Digital Media in Teachers' training; formulating recommendations on how to enhance creativity

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Abstract. In this paper we discuss the process of formulating guidelines for educational practitioners on how to integrate digital creative teaching in their daily practice and of drawing policy recommendations for institutions on how to enhance digital creativity (DC) in teachers' education on national or European level. This set of guidelines/recommendations comes as one of the end products of DoCENT project (DC Enhanced in Teacher Education). A main goal of the project was to design a teachers' training model, based on the DoCENT Framework for Digital Creative Teaching Competences (DF), which was already developed at the beginning of the project. The training model was implemented in Italy, Spain and Greece, and a set of digital resources was produced. The evaluation of the implementation phase, the analysis of the data that were produced and the resources that was constructed during the implementation phase, are the basis of the set of guidelines/recommendations. In the next pages we mostly describe the rationale behind the guidelines/recommendations formulation and we focus on their linking to the DF. Finally, we give a sample of guidelines, since their drawing is still ongoing.

Keywords: Digital Creativity, Teachers' Training, Guidelines and recommendations.

1 Introcuction

1.1 Aspects of Creativity

A survey of the literature shows that there are many studies on the nature of creativity; a lot of work has been done focusing on the so-called "genius" view of creativity [1]. From this point of view, creativity is a characteristic of extraordinary individuals, not likely to be heavily influenced by instructions. However, another view of creativity has emerged, standing in contrast to the "genius" view; creativity is often associated with working for long periods of time, rather than moments exceptional insight [2].

From this point of view, creativity is a result of the person's tendency to think and behave creatively, thus there is room to build educational applications, and creativity-enriched instructions for individuals. Building on this approach, we are focusing on DC, and we support the utility of a practical guide for educational practitioners and policy makers on how to integrate and stimulate DC in teaching.

1.2 Digital Creativity in Teaching

Creativity is one of the so-called "soft skills" that are considered essential for diverse kind of professions [3]. Especially in education, creativity is a skill that could be fitting for teachers themselves to develop, which means upgrade of educational services, since teachers are "key players" for ensuring the quality of teaching and the innovation in education [4]. We focus on a specific aspect of teachers' creativity what is called "Digital Creativity in Teaching". DC in teaching consists of applying technologies to develop teaching processes that are related to creativity; i.e. promoting learner-centered methodologies, helping connections, providing safe environments that encourage risk-taking, encouraging collaboration, boosting exploration and discovery [5]. There is a lot literature that documents the interest of researchers on DC, as well as the labor market needs of individuals with such skills [6].

This paper aims to describe -mainly- the formulation of a practical guide for educational practitioners (teachers or/and teacher educators) on how to integrate DC in their everyday practice. It also briefly discusses the procedure of formulating related policy recommendation at National and European level. In the next pages, before we present our rationale and our method of building up this -under construction- set of guidelines, we provide some details of the DoCENT's training model implementation.

2 The guide/recommendations formulation

2.1 Design and implementation of a training model

In the first steps of project we designed the DF and a training model for teacher educators (Fig 1). After that we proceeded to the implementation where we presented the rationale of the training model to many teacher educators, at least 45 in each country, Italy, Spain and Greece, through workshops. A set of digital resources were used (a MOOC, a Serious-Game etc.), which were specially designed by us, taking under consideration the details of the DF. Moreover, a set of new resources was emerged. They were mostly learning scenarios, designed by the participants, based on the DF. Up next was the utilization of these new resources (the learning scenarios) to conduct teacher training on DC for pre-service and in some cases in-service teachers (e.g. in Greece). The workshops/hands-on gave us the opportunity to reflect on our work and consisted the trailhead of the guidelines'/recommendations' construction.

2.2 Method of analysis and the guidelines' construction

The construction of the guidelines has already started from the first stages of the implementation where we formulated a set of design principles [7] that could be used as guidelines. These principles were revised more than three times, since the workshops were not conducted all at once (there was iteration); that is, we concluded to an informed set of guidelines. Figuratively, we could call them "interim" guidelines, since the large corpus of data, taken in-the-field during the implementation (i.e. observation notes, interviews and learning scenarios of the participants, that some of them were implemented in the classroom), should be used to enhance and refine them.

↓	**Design Phase**	DoCENT Framework (DF)	
↓	**Implementation Phase**	Workshops	Design and implementation of learning scenarios
↓	Taking feedback, evaluation of the process and the product, reflect on the implementation		
→ Validation of the Framework / writing guidelines and policy recommendations			

Fig. 1. A description of the phases of DoCENT project that lead to the guidelines' formulation

Firstly, we analyzed the observation notes and the interviews, following a Grounded Theory approach [8], since we wanted to get to conclusions originally emerging from the data. For the analysis, we used NVivo 10, to operate effectively the big amount of data. Then we used the conclusions drawn from the analysis, to refine the set of "interim" guidelines. Now, we are in the final phase of guidelines' construction, where we are testing the guidelines' robustness; we are comparing them with the characteristics of the participants' scenarios that were effectively implemented, doing a kind of triangulation [7] of the guidelines, while we are planning to put them under a conclusive revision cycle, following the Delphi Study approach [9]. This set of guidelines under construction will be the basis to write down the practical guide for teachers and/or teacher educators. In the next paragraphs we discuss the purpose and the rationale of this guide.

2.3 The guidelines

The set of guidelines-under-construction addresses to teacher educators (and teachers), supporting them to integrate DC as professionals. At this point, looking back to the synthesis of the DF provides a better understanding of this guide's rationale.

The basis of the DF was the four Ps of creativity; the process, the person, the press and the product dimension [10]. The "process" dimension refers to an iterative sequence of stages that involve in the creation of ideas and outcomes [12]. The "person" dimension concentrates on the individual characteristics of the creator trying to identify personality traits of creative person [13]. However, there characteristics are not used as criteria to say if a person is creative or not [14]. The "press" dimension takes under consideration the environment in which creativity occurs; i.e. there are general factors of the environment like social cultural and political factors and specific factors

like interpersonal exchanges and environmental settings [15]. Finally, the "product" dimension describes the tangible or intangible results of the creative process [16].

The DF is a set of 19 competences required by teacher educators to create, apply and validate a creative teaching scenario mediated by digital technologies. DoCENT's training model is based on the DF and given that the set of guidelines emerged during the implementation of the training, we suggest that the competences will be apparent into the "background". However, we considered that the guidelines should be "accessible" to every teacher; that is, one should be able to use them, without knowing the DF. So, for the presentation of the guidelines in the guide, we went back to the 4 Ps.

For example, the data taken from the field and the evaluation process indicated that "community building" -a component of the DF- was apparent in many cases, where DC was documented. In the next paragraph, in terms of guidelines, we propose "community building" as a technic for enhancing DC in teaching: "Building communities among the trainees, or the students stimulates DC. Working in a community stimulates creativity by providing trainees/students different perspectives of the task that is addressed to them. The different views of the community members may provoke them to propose a useful and novel solution, as the end-product of their work, which can be characterized as creative. Off course, building a community is not a simple task, for the teacher educator, or the classroom teacher; in many cases he/she should have identified some characteristics of the trainees/students in order to make the needed interventions, providing sparkers for fruitful communication. Moreover, setting up an environment that provokes communication between the members of the community, physically or virtually, is can be very supporting."

It is obvious that, in this short paragraph we mostly analyze "community building" following the 4 Ps approach, avoiding the use of technical terms; firstly, we refer to the benefits of communities in terms of the process (task identification) and the product (useful and novel). Then we mark the difficulties, concentrating on person's special characteristics, and finally we point out the importance of the environment (press). This is the form of guidelines that, from our perspective, serve our goals related to the practical usefulness of the guidelines. We also have the intention to add a couple of examples from the field to clarify some aspects of the guidelines, and cases of scenarios that seemed to promote DC of the trainees/learners.

2.4   Policy recommendations

Our next step will be to draw recommendations for policy development across Europe and in national level (referring to the 3 countries that the project was implemented), in order to enhance DC in educational systems and curricula. Obviously, we speak of institutional policies that are delivered by big organizations and practically these recommendations address to policy makers. Thus, we have to combine the DF and the results from the training model's implementation with the opportunities, goals and needs of educational systems in each country, and in Europe. In this sense, we use SWOT Analysis, as a simple but powerful tool [16] to document capabilities, deficiencies, opportunities and future threats of DoCENT's approach in terms of addressing the identifying critical issues that affect the embedment of DC in teacher educa-

tion. Initially, each country will focus separately on the need for fostering the integration of digital technologies and of creativity in teacher training. In this way, we intend that the policy recommendation to be more specific, while in the next steps a more integrated perspective will come up.

3 Discussion

In this paper we documented our rationale on writing -mostly- guidelines and recommendations to enhance DC in teacher training. Despite the extent of their feasibility, the content of the guidelines cannot be separately seen from the DF. Thus, it could be interesting if similar guides would be produced using other training approaches.

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