

# How Do Teacher Educators from the ‘Startup Nation’ View Pedagogical Innovation?

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## Abstract

A qualitative inductive analysis of 110 open-ended questionnaires was performed, as part of a research network aiming at investigating views of pedagogical innovation among teacher educators in seven Israeli colleges of education. Three results emerged: (i) Teacher educators mention technology when describing implementations of pedagogical innovation in their teaching; (ii) the stories that teacher educators associate with pedagogical innovation do not deal with the most up-to-date learning technologies; (iii) Teacher educators tend to use inclusive terms in their descriptions of pedagogical innovation. The discourse of teacher educators on the subject of innovation seems to differ from the discourse in other professional communities, such as the medical, agricultural, high-tech, and business communities. The importance of these findings is heightened in view of the expectation that those who are responsible for the training of the next generation of educators would design innovative approaches to meet the future needs of the education system.

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**Keywords:** Innovative pedagogies; educational technology; capacity building.

## Introduction

"Once a season, once a quarter, once a year, sometime – with determined and uncompromising regularity, the messenger arrives at my door with new material [...] I still haven't managed to upload the material to my computer, and the messenger is back at my door with another dose of innovation laid out at my doorstep" (Ullman, 1997).

The field of teacher education seems to be in the midst of two conflicting logics (Lamm, 1976; Harpaz, 2010) attracting the entire educational system in two opposite directions: On the one hand, modern and postmodern society praise and even admire innovation and constant change as a way of life; On the other hand, educational institutions tend to avoid changes that might disrupt the system (Christensen & Eyring, 2011). In "A Brief History of Humankind", Harary (2011) describes how both science and modern socio-political order espouse constant progress and change, and how the demand to keep innovating has become an ideology. The ecosystem within which teacher education operates is largely based on such ideology, accompanied by seeing change through positive lens and by resisting any signs of stagnation. Teacher education institutions as well as stakeholders and staff in those institutions are therefore expected to constantly present innovative ideas, develop new plans, and cultivate what is commonly termed 'pedagogical innovation' (Walder, 2014).

While the term itself is relatively ill-defined (Poyas, 2016), one common thread is the expectation that those who are responsible for the training of the next generation of educators will design approaches and tools to meet the future needs of the education system. The work of teacher educators in the development of innovative pedagogical models is vital for providing the future generation of teachers with the professional model and the opportunities to learn to teach in a range of settings (Herbst et al, 2016). Not less important is the discourse regarding pedagogical innovation among teacher educators. As the title of this article hints, its aim is to look at the term through the eyes of those who are practically "doing it" within colleges of education in Israel, described in Senor & Singer (2009) as 'the start-up nation'.

The paper builds on stories gathered from teacher educators who were asked to describe episodes of "pedagogical innovation" in their own practice. The descriptions were a part of a qualitative study conducted within a national research network aiming at investigating views and

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applications of pedagogical innovation in Israeli institutes of higher education in general, and those focusing on teachers training in particular. The participants in the current study were lecturers who voluntarily responded to an online open-ended questionnaire. Coming from different institutions and diverse areas of teaching, the respondents were prompted to characterize elements of pedagogical innovation based on their daily experiences within their colleges of education and to present definitions, narratives and descriptions of pedagogical innovation originating in their field of professional experience.

However, since definitions might be challenging to start with, the questionnaire began with inviting "small stories" (Bamberg & Georgakopoulou, 2008) about the practicalities of pedagogical innovation, while only the last question prompted at defining the idea according to the respondent's point of view. For example, the following answer was given by a science education lecturer to the first question: '*describe a situation in which you applied pedagogical innovation in your own practice*': "Virtual courses have (or had, back then) in my view, pedagogical innovation, because of the fact that using a virtual medium for facilitating learning is different from regular classroom learning and because of the need to transfer to the learners the responsibility for their own learning" (respondent 7, Sep 2010).

From the inductive analysis of the open-ended questionnaires, two contradictory categories emerged. On the one hand, teacher educators described instances of what they perceived as pedagogical innovation in their institutions, like the example above. On the other hand, expressions appeared like "There is nothing new under the sun, everything I did Korchak and Levin had done before..." (respondent 33, Dec 2010), in which innovation was seen merely as a buzzword. Although both responses were made eight years ago, which is a long time considering the evolution of educational technology, teacher educators' perspectives might not have changed as much over that time, and the abovementioned contradiction can still be found in the discourse on pedagogical innovation.

In another publication dealing with these data, Baratz & Levy (2016) ask whether educators see innovation as an ideological foundation for the erection of a new form of reality, or rather as a semantic expression. This paper follows a different path emerging from noticing, at an early stage of the inductive analysis, the teacher educators' narrative relating pedagogical innovation and (educational) technology. As in the first example above, many "small stories" included practical examples of the use of learning technology, even though the questionnaire did not explicitly mention this aspect of the respondents' work. Although not all respondents mentioned educational technologies in the situations they chose to describe, most of them, at their own initiative, made some connection between pedagogical innovation and technology. They did so either by describing how they used technology and which technology they used in order to implement pedagogical innovation, or by regarding their tendency to avoid the use of technology.

This phenomenon existed although the respondents were not homogeneous in term of their specialty, years of experience, or role at their colleges. In light of the general discourse of innovation surrounding them, which is based mainly on the industrial-technological-social-cultural change that characterizes our times, it is not surprising that teacher educators view learning technologies as an inherent part of pedagogical innovation. However, the nature of pedagogical innovation as exhibited by teacher educators seems to differ from views and practices exhibited by other professional communities in Israel. Below we will present these findings in detail.

The paper first draws some connections between the revolutionary developments that characterize the knowledge age and the expectations from those who educate the future teachers. Following a brief description of the research method and the analytic process, three findings are presented. The first regards the abovementioned phenomenon, namely the connections seen by teacher educators between pedagogical innovation and learning technologies. The second sheds light on teacher educators' tendency towards less updated educational technologies, and the third finding regards their use of inclusive terms rather than specific technologies.

## Theoretical framework

The rapid development of ICT, including the Internet; mobile devices; the free use of teaching aids and OER; and the continuous reduction of computing devices' size, which facilitates the use of these aids in laptops, tablets and cellphones – have had a huge impact on education culture and on educational institutions (Christensen & Eyring, 2011; Hirsh-Pasek et al. 2015; Hine, 2015). Furthermore, social networks and new media significantly change the ways in which information and knowledge is accessed, as well as the methods of dialog between students and teachers and within the learning community (Kop & Hill, 2008; Shafri & Levy, 2018). In the past, teachers were held solely responsible for access to knowledge and for student-teacher interactions, and both took place mainly in the classroom.

Today, online learning and free viewing of academic courses are possible anywhere and at any time; academic articles enable extensive access to scientific resources; electronic accessibility to complete books is made possible for anyone who is interested; and open sources of knowledge such as Wikipedia are available on the go at the palm of one's hand. The source of many of those changes has been the development of the Internet, a development which creates global and free access to an unlimited range of information sources and supports the creation of a new culture which is based on inquiry learning and on content-sharing.

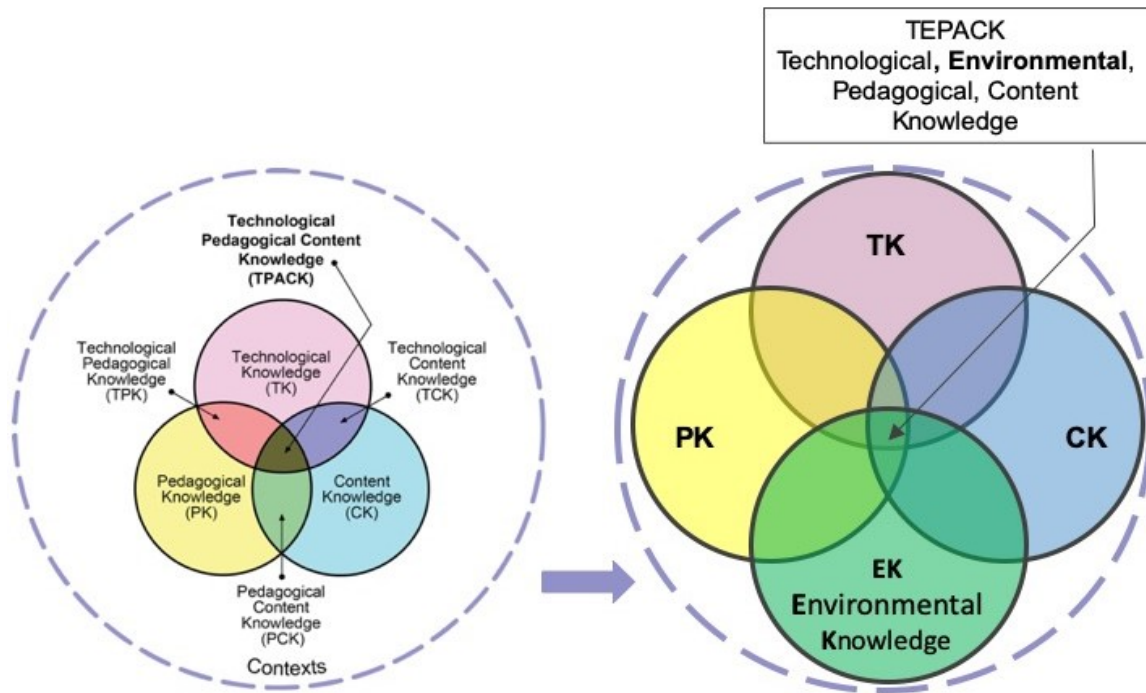
The classroom door, therefore, becomes much more penetrable to information and knowledge, which the teacher cannot supervise (Levy & Schrire, 2015). The many routes to social communication such as blogs, instant messaging, tweets, Facebook posts and so on enable learners not only to acquire knowledge, but also the creation of knowledge and content ('produsage') (Bruns, 2008). In contrast to the pedagogical models formulated at the 20th century, the teacher nowadays is not considered the only one who is in charge of defining, creating or implementing educational content. Students and teachers alike can discuss ideas and turn information into knowledge even (and, perhaps mainly) outside the confines of the educational institution to which they belong (Dede, 2008).

The adoption of principles of collaboration (Webb, 2013), connectivity (Siemens, 2005), and openness (Bonk, 2009) have enabled a revamp of the learning environment and led to the sharing of learning materials and to the use of varied technological tools for teaching, learning, evaluation, organization of learning and management of the classroom (Anderson & Dron, 2011). In such learning environments, technological innovation is combined with pedagogical innovation.

In Israel, the prevailing trend has always been to combine innovative technology with the teaching-learning process. However, the processes of introducing learning technologies into the classrooms are long-term, complex, fragile, and require a conceptual change among all those who encounter them, while the technology itself has been developed only recently. As a consequence, in contrast to the rapid penetration of information technology into the areas of business, communication, and leisure culture, within the Israeli education system change has been slow (Chen & Kurtz, 2008); often led by devoted individuals from within the system; and these innovators rarely receive appropriate reward for their actions (Tawill & Levy, 2017).

Thus, the gap between what goes on within the confines of the school and "real" life outside it is continually widening, and while scientific-technological innovation have been generating significant changes in areas such as agriculture, communications, medicine and industry, the approaches to teaching and learning have remained unchanged.

It is widely accepted that the knowledge regarding the combination of technology and pedagogy is unique for the teaching profession and the development of such knowledge is perceived as a vital stage in the teacher training process. For that aim, Mishra & Koehler (2009) have suggested TPACK as a framework integrating technology, pedagogy and content knowledge (Rosenberg & Koehler, 2015). Building upon the TPACK framework, Shafri & Levy (2018) propose to add the knowledge of the environment into a framework they title TEPACK (Fig. 1).



**Figure 1:** Additional area of knowledge to consider for technology-enhanced learning

The need to bolster pre-service teacher knowledge about using innovative technologies in the classroom has been recognized in both research and policy agendas (Polly, Mims, Sheperd & Inan, 2010), but the barriers to change have been substantial for a variety of reasons, including the lack of models to guide the development of expertise. Consequently, many graduates of colleges of education are not sufficiently familiar with the need for technology-rich learning environments or models for designing such environments for pupils in the knowledge age. These graduates are, therefore, devoid of experience in any teaching that includes the integration of pedagogical-technological innovation. The work of teacher educators in the development of pedagogical models that combine innovative technology is, therefore, of paramount importance, as they are the ones who provide the future generation of teachers with the professional model and the framework for connecting pedagogy and technology. Many scholars call for equipping the educators of the future with the qualifications and skills that will enable them to use the potential of the current mobile and interconnected world (Kamarainen, Metcalf, Grotzer, & Dede, 2015). However, recent studies indicate that not enough attention is given to that professional knowledge of teacher educators (Voogt & McKenney, 2017). Therefore, the research outlined in this paper deals with the perceptions and views of teacher educators regarding the interrelationships between digital technology and pedagogical innovation.

## The study

The aim was to examine connections between pedagogical innovation and educational technologies, as these connections have been reflected in the "small stories" brought by Israeli teacher educators in response to the open question *Describe a situation where you have applied 'pedagogical innovation' in your teaching*. This specific goal has derived throughout a cyclic inquiry process from a more general objective - to understand how those who have been in the frontlines of the Israeli educational system regard the term 'pedagogical innovation'.

For that aim, an online tool titled "implementing pedagogical innovation by teacher educators" had been circulated among potential respondents in several colleges of education around the country. The above question was the first of seven open-ended questions in the online questionnaire, inviting "small stories" (Bamberg & Georgakopoulou, 2008) about the practicalities of pedagogical innovation. Apart from being mentioned in the title of the questionnaire, the term was not explained nor defined beforehand, as we sought to listen to the teacher educators' authentic voice.

## The questionnaire

The open-ended questionnaire intended to allow participants to express their views verbally and in an unbiased manner and to evoke the naivest associations participants might have. The questionnaire was disseminated among teacher educators during the years 2010 – 2012 using both an online and a printed version. The first part included seven open-ended questions asking participants to describe their experiences with pedagogical innovation and their feelings in the wake of these experiences, to characterize the components of pedagogical innovation, and eventually to provide a definition of pedagogical innovation based on their experiences. The second part included anonymous demographic data such as gender, age, teaching discipline and years of experience as teacher educators.

The questionnaire began with a disclosure statement, indicating that the data would serve as a part of a research study. The statement emphasized the anonymity of the questionnaire and the fact that no identification details were being recorded. The teacher educators who voluntarily accepted the invitation to participate were specifically requested to avoid naming people and places in their open-ended responses. Only after signing a consent could they move on to the first question – *describe a situation in which you implemented pedagogical innovation*.

responses to the first question tell the basic story of the participants' experiences with pedagogical innovation, whereas the remaining questions enable participants to develop their story and to present their reflective observations regarding these experiences. As is highlighted above, the term under investigation was used in the questionnaire without any further explanations, references or examples, in order to evoke the most naive associations participants might have. For the specific goal of the study described in this paper, only the responses to the first question were analyzed.

## Participants

The participants in the study were teacher educators working at teacher-training colleges throughout the country. As Table 1 below displays, a variety of 108 teachers from different disciplines, with various backgrounds, and teaching experience ranging between six and more than thirty years shared their 'small stories' and narratives with us. The study cohort included teacher educators from seven different teacher-training colleges all around Israel. All the participants voluntarily accepted the invitation to participate and shared their stories with us anonymously on their free will. They are by no means representative of the population of teacher educators in Israel.

## Data analysis

The qualitative method of inductive analysis (Thomas, 2006; Goetz & LeCompte, 1991) was used to analyze the 'small stories' provided in participants' answers to question 1. In general, such analysis entails a search for patterns among the data collected in the field: "as you read through your data, certain words, phrases, patterns of behavior, subjects' ways of thinking, and events repeat and stand out....These words and phrases are coding categories" (Bogdan & Biklen, 1998, p. 171). Participants' responses did not indicate where in the text the pedagogical innovation was mentioned; hence, the researcher relied on an interpretive approach to identify and mark the enunciations relevant to the term under investigation. As has been previously mentioned, the responses described an educational situation that the respondent had viewed as exemplifying 'pedagogical innovation' without any direction or definition of what pedagogical innovation is. Therefore, these accounts represent an 'emic' perspective (Olive, 2014), or an expression of the teacher educators' authentic voice (Yin, 2010).

The analytic process was cyclical (Guba & Lincoln, 1989): stories were examined repeatedly, in order to find participants' authentic expressions of perceived categories and to identify keywords (Katriel, 1999). As an example, here is the response of a geography educator: "Today, I demonstrated to the students how it is possible to make use of a **smartphone** to upgrade the content and understanding of the subject I was teaching. I also dwelt on the subject of forging **links** between various topics with the aim of drawing a picture that I wanted to draw for the teaching requirements" (respondent 95, Jan 2012). The emphases in this story and in the examples below were added as the

researcher carefully read the responses at the preliminary analysis stage and marked the keywords in the text. The length of the responses that served as the basis for the analysis ranged from just a few words, such as "use of **online teaching** of many and varied types" (respondent 32, Dec 2010), and detailed stories of some 200 words.

**Table 1:** Demographic characteristics of the respondents (N=108)

Variable	Category	Number	Percent
Gender	Female	82	75.92
	Male	26	24.08
Total		108	100
Age	<=35	3	2.77
	36-50	32	29.63
	51-65	64	59.26
	>65	9	8.34
Total		108	100
Teaching discipline	STEM	22	20.37
	Language (Hebrew, Arabic, English)	7	6.48
	Social Sciences (other than education)	12	11.11
	General Education	31	28.70
	Special Education	13	12.04
	Humanistic Studies	12	11.11
	Arts	5	4.63
	Other (physical education, unspecified)	6	5.56
Total		108	100
Professional qualification	MA/MSc/MEd	16	14.82
	PhD/EdD	88	81.48
	Professor	2	1.85
	unspecified	2	1.85
Total		108	100
Teaching experience (as a teacher educator)	<5 years	17	15.74
	5-15 years	33	30.56
	15-25 years	43	39.82
	25-35 years	12	11.11
	unspecified	3	2.77
Total		108	100
Academic position at the college of education	Dean	2	1.85
	Head of a special program / unit / department	43	39.82
	Lecturer / Teacher / Pedagogic advisor	23	21.28
	Unspecified	40	37.05
Total		108	100

The respondents did not explicitly indicate where the pedagogical innovation is in their 'small stories'. Therefore, during the first cycle of carefully reading the small stories, the researcher highlighted the elements interpreted as relevant to pedagogical innovation. During this early analytic phase, the immanent place of technology in this innovation had also been noted, as exemplified in the responses given by teacher educator #95 and #32 above.

Five of the 108 responses to the first question were excluded from the next analytic phase, replying either "I didn't implement any pedagogical innovation" or "I don't know what it is". Out of the rest 103 responses, more than half mentioned technology (55 responses, 53%). Since the term 'educational technologies' did not appear in the questionnaire, and although the participants did not use the term 'as is', it is regarded as an emergent theme raised entirely by the participants. It is the researcher's choice to include the diverse digital tools and applications mentioned voluntarily by the majority of the participants under the umbrella of educational technologies.

During the second analytic phase, the responses to the first question that were included in the 'mention technology' category were reexamined. The analysis expanded also to responses given by

the same respondents to other questions in the questionnaire, including their suggested definitions of pedagogical innovation. The results are detailed next.

## Results

As stated above, although the open-ended question did not mention technology whatsoever, in fact, most of the respondents mentioned learning technology, referring to educational technologies such as: the Internet; software tools for e-mail, word processing, calculating, drawing, etc.; LMS - learning management systems; collaboration tools - video conferencing, social networks, discussion forums, blogs and Wikipedia; computer games and simulations; and mobile technologies based on the use of tablets and smartphones. However, in only a few stories, were concrete learning technologies noted, and these were described by means of inclusive terms such as 'distance learning' more than by actual examples for such learning technologies. These two main results will be presented below, and, in addition, an additional finding will be outlined – those technologies which were absent from the teacher educators' discourse.

### Teacher educators view educational technology as Pedagogical Innovation

As an introduction to the short description of a situation in which 'pedagogical innovation' was implemented in the college in which she teaches, one of the lecturers wrote: "The question is what's the point of pedagogical innovation? Is it **the integration of technology in learning** and its assimilation, or a return to the Socratic method, or a workshop in which the participants express ideas in a 'brainstorming' context? There is a wealth of definitions for pedagogical innovation, and I wonder what pedagogical innovation really is." (respondent 5, Sep 2010).

The situation which was outlined later did not include the use of technology. However, the dilemma presented in the introduction illustrates the associative connection the research participants make between pedagogical innovation and learning technologies. Another lecturer linked pedagogical innovation and computers: "I applied pedagogical innovation three years ago, when the college proposed adding an assistant **from the computer department** for any lecturer who so desired. I immediately addressed this challenge and recruited her to my methodology lessons. Together with her, I applied **the integration of computers in the teaching of literature** according to a rationale which was specially prepared for this situation" (respondent 25, Dec 2010).

Sometimes, the respondents wondered whether the use of learning technologies expresses pedagogical innovation: "I use accompanying **websites** regularly in all my courses, **upload files** for each lesson, use **wiki** in lessons, etc. Is this innovation?" (respondent 71, Jan 2012). Another lecturer chose a similar wording and also provided an answer to the question above: "For example, using the **Moodle website** in a course, I **upload** detailed resources before each lesson and ask the students to read them in order to **discuss** them in the lesson. Is this pedagogical innovation? In my opinion, no. In the students' opinion, yes. They claim that I am the only one who does this" (respondent 85, Jan 2012).

Table 2 below, presents in descending order, the common terms appearing in at least three stories, which the teacher educators used to describe the technologies that they perceived as examples of pedagogical innovation.

In two-thirds of the responses to the first question, there was some mention of technology, even though the wording of the question itself did not intend this. It is possible that the way in which lecturers were exposed to the questionnaire led them to the association with technology, in that the questionnaire was sent to them by electronic mail in a link to the Google form. Still, this tendency has been found prominent in the teacher educators' small stories. Accordingly, the first major finding is that *the descriptions of the teacher educators on the subject of pedagogical innovation tend to mention technology.*

**Table 2:** Frequent technological terms.

Term	Example (respondent #)	Number of stories in which the term appears (frequency)
Virtual course	"I was among the first in the college to design virtual courses for the students..." (7).	17 (30.90%)
Teaching with computers	"I applied the teaching of Arabic via the computer for students in Arabic, according to how I taught the overseas students who are not Arabic speakers. The results were amazing! This is pedagogical innovation." (73).	13 (23.64%)
Accompanying course website	"I regularly use accompanying websites in all my courses, upload activities for each lesson, use Wiki documents in the lessons, etc...Is this innovation?" (71).	10 (18.18%)
Online reading	"Before every lesson, the students must send me an exercise: Reading an article online, Reference to a video, familiarity with an educational program [...] the next lesson build on the ex, or in terms of Froebel 'gifts' which they send me." (104).	8 (14.54%)
Forum	"In the course website forum which I opened, the students were asked to create a gesture in any way of expression they choose (photographed, drawn, written, etc.)" (35).	8 (14.54%)
E-learning assignment	"Every subject has an assignment with a grade. Sending it [to the site] within a time interval provided in the instructions of the assignment" (52).	8 (14.54%)
Moodle system	"The use of the Moodle platform in working processes in the training of teachers [...] I create virtual assignments, in which the teachers are obliged to respond, share, collaboratively think about solutions – because of the difficulty in hearing the range of opinions in the training process" (15).	8 (14.54%)
Video	"I apply a certain degree of 'pedagogical innovation' in the course [...] I built it on the basis of a pedagogical approach which divides channeled viewing video clips followed by a discussion on the various insights and scales" (53).	5 (9.09%)
Wiki (Wikipedia)	"I built up a semester in which the learning was developed in a virtual discussion in a Wiki on various articles. The students read an article which had been published on the course website and responded in a Wiki environment. The responses were the basis for the classroom meeting, after which the additional responses to the article continued to appear" (2).	4 (7.27%)

### Teacher educators seldom mention future educational technologies

In view of the prominence of the idea of technology in thinking about pedagogical innovation, the analysis further focused only on those accounts and 'small stories' in which any technology was mentioned. These references were found in 62 of the 108 stories which formed a basis for continuing the inductive analysis. These accounts were re-read, and the technological references therein emphasized. The largest number of references to technologies were found in the account of a young lecturer (35 years old) teaching education in a college in the center of the country: "In almost every course that I teach in the college, I use **the discussion forum on the course site**. I **upload** all the course material to **Moodle** and conduct a discussion between myself and the students via the **website**. My instruction is not based on frontal teaching alone, but rather I also use new teaching systems, such as **videos on YouTube** and other **videos**, holding discussions, working in groups" (respondent 51, Jan 2012). As can be seen in Table 2 above, references to discussion forums, the accompanying course website, and the Moodle environment are also found in other accounts, but this is the only story which presents the educational use of YouTube as an example of pedagogical innovation. Other one-off references (in other stories) included for example:

- Technology encouraging dialog: "I am engaged in pedagogical innovation in the context of training teachers for the assimilation of **technology encouraging dialog** in the classroom" (respondent 77, Jan 2012).



- Sharing management technologies: “We activated the course in parallel, in the classroom and in the **virtual world** using **ZOHO technology** for working with **document sharing online**” (respondent 17, Oct 2010). The ZOHO is a set of cloud-based software products for organizational collaboration (see <https://www.zoho.com/>).
- Digital diary: “We transferred the teaching practice logs to **digital (computerized) diaries** using the **Moodle program**” (respondent 83, Jan 2012).
- Online testing, mentioned once in the following story: “Towards the end of the course, the students receive an article dealing with some educational occurrence. On the day of the test, at a designated hour, they receive, via the college's **online lesson management system**, three questions relating to this article [...] the answers entered have to be retained in the **computer** with a backup, **and sent via the college's website** as an accompanying **Word document**” (respondent 105, Jan 2012).

These elements of the technological environment were not mentioned in most of the stories that were examined. It might demonstrate a gap between the technological affordances (Chemero, 2003; Levy & Schrire, 2015) and their use for pedagogical purposes in teacher education colleges. This gap is particularly noticeable in view of the expectation that the structure of the pedagogical-technological knowledge of teachers and lecturers will include the use of innovative technologies which enable collaboration (Schonfeld & Griest, 2018; Webb, 2011; Blau, 2011), evaluation of learning (Adams et. al., 2017), visualization (Levy, 2013), and mobility (Kamarainen et. al., 2015). In this context, it is important to point out also emergent learning technologies and key terms which were not mentioned in the lecturers' stories even once, like smartboard, tablets, educational apps, augmented reality, massive open online courses (MOOCs), cloud computing, and learning analytics (Arroway et. al., 2016). The most innovative technologies were therefore not mentioned in the stories of the teacher educators regarding pedagogical innovation. The second finding is therefore that *the 'small stories' that teacher educators associate with pedagogical innovation do not deal with the most up-to-date learning technologies*, certainly not with future learning technologies. Possible explanations for this finding include the timing of the study, the nature of the research tool inviting associative ‘small stories’ without forcing detailed descriptions or additional examples, and the fact that those who responded did so on a voluntary basis. A follow-up questionnaire or further interviews with teacher educators might have provided additional explanations. However, these have been beyond the scope of the current study.

### Teacher educators tend to use general terms

In the second result above, the excerpt from Respondent 51 ‘small story’ was presented, mentioning a variety of technologies for learning. A similar variety is found only in six other accounts, while half of the 62 writers whose stories referred to any learning technology noted two such technologies and the rest of the stories mentioned only one.

Table 2 above presents in descending order the common terms (appearing in at least eight stories). The top three are general terms: virtual course (~30% of the responses mentioned it), teaching with computers (~24%), and accompanying websites (~18%). The term Moodle with 15% frequency of mentioning is an exception. It is the name of a specific LMS (learning management system) that has been the most used LMS in Israeli higher-education institutes in the last decade (Tawill & Levy, 2017) therefore its high number of mentions seems reasonable while other learning management systems were not mentioned at all.

Apart from Moodle, all other high-frequency terms are also general. Therefore, the third finding suggests *teacher educators tend to frequently use inclusive terms such as 'distance learning' and 'course website' in their descriptions of pedagogical innovation*.

### Conclusions

Most of the respondents do not explicitly note where the pedagogical innovation was hidden in their 'small stories'. Therefore, this study used an inductive approach in locating and marking the

elements which are relevant to pedagogical innovation and the role of learning technology in this innovation. From this interpretive analysis, three results arose:

- *The descriptions of the teacher educators on the subject of pedagogical innovation tend to mention technology.*
- *The 'small stories' that teacher educators associate with pedagogical innovation do not deal with the most up-to-date learning technologies.*
- *Teacher educators tend to use inclusive terms in their descriptions of pedagogical innovation.*

Therefore, the analysis indicates that many of the respondents made associative links between pedagogical innovation and the use of technological tools and learning technology. However, in the teacher educators' accounts, quite long-standing learning technologies were noted – current innovations in the field were not mentioned, and they did not reflect any consideration of future technologies. The discourse of Israeli teacher educators on the subject of innovation in the knowledge age has been therefore very different from the discourse on the subject of innovation in other professional communities, such as, the environmental, medical, agricultural, high-tech (Senor & Singer, 2009), and business communities. The importance of this finding is heightened in view of the expectation that those who are responsible for the training of the next generation of educators would design approaches and tools to meet the future needs of the education system (Levy & Schrire, 2018).

Many educational researchers, especially those who focus on the study of technology in education, discuss the need to update learning content in teacher training colleges and adapt them to the target of training teachers of the future to educational work in the digital age (Dede, 2008; Kamarainen, Metcalf, Grotzer, & Dede, 2015). The study here presented suggests also that it is necessary to look into both the curricular content and the instructional methods utilized within the colleges of education in order to find more evidence for innovative thinking. The pedagogical innovation research network, the national framework within which this study took place, operated in this direction by bringing together a mosaic of voices regarding the perception of pedagogical innovation in teacher education in Israel (Poyas, 2016). Although each study in the network had its own focus and its own participants, the findings of the different studies reflect teacher educators' confusion with regard to pedagogical innovation, and the two conflicting logics attracting them in two opposite directions (Keinan, 2016). On the one hand, technological development and media-intensive reality force teacher educators to construct their pedagogical content knowledge, their educational-organizational knowledge, and their knowledge of managing teaching-learning processes in a manner that will assist them in fulfilling their important role in the present information age. On the other hand, unlike the speedy entry of information technology into business, media, and leisure culture, its entry into teacher colleges is slow and is challenged by resistance (Zimmerman, 2006; Flavin, 2016). As a consequence, many student teachers in these colleges are still taught in the traditional manner. The findings outlined in the current study also hint at this duality, and highlight a further need: encouragement to think about the future – including discussion of future technologies – among the members of staff in teacher education colleges (Traxler & Kukulska-Hulme, 2016). Without consideration of the future, the use of the word 'innovation' and in particular, 'pedagogical innovation', is quite meaningless.

To conclude, the teacher educators' accounts of the significance of pedagogical innovation reflect the basis of their practical knowledge, the ideology at the basis of the socioeconomic-cultural structure of the teaching profession and the trends of those who make educational policy decisions. At the same time, this discourse shapes the actual image of teacher training, and so it is important to analyze it and discuss the implications arising from the analysis, as this paper tries to do.

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