An international competence framework for digital creative teaching: The DoCENT model

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Abstract. Worldwide educational policies call for the development of creative and digital competences, as they are essential to reach social inclusion and employment in today society. Yet, educators are not adequately trained to apply creative teaching strategies, nor to fully exploit the educational affordances of technologies. In the context of the DoCENT project (Erasmus + programme), this paper proposes an innovative framework mapping the key-competences needed by teachers to effectively integrate digital creativity in their teaching practices. We report the methodology used to build the framework, as well as present its six areas and 19 competences. The DoCENT model provides teacher educators, educational practitioners and researchers with a tangible tool for embedding educational creativity in the digital society.

Keywords: Digital Creativity, Teaching Competences, Competence Framework.

1 Introduction

Creativity is essential for individuals to face the social and economic changes which characterize the XXI Century [1–2], as well as to reach social inclusion and employment [3]. Furthermore, today labour market is strongly linked to employees' abilities to work with digital technologies [4]. Hence, worldwide educational policies call for the development of creative and digital competences in students from all levels [5].

Yet, education systems do not efficiently integrate creativity and technologies in today classrooms [4, 6]. Indeed, educators are not adequately trained to apply creative teaching strategies, nor to fully exploit the educational affordances of technologies.

To address this shortcoming, the DoCENT project[1] intends to enhance digital creativity in teacher education settings. In the context of DoCENT, the present study aims to define the key-competences needed by educators to effectively integrate digital creativity in their teaching practices, as well as to provide and validate a European reference framework for developing and evaluating those competences.

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[1] DoCENT – Digital Creativity Enhanced in Teacher education - Erasmus +, Strategic Partnerships for Higher Education, 2017-19, project number 2017-1-IT02-KA203-036807

Competence can be defined as "The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations, and in professional and personal development" ([7], p. 19). This article reports the methodology used to build the DoCENT competence framework, as well as presents the result of this design process in terms of areas and components.

2   Methodology

This section defines the methodological steps which we followed to design the DoCENT competence framework for digital creative teaching.

First, we identified and reviewed a set of existing competence frameworks related to the different dimensions of DoCENT, i.e. creativity [8, 9, 10, 11], digital technologies [12, 13] and teacher education [14, 15]. We also analysed frameworks related to 21st Century Skills [16,17] and lifelong learning [18]. In total, we considered 26 frameworks.

In a second step, we extracted possible competences from those models. Then, we selected the most relevant ones for inclusion in the framework, following a series of criteria, i.e., (a) corresponding to the three dimensions of DoCENT; (b) being conceptually clear; (c) being formulated at a general rather than at a specific level; and (d) being conceptually distinct from other competences [19].

Afterwards, we synthesised and adapted the set of competences obtained into a first prototype framework. To do so, we defined a set of areas, each of them composed by a number of competences. Following an iterative process, the model was analysed and refined by the members of the DoCENT consortium.

In a final step, we reviewed, refined and validated the prototype through an expert evaluation conducted in the different project countries: in the context of face-to-face focus groups, a panel of 24 educational experts and practitioners reviewed, discussed and provided feedback on the different elements of the framework. We considered their suggestions, by adapting the existing components and adding new ones. As a result, we obtained a refined version of the framework.

3   Results

The DoCENT framework considers the professional competences of educators, their pedagogical competences, as well as the development of students' digital creative competences. The framework is organized in such a way that it is compatible with the European Framework for the Digital Competence of Educators (DigiCompEdu) [12], by presenting a similar structure, specifically adapted to the topic of digital creativity. The DigiCompEdu provides a scientifically sound background and a reference point for developers of competence models.

The DoCENT model targets teacher educators, educational policy makers, as well as pre-service and in-service teachers. As shown in Figure 2, it is divided into six areas and includes a total of 19 competences, which are described in the next subsections.
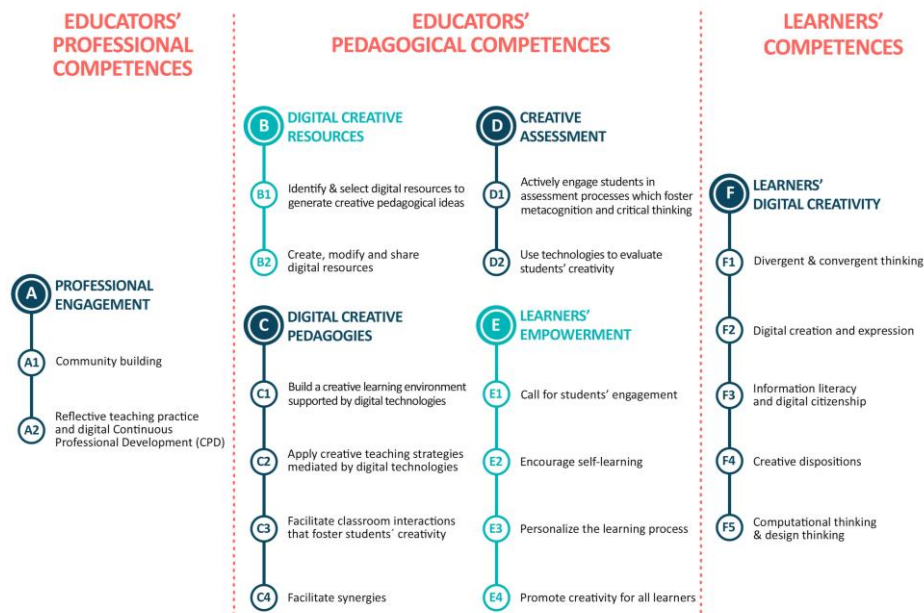
Fig. 1. DoCENT competence framework.

Area A: Professional engagement. This area refers to teachers' use of digital technologies to collaborate with the different members of their professional community, i.e., to exchange practices and methodologies, as well as initiate or participate in collaborative projects which contribute to educational change (Competence A1). Furthermore, it tackles educators' reflective teaching practice and digital continuous professional development (Competence A2).

Area B: Digital creative resources. Here we focus on teachers' abilities to identify, critically evaluate and select digital resources with a creative educational potential, e.g., manipulative technologies, educational robotics, RFID/NFC technologies, game design and coding tools (Competence B1). The area also refers to teachers' creation, modification and sharing of digital resources (Competence B2).

Area C: Digital creative pedagogies. This area addresses the use of digital technologies to support creative teaching and learning. It implies, for teachers, building a creative learning environment supported by technologies: creating a positive social climate, accepting new ideas, using failure as a positive learning factor, and promoting exploration through a flexible use of space and time (Competence C1). Competence C2 tackles the planning and application of digital teaching strategies which potentially enhance students' creativity, e.g. inquiry-based, project-based, game-based learning. Competence C3 addresses teachers' ability to facilitate classroom interactions that foster students' creativity, by fostering rich collaboration processes, stimulating expression and dialogue, as well as encouraging democratic practices in the digital

classroom. Finally, Competence C4 relates to the creation of synergies, by linking curricular concepts to real life situations, as well as bridging between subjects, themes and concepts through cross-curricular learning opportunities.

Area D: Creative assessment. Here we concentrate on teachers' ability to engage students in assessment processes which foster metacognition and critical thinking (e.g., self- and peer-evaluation - Competence D1), as well as using digital evaluation strategies which allow for evaluating students' creativity (Competence D2).

Area E: Learners' empowerment. This area refers to the use of digital technologies to enhance learners' engagement (Competence E1) and self-learning (Competence E2), encouraging them to become active, responsible members of the digital society. It also tackles the personalization of the learning process (Competence E3) and the inclusion of all learners without regard to gender, physical, intellectual, social, linguistic, cultural, or religious characteristics (Competence E4).

Area F: Learners' digital creativity. Finally, Area F focuses on teachers' ability to enhance students' digital creative competences, i.e. the use of divergent and convergent thinking to analyse and solve real-world problems (Competence F1); the adoption of a "maker culture" which fosters the creative expression of ideas (Competence F2); information literacy and digital citizenship, by encouraging students to participate safely, effectively, critically and responsibly in the digital world (Competence F3); creative disposition (openness to experience, responsible risk taking, tolerance of ambiguity, learning from failure – Competence F4); the use of computational thinking and design thinking to solve problems and model systems (Competence F5).

4 Conclusions

This study proposed an innovative competence framework for applying creative teaching practices mediated by digital technologies. It includes six areas, each of those equally important for ensuring the emergence of creative teaching and learning. The framework has recently been applied in a teacher training course conducted in DoCENT countries. Further research will present the results of this implementation.

The study allowed for bridging two key-educational research constructs, namely creativity and digital technologies. Furthermore, it provides teacher educators, educational practitioners and researchers with a tangible tool for embedding creativity in the educational system and, beyond, in the digital society. The DoCENT competence model allows for rethinking teacher education programmes, by designing innovative learning solutions that combine creative practices with digital tools.

It is important to note that the identified competences will naturally evolve with the emergence of new technologies (which will eventually provide new affordances) and pedagogical models. In addition, competences might vary according to the sociocultural context at stake, as the emphasis of professional development and pedagogical patrimonies may differ accordingly.

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