their friends, is invaluable:

"Very interesting things happen when there is a discussion and you have to convince others, when you have to hear other opinions and arrive at a joint outcome. There are deeper processes of learning here. It builds a different kind of knowledge for the students who undergo these processes."

Summary :

According to the graduates' concept of the roles of the student, the significance of digital pedagogy is that the student should take the initiative for learning. The student should be independent, curious, and work out of interest and inner motivation to achieve meaningful learning. Like teachers, students too need to learn through collaborative learning and colleague learning. They should be familiar with the digital environment and know how to select suitable tools for their learning processes.

3.1.3 The Contribution of Technology to the Learning/ Teaching Processes

The graduates believed that technology supports many of the learning-teaching processes which they regarded as an inseparable part of digital pedagogy.

Technology increases the range of teaching possibilities and allows them to be more flexible: *"For students who have difficulties writing or reading books, there are other means…they are not a substitute but they increase the range of possibilities."*

Technology makes it possible to demonstrate by means of things that look like the real thing. We don't need to invent anything.

Technology supports inquiry learning in team work:*"I learned with the students, inquiry and information management. Together with me they found a way to introduce technology into the process."*

Technology helps students to engage in collaborative learning and colleague learning: *"Technology enables collaborative learning, joint structuring, shared thinking. Even students with difficulties have the possibility to express themselves."*

Technology made it possible to hold a dialogue and brainstorming: *"Technology helps me make my teaching flexible. I have many more options…"*

The graduates' statements indicate that technology also has an important contribution in creating internal motivation**:** *"Technology enhances the motivation to learn. The students look forward to the computerized lessons. Even the students with learning difficulties flourish."*

Technology also makes it possible to cope with different levels and to reduce gaps: *"Because it is possible to adapt the learning level to the place where the students are in the learning process."*

Technology has another substantive advantage: It transcends frameworks of time and place: *"Today there are no boundaries and it is possible to talk to people everywhere in the world, whom you do not know.";"…You can apply to anyone in the community…beyond any frameworks of time and place."*

According to the graduates, *"the computer has an added value in learning and we should not treat it as a marginal tool."* Nonetheless, *"The computer should be seen as a tool, as a means, and not as a goal in the learning processes. It will not replace the teaching processes conducted by the teacher.*

The advantages of the technology will be given expression only in the framework of appropriate pedagogy."

Summary :

The graduates believed that the significance of digital

pedagogy from the standpoint of the contribution of technology to learning/teaching processes is in the creation of a supportive environment. It makes it possible to demonstrate phenomena and processes, increases the range of learning possibilities, helps provide an answer to variance of students and narrows the gaps between them.

Technology supports collaborative learning and team work, enables the creation of learning outcomes on a high level and enhances the students' motivation. It enables flexibility in learning and helps transcend frameworks of time and place.

The use of technology is an inseparable part of digital pedagogy, but its advantages can only be given expression within the framework of appropriate pedagogy. Technology cannot serve as a substitute for the teacher.

3.2. The Application of Digital Pedagogy by the Graduates in the Program

3.2.1 Actual Application of Digital Pedagogy by the Graduates

At the end of their studies, many graduates reported that they were applying the digital pedagogy approach in the settings in which they were working: *''The studies [in the program] made me understand that we need to make a change in pedagogy and I am making changes in the contents I teach."*

3.2.2 From declaration to application— applying principles of digital pedagogy by the graduates of the program in their classrooms and schools

In their interviews, the graduates presented a well-formulated concept of the significance of digital pedagogy and how it could be applied in their classrooms. To see whether the graduates were actually practising the approaches they presented, steps they took in the classroom as part of their Masters degree thesis were examined. The Graduates presented a variety of actions taken to apply new pedagogical approaches in their classrooms, including:

- Use of a Moodle environment and tools for synchronic learning to develop curricula that include lectures, exercises and problem solving in a collaborative approach, on various subjects. A Moodle environment also served to develop joint projects of learners in different countries. For example, a system for sharing information, working methods and cooperative writing between girls serving as emissaries of Habad chasidism.
- The introduction of Web tools to develop collaborative inquiry learning - Google docs, Wiki, conceptual maps and forums.
- The development of adventurous learning through second life and Junaio.
- The development, operation and evaluation of teaching the subject of the "law of leverage" by means of a collaborative inquiry approach in a computerized environment in the eighth grade, while making use of the learning site http://phet.colorado.edu, animation from youtube, an information search on the Web and self learning of part of the subject, and application of the learned material in the contexts of daily life. The purpose of the application was to connect the law to everyday life and to industry.
- In the framework of learning English, the inclusion of personal writing on a guided subject on a personal blog which is open to other students in the class in order to create interaction. Studying a play in English in the 12th grade in the setting of a closed group on Facebook in order to stimulate collaborative learning and interaction between the learners themselves and between them and the teacher.
- Adaptation of especially designed programs for students with special needs with the help of web2 tools.

A large number of graduates became leaders of change in their schools, serving as a driving force for pedagogical changes and the introduction of technology in teaching and learning of various subjects. Some of them became leading instructors in various advanced courses given by the Ministry of Education.

3.2.3 Future Plans for the Application of Digital Pedagogy by Graduates of the Program

The graduates reported on their plans to expand their applications of digital pedagogy in the near future: *"I want to build a computer-integrated program because my*

hope is that in three years the entire school will be computerized and based on digital pedagogy."

"I want to achieve a level of collaborative learning with other schools in the country."

Summary :

The graduates of the program applied the digital pedagogy approach by introducing technology tools in the teaching and learning in their classrooms. They developed learning frameworks for their students that arouse their interest, such as learning through adventures or social networks. They developed new approaches to evaluate learning by means of blogs that express the students' reflexive thinking.

The graduates implement their plans to expand the application of pedagogy in the near future by leading processes in their school. They are interested in building appropriate learning sites and social networks for their students. They also want to develop frameworks of collaborative learning with other schools in the country in order to transcend the frameworks of time and place.

3.3 Factors that Support or Inhibit the Application of Digital Pedagogy

3.3.1. Supportive factors

The graduates' statements indicate that the most significant factor in the school is a supportive Principal: *"In order to create a process of change in the school, we have to recruit the person who is at the head of the system—the Principal. It is also important that he makes the change his top priority*" .

They believed that it is essential to have some teachers in the school who are totally committed, who will lead and take the whole staff with them.

In their view, it is necessary to provide good instruction, adapted to the needs of the teachers, and it is desirable to do that within the school staff: *"The change will only come if teachers are given instruction, time and opportunity";"It is best if the instruction is given by a staff member from within the school, who is attentive to the teachers, and not someone from the outside".*

The graduates believed that the instruction should begin gradually with small groups:

"To take a very small number of teachers, 3-5, to support them so they don't feel overloaded, and slowly to make them independent, to show them the ease and beauty of working with technology."

They also believed that inspiring encounters with teachers from other schools in Israel and elsewhere in the world are extremely important for the successful application of digital pedagogy:*"We need to find a place for discussion and discourse and to build joint projects, with people who want to lead changes."*

"Today there are no boundaries and we can talk to people all over the world, even with those we don't know."

3.3.2 Inhibiting Factors

The graduates believed that two main factors inhibit the application of the digital pedagogy:

- At the system level: Evaluation of learning by measuring achievement as the policy of the Ministry of Education: *"Today stress is an output and that is at the expense of deepening learning;* lack of autonomy, *there isn't much freedom because the curriculum is very rigid. Things are dictated and very patterned*"*;* lack of appropriate guidance, *"We need high-level instructors who have received appropriate training so they can contribute to the system".*
- Crowded classes and inadequate supply of equipment: "The Ministry of Education did not provide enough computers. Even the teachers did not get personal computers."
- At the school level: Principals who lack understanding and fail to provide support, *"The principal's support is borderline…he does not understand that a lot of time is required for it, both on the part of the teachers and of the students"*; teachers reluctant to use technology in teaching/learning processes, *"All teachers who have a phobia about computers cause problems. The teachers who resist technology, even those who are young, have to change their way of thinking."*

The graduates indicated the problems arising from the use of technology:

- Difficulty in self-learning how to use technology: *"Not everyone can learn alone or is capable of learning to*

use digital tools on their own."

- Use of technology is time consuming: *"Both teachers and students need more time for that. We also need to allocate time to instruct students in the use of the computer."*
- Misuse of technology: **"***There are entire lessons during which the kids work on closed programs instead of doing it at home. The computer serves as a kind of babysitter instead of improving the learning."*
- Lack of a suitable pedagogical basis: *"We can only develop if we have a good pedagogical basis. Even when the teachers see good examples they do not always use them."*

4. Discussion and Implications

"Digital pedagogy" defines the aims of education and the image of the learners in the 21st century in order to adapt them to the dynamic changing reality in which we live. The term "digital pedagogy" describes a flexible structure of learning, appropriate for the processes of socio-cultural, economic and technological changes, as well as for changes in the perception of the essence of knowledge. The learning content and knowledge must be relevant to the changing reality and must encourage students to engage in current issues and dilemmas in a learning environment in which technology is integrated into teaching-learning-assessment processes and into their management.

The perception of digital pedagogy that the graduates of the program presented was commensurate with many of the studies dealing with these subjects (Davidson & Goldberg, 2009; Harasim, 2011; Levin, 2012; O'Hara et al., 2013). They understand that digital pedagogy creates a lasting connection between the teacher, the student and technology.

To apply digital pedagogy, the relationship between teacher-student has to change substantively. The division of roles also has to be different than the one usually accepted in the "traditional" teaching approaches that place an emphasis on imparting knowledge in passive frontal learning. The graduates understand that they have to constantly remain up to date, and to learn varied pedagogical approaches along with technological innovations.

The graduates note that their role has changed and that they must create frameworks that encourage and support students' independent learning and initiatives. They need to learn with their students and help them build learning processes using suitable pedagogical approaches. They understand the need to "transcend the boundaries of the classroom" in order to make the frameworks of time and place more flexible and to enable them and their students to create learning continuities that are relevant to the studied subjects.

These findings are consistent with those of the assessment reports of the Technology in Education program (Levy-Feldman et al., 2011; Levy-Feldman et al., 2012) that examined how 45 students in the program (who are now our graduates) perceived the significance of a "digital teacher". The reports' findings show that they perceive the digital teacher as a person who has technological skills in teaching, who is developing, independent, curious, flexible and open to changes, a facilitating teacher, student-focused, who enables independent learning but also encourages collaborative learning.

They are not daunted by the need to constantly learn and keep up to date, but realize that it is necessary to maintain a link with supportive settings (such as the program in which they were enrolled). They also understand the importance of the ability to conduct learning in team work and collaborative learning with other teachers in the school, as well as with various others in the community - experts inside and outside the country. They are prepared and interested in applying their concepts in their work setting, even though some of them still feel that they need to progress cautiously and study the subject in order to become confident that digital pedagogy is the correct approach. They understand that change has to first come from the field - the level of the school - before it can be implemented in the entire educational system. The forces that drive the process must be the teachers in the school, with the cooperation and guidance of the Principals. But the graduates claim that the educational system is not really primed to assimilate the required changes, in many

regards. It emphasizes achievements and success in exams, rather than the deepening of learning processes and giving great freedom to teachers and students; it has not provided appropriate conditions for the application of digital pedagogy, the classes are too large and too heterogeneous and there is a lack of equipment and infrastructure.

The graduates are aware of the difficulties that many of their colleagues point out, but they show that they want to lead changes in the educational system and feel confident that they can.

As indicated by the studies conducted by the graduates as part of their theses, they are also putting into practice the approaches they adopted during their studies. They are doing this in their classrooms by developing curricula based on approaches that arouse the students' interest and motivation, such as inquiry and problem solving, and doing that in their schools, by leading change and instructing other teachers and the staff and on a national level, in the framework of providing instruction in courses and other settings.

The research findings open a window through which one can gain an understanding of the thinking and behavior of the graduates and assist in the development of mechanisms of models and projects that can improve the graduates' abilities as high-quality digital pedagogues.

Conclusions

- The graduates who participated in this study were able to present a well-formulated concept of the significance of digital pedagogy and how it could be applied in their classrooms.
- The graduates were able to implement successfully their pedagogical approaches as demonstrated in their investigations presented in their Masters degree thesis.
- The graduates were aware of the obstacles hindering the implementation of digital pedagogy and of the advantages and disadvantages of this pedagogy.

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