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Pedagogical choices and learning design for the digital environment of the teachers' training, regarding the new curriculum for Greek preschool education

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Abstract

This paper outlines the development of a teacher training program on the new curriculum for preschool education, in Greece. It highlights the theoretical framework utilized and documents the main methodological tools used in the program. The significance of professional development in the 21st century is emphasized, particularly in the context of ongoing educational reforms, and how innovative learning designs can facilitate engagement, active learning, and skills development. The paper describes the development and organization of the Digital Learning Environment (DLE) that supported the training program, using a blended learning approach that combines asynchronous and synchronous digital learning activities through the Moodle Learning Management System. The DLE aligns with a digital, andragogical, and sociopedagogical approach, which is in line with current educational trends. Accordingly, examples of activities and tools are briefly presented to demonstrate how they support theoretical and practical learning. Ultimately, the paper provides valuable insights into the principles, design, methodology, and organization of the training program, which can be applied within similar educational contexts.

Keywords: digital andragogical and sociopedagogical learning, teacher training, 5 E framework, curriculum for preschool education

Introduction

Educational reforms and innovations need systematic and comprehensive professional development processes that prepare teachers to embrace new roles, participate in changes, and assume co-responsibility for the results of their efforts (Campos, 2005). These professional development approaches should take into consideration changes in the teaching profession, broader societal needs and digital technology developments to promote professional learning that is in line with the 21st century profiles teachers should develop as well as students (Penderi, Chlapana, Melliou, Filippidi & Marinatou, 2022a).

These changes necessitate for a sociopedagogical stance towards professional development and learning. This perspective highlights the importance of professional learning as a participatory process that harmoniously combines theory with practice. In addition, by bringing to the foreground the unique characteristics of personal theory,

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knowledge and experience, it treats the learning process as an object of inquiry and reflection that promotes personal and collective professional development and agency. In these terms, emphasis in communication skills and self-learning becomes prerequisite for the establishment of a communicating professional learning community (Hämäläinen, 2014).

Professional learning in the 21st century enforces the digital expansion of the educational and pedagogical framework, through the lens of a new digital andragogical approach (Blackley & Sheffield, 2015). This approach shifts the locus of control of learning from the educator to the learners, in our case the teachers, who are motivated to use digital technologies and develop modes of working that permit personalization of learning, promote interaction with peers and tutors and engage them with the content of learning through critical thinking, communication, collaboration and creativity (Silva, 2009). Digital andragogy also highlights the role of the digital learning environment which mediates the relationship between the learner, the educator and the content of learning. The digital learning environment encapsulates the learning materials, the learning design, the methodology and the digital tools used in a professional learning course. According to the digital andragogical approach emphasis is placed on shelf-awareness, the experiences and understandings of both the thinking and practicing in the given professional community (Land et al., 2005) to encompass three learning domains: cognitive, affective, and behavioral with the use of digital technologies. A balance between content, connection and application should be assumed, encouraging active, self-directed and reflective learning that is motivated and facilitated by both the digital environment and the educator.

Within this line of thought, a teacher in-service training program was developed under the auspices of the Greek Institute of Education Policy, addressed to preschool teachers with an aim to familiarize them with the new Curriculum for Preschool Education (CPE) (Penderi, Chlapana, Melliou, Filippidi & Marinatou, 2022b). The program followed a sociopedagogical orientation highlighting the importance of (a) the organization, design and methodology of the digital learning environment to promote trainees' active participation, engagement and reflection, (b) the interactions and relationships between trainees and with the educator, (c) creative and experiential learning and (d) the psychological safety necessary from the part of both the trainees and the educators to bring the "whole" professional self into the learning community, and (e) the opportunities to share the personal experiences, ideas and knowledges, so as to empower each participant to reach his or her own optimal point in the learning zone (Charfe et al., 2020). The duration was 7 weeks, and it was organized in 4 Units (see Figure 1).

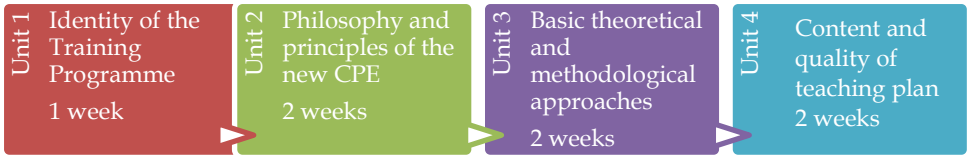

Figure 6. Units of the Training Programme

The purpose of this paper is to elaborate on the principles, the design, methodology and organization of the Digital Learning Environment (DLE) that supported the aforementioned training program, in line with the digital, andragogical and sociopedagogical approach, based on a blended learning approach with a combination of asynchronous and synchronous digital

learning activities using Moodle Learning Management System, in the platform of the Institute of Educational Policy.

Principles, goals and pedagogical axes for the development of the digital learning environment

Based on the andragogical and sociopedagogical orientation, key components that interact and determine the success and effectiveness of the digital training program are: a. the trainees themselves, b. the digital learning environment and the training material, c. the organization of the training program, d. the social context of the training and e. the educators as facilitators of learning and critical friends. In this context and with the aim of enabling deeper learning, mobilizing personal learning and developing a collective professional identity, the training material and activities were developed on the basis of the following basic principles (Blackley & Sheffield, 2015; Dede, 2010; Opfer & Pedder, 2011):

A. *The trainees know why they are learning something and are involved in the planning and evaluation of the training*
B. *Learning is based on experience and draws on learners' funds of knowledge, with a direct connection with the professional life of the trainees*
C. *Learning activities are based on problem solving, collaboration, reflection and communication, which takes place in the context of synchronous and asynchronous teamwork in a digital environment that enables more refined collaborative skills*
D. *Trainees are given the opportunity to design, implement and evaluate teaching interventions in practice*
E. *Appropriate support is provided so that trainees feel safe in the environment which is new or they wish to change*

The aforementioned principles are not mutually exclusive but interact and complement each other to inform the learning design of the training program and support the fulfillment of the basic goals. These goals concern:

a) the acquisition and systematization of *knowledge* about the philosophy, the basic principles and the quality characteristics of the new CPE and the Preschool Teacher Guide (PTG),

b) the development of *skills* regarding the proposed theoretical and methodological approaches so as to connect them with the learning processes in the preschool classroom,

c) the adoption of *attitudes* regarding the development: a. of lesson plans that respond to the backwards design model, b. of a collective professional identity and a culture of collaboration among the trainees, in order to strengthen their role as professionals and to upgrade the quality of their educational work.

Development of knowledge, skills and attitudes is prerequisite for teachers' transformative learning which busts professional ethos and critical stance towards their professional role and mission (Matikainen, Männistö, & Fornaciari, 2018) as well as creative learning. Creativity in learning involves intrapsychological and interpsychological processes that transform the way each person sees his or her own self and others (Beghetto, 2016), while at the same time providing new tools for thinking and doing. The aim is to generate a positive stance towards education that brings about positive changes in one's own and others learning and well-being (Beghetto, 2021). Within this line of thought, pedagogical choices reflect the three dimensions identified as important for the digital learning (Ng'ambi & Bozalek, 2016): i. the *associative dimension* which is task focused and objective oriented, describing learning through

competence development, ii. the *cognitive dimension*, which emphasizes on the development of autonomous learning through interactive and reflective activities that promote experimentation and metacognition, and iii. the *situated dimension* that promotes social interaction and collaboration though engagement in authentic activities that regard real problem solving with reference to the specificities of the profession. According to these dimensions, specific conceptual and methodological tools were chosen and utilized to guide the development of the DLE and design the learning path for the trainees.

Conceptual and methodological tools

One of the basic conceptual frameworks that guided the development and methodology of the training program was the 5 E model which was developed to promote inquiry-based learning, mainly in science education (Bybee et al. 2006). Recent studies have provided evidence for its positive effects in students' active learning in various subject areas (Hew et al., 2018; Lo, 2017). It is based on various educational theories and models to provide a concise and sound instructional sequence to design a course or to plan lesson activities (Hew et al., 2020). The 5 E model had a dual role in the training program. As a *learning model*, it was used to organize the training activities, both compulsory and non-compulsory. The 5 E model is also used as an *instructional model*, in designing lesson plans. A basic hypothesis has been that the use of 5 E framework as a learning model and as an instructional model would promote trainees' engagement in activities as well as understanding of the new methodology in instructional design, as introduced in the new Curriculum for Preschool Education (Penderi et al., 2022b).

Each phase of the model —Engage, Explore, Explain, Elaborate, and Evaluate (Bybee et al. 2006) represented a different type of activity in the learning path of each unit, of the training program:

Engage: An introductory activity to engage trainees in the digital content of the unity using multimedia resources, for example a real-world vignette, a problem-solving activity or providing a prompt with questions to critically think, using prior knowledge or experience.

Explore: This phase provided trainees with the time and the study material to explore the content of the unit and construct their own understanding of the topic. The study material and the supplementary material (extra material such as research articles, reports and videos) using reflective questions helped trainees to reconstruct prior knowledge and practices by fostering connections with the learning material.

Explain: Activities that engage trainees in asynchronous exchanges where they could have the opportunity to reflect on the material regarding topics they have studied, using their experience from the real classroom. Trainees gradually integrate the new tools and concepts into their educational practice. This phase combines asynchronous and synchronous learning processes. Flipped classroom pedagogical strategy was used to promote online active learning. In online flipped classroom trainees learn basic concepts before synchronous online meetings (Hew et al., 2020).

Elaborate: It involves the application of the knowledge and skills acquired by the trainees in the previous phases so that they begin to apply them to the lesson planning. The lesson plan is gradually developed, using online collaborative tools that enhance mutual exchange and collaboration between the trainer and the trainees.

Evaluate: It involves formative assessments (e.g., peer evaluations and feedforward comments) throughout the 5E phases, and a summative assessment after the elaboration phase in the form of a quiz.

Learning design in the digital environment: type in activities and resources

The learning design in the digital environment included: (a) different types of compulsory and non-compulsory activities (e.g. forum, study etc.), which promote self-regulation, autonomy and peer collaboration, and (b) materials and resources (e.g. multimodal information material, such as pdf files and video presentations) that supported professional learning in line with the five principles of the program and its sociopedagogical and digital andragogical orientation.

With reference to the first principle (*The trainees know why they are learning something and are involved in the planning and evaluation of the training*), and regarding teachers' information and agency, several tools were used to provide trainees with a clear picture regarding the learning path. For example, the Trainees' Guide (TG) presented the principles, the methodology and organization of the training program. It included a comprehensive description of the activities, the materials and the schedule of each Unit. It also described the responsibilities and task requirements for the trainees to successfully complete the program. In addition, an introductory unit presented all necessary information about the scope and objectives of the training program, as well as the organization and duration of each unit. Moreover, in each unit, learning goals and expected learning outcomes were stated and an introduction was provided to highlight the basic components of the content of the unit.

Trainees' agency was promoted with their engagement in the planning and evaluation of the learning process. This was facilitated in a few ways. At first, trainees could make several choices regarding their involvement in the non-compulsory activities, the rhythm and pace of their study within the framework of the general timetable of the program. Of particular importance was the possibility of making different choices regarding the level of interaction with peers and educators, following the route of the non-compulsory activities along with the compulsory ones. Trainees were engaged in self- and peer evaluation and reflection processes, using the tools and resources of the training program (see Table 1). Moreover, after completing the activities of the program, trainees were given a questionnaire to assess the quality and effectiveness of the training program.

Table 1. An example of activity and resources to promote trainees' agency

Unit 4	Phase	Type of activity	Resources	Activity: Posting a lesson plan and commenting on the work of another trainee
Individual Activity	*Evaluate*	Forum	Templates: -lesson plan -assessment rubric	Trainees use the resources to develop a lesson plan. They upload their lesson plan on the forum and they choose the work of another trainee to comment. They use the criteria included in the rubric to point out positive aspects of the lesson plan and make suggestions for further development or alternative activities and improvement.

Professional practice, experience and prior knowledge were used as a point of reference for the development of the learning material, according to the second principle (*Learning is based on experience and draws on learners' funds of knowledge, with a direct connection with the professional life of the trainees*). The activities and the study material used examples from the everyday practice to motivate trainees to be engaged in the tasks and make connections between theory and practice (see Table 2).

Table 2. Examples of activities and resources connecting with trainees' experience, knowledge and authentic to the specificities of the profession situations

Unit 3	**Phase**	**Type of activity**	**Resources**	**Activity: Trainees reflect on the vignette and report their thoughts and experience**
Individual Activity	*Engage*	Forum	Vignette	The vignette depicts a situation in the classroom. Trainees make connections with their own experience and use their knowledge to reflect and answer two questions regarding practice: What type of investigation would you choose to address this topic? What strategies/practices in relation to inclusive education would you recommend considering the classroom ecology? Then they choose another trainee's post to comment about.
Unit 3	**Phase**	**Type of activity**	**Resources**	**Activity: Trainees study the material presenting theory and methodology**
Individual Activity	*Explore*	Study	Study material (pdf file)	Trainees study the material and use their own and peers' reflections and comments in the vignette to develop understanding of theory and methodology. They reconsider their answers to the questions regarding the situation in the classroom described in the vignette and reflect on their own practices using new knowledge and understandings.
Unit 3	**Phase**	**Type of activity**	**Resources**	**Activity: Trainees watch the video presentations that elaborate on the themes in each unit**
Individual Activity	*Explore*	video	Video presentation	Video coaching is used to support trainees' understanding of the study material. Excerpts from classroom applications and interviews with teachers are included to promote connection with everyday practice.

Based on the third principle (*Learning activities are based on problem solving, collaboration, reflection and communication, which takes place in the context of synchronous and asynchronous teamwork in a digital environment that enables more refined collaborative skills*), problem solving, collaboration, reflection and communication were facilitated during synchronous and asynchronous digital activities. Teamwork was prerequisite for the compulsory activities, supporting individual and collective reflection. Trainees worked in Study and Working Groups (SWG) and collaborated to develop a lesson plan. Two levels of collaboration facilitated teamwork: a. collaboration in the SWG for the development of the General Lesson Plan (GLP) which referred to the development of a thematic approach or a project and included suggestions of different thematic categories and b. collaboration in pairs for the development of a Specific Lesson Plan (SLP), analyzing one of the suggested thematic categories of the GLP. Activities had a feedforward perspective, enhancing peer evaluation reviews and promoting collegial bonding that supported the function of the digital learning environment as a Digital Learning Community (DLC) (Blayone et al., 2017). Several tools were used to facilitate trainees' different levels of interaction with peers (see Table 3).

Table 3. Examples of activities to promote, communication, reflection and collaboration

Unit 1	**Phase**	**Type of activity**	**Resources**	**Activity: Trainees write some basic information about themselves and suggested prospective partners for the SWG**
Individual and Teamwork Activity	*Explain*	Synchronous learning	- chat (or an external digital tool) - breakout rooms	Using the chat of the platform for the synchronous meeting (or an external digital tool such as padlet), trainees write some basic information about themselves, which will be later used in the discussion to form the SWGs. Following the trainees 'suggestions, the educator organize breakout rooms for the members of the SWGs to get to know each other and exchange ideas and other information, relevant to their professional profiles.
Unit 2	**Phase**	**Type of activity**	**Resources**	**Activity: Trainees in their SWG decide on the theme of their thematic approach or project and complete specific parts of the General Lesson Plan Template**
Teamwork Activity	*Elaborate*	Assignment	- General Lesson Plan Template - Lesson Plans in the Preschool Teacher Guide (PTG) - Wiki - Chat	Trainees in their SWG decide on: the topic and duration of the GLP, the purpose and rationale of the scenario, the ways to arouse children's interest and to bring to the surface their prior knowledge. Then they fill the relevant information in the GLP Template. They can use the chat and the wiki to exchange ideas and work on the GLP Template, using collaborative writing.
Unit 2	**Phase**	**Type of activity**	**Resources**	**Activity: Critically reflect on one of the Lesson Plans in the PTG and point out 2-3 new elements introduced in the CPE that are depicted in this Lesson Plan**
Individual Activity	*Explain*	Forum	- Lesson Plans in the Preschool Teacher Guide (PTG) - Study material	Trainees study one of the Lesson Plans presented in the PTG (based on their choice). They emphasize on those elements that according to their opinion they highlight the principles and philosophy of the Curriculum for Preschool Education (CPE). 1) They make a post (up to 150 words) where they mention 2-3 new elements introduced in the CPE, accompanying each element with an excerpt from the Lesson Plan they have studied, which shows how this element is incorporated into the teaching design. 2) They reflect and comment on another trainee's post.

Trainees were supported and facilitated to design, implement, and evaluate teaching interventions in practice, using the resources of the training program, according to the fourth principle (*Trainees are given the opportunity to design, implement and evaluate teaching interventions in practice*). More specifically, they were provided with Lesson Plan Templates (GLP and SLP) and examples of Lesson Plans to further understand the 5E as an instructional model, as well as to connect the principles and methodology introduced in the new Curriculum for Preschool Education (Penderi et al., 2022b) and the Preschool Teacher Guide (Penderi et al., 2022a) with practice, while developing and implementing their lesson plans in the classroom. Moreover, a rubric regarding the assessment and evaluation of the design and

implementation of the lesson plan aimed at facilitating trainees' formative assessment of their work.

The final principle regarded the psychological support of the trainees to feel safe and secure in the digital learning environment. Trainers' role as facilitators and mentors, collaboration with peers, self- and peer evaluations and feedback from both peers and trainers before the submission of the final assignment in each unit were among the factors that were expected to contribute to the creation of a culture of safe and constructive learning environment that facilitates and motivates engagement. Moreover, the final compulsory assignment of the training program which regarded the submission of a Specific Lesson Plan, was successively developed and evaluated in the four units of the training program, while during the final synchronous meeting each pair of trainees could make a brief presentation of their lesson plan to get feedback from peers and the trainer, before submission.

Conclusion

The design of a Digital Learning Environment (DLE), in line with an andragogical and sociopedagogical perspective shifts the emphasis from the educator to the learner, aiming to promote the pedagogical quality and the social context of the learning experience. It can offer teachers a point of reference to make more informed decisions in how to make effective use of curriculum's resources. Many DLE aim to help teachers design for learning, however the added value of this specific model is that it promotes multiple curriculum representations that are used by teachers to understand, discuss, and share teaching practices in meaningful ways. This consideration can contribute to challenges highlighted by previous research (Conole & Wills, 2013) on identifying effective forms of supporting teachers to contextualize the curriculum by sharing and discussing their designs and practices.

Accordingly, the pedagogical principles, the basic conceptual and methodological choices and the learning design in the digital environment that supported teachers' training regarding the new Curriculum for Preschool Education (Penderi et al., 2022b) and the Preschool Teacher Guide (Penderi et al., 2022a), are presented. The 5 E framework (Bybee et al. 2006) was used as a learning and instructional model along with online flipped classroom methodology to facilitate trainees' engagement, interaction, and active learning. Multimodal, digital learning activities using blended learning techniques and digital tools that facilitated trainees' engagement as a community of learners are described in line with the conceptual and methodological choices with an aim to connect theory into practice and facilitate professional development within the profile of the 21st century skills framework.

All these perspectives are incorporated in Mayes and De Freitas (2004) perspectives of pedagogical choices that should underpin learning through technologies. The essence of the paper is to build up a meaningful picture of how the online learning experience unfolded in the specific context of the presented training program and is not predictive of the training outcomes. However, building on a sound and concise pedagogical and methodological framework to design a Digital Learning Environment (DLE) and establish informed choices on trainees learning paths, is of great importance, especially for education reforms. The conceptual and methodological tools presented here, could be also used as a point of reference for the assessment and evaluation of the implementation of the training program to inform policy designs.

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