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Digital Artefacts for Reflection on Identity in Teacher Education

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ABSTRACT

This paper presents an analysis of digital reflective narratives of identity constructed by student teachers in their first year in a Spanish University. The literature review demonstrates the multidimensional nature of teacher identity, showing that, during the transition of their first year at University, student teachers' ideas of identity reflect a highly emotional and committed stance on childhood and social justice. The innovative approach taken in the current work includes a review of the possibilities of digital artefacts, as OER, for reflection. The conclusion discusses the importance of scaffolding approaches to the development of teacher identity through a reflective methodology.

INTRODUCTION

The use of digital artefacts for reflection in the educational field in Spain has received much interest in recent years. Among the most popular web tools for this purpose, especially in teacher education, are e-portfolios (Europortfolio, 2015; Guasch, Guàrdia & Barberà, 2009; Navarro, 2014; Tur, 2013). However, apart from eportfolios, little research has been done in the Spanish context on the reflection on professional identity through the use of other types of digital artefacts combining images, audio and text. In our project, we took an innovative approach to the creation of digital artefacts as Open Educational Resources (OERs) for reflection on identity.

In Spain, there are two different routes to becoming a teacher. To teach in Primary Education there is a four-year undergraduate programme whereas to become a teacher in Secondary Education it is necessary to undertake an MA programme. In both programmes, ICT has only a minor presence, which is why a cross curricular approach has been proposed (Cózar & Roblizo, 2014; Durán & Vega, 2013; Pérez Fernández & Vílchez, 2012). In Spain, the use of ICT across the curriculum at an early stage is felt to impact student teachers' attitudes and beliefs toward the use of technology in their future careers (Ruiz Palmero & Sánchez Rodríguez, 2012; Tirado-Moreta & Aguaded-Gómez, 2014).

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First year student teachers on a Didactics and Curricular Design module, delivered as part of the Teacher Education programme of the University of the Balearic Islands (UIB) in Ibiza, Spain, were asked to create digital artefacts which expressed their initial ideas about their professional identities as future teachers. This activity, which was a curriculum development initiative by one of the authors, was intended to introduce the overarching concept of "teacher identity" as an important component of professional development; to provide opportunities to collaborate through small group work in reflecting on learning; and to encourage digital competence and creativity through the use and development of OERs. This paper seeks to link all three areas - teacher identity, reflection and OERs- by discussing the possibilities of digital artefacts used by first year students in creating reflective narratives of teacher identity.

THEORETICAL BACKGROUND

Teacher Identity

According to Gee (2000, p. 99), identity can be understood as "the 'kind of person' one is recognised as 'being'. Initial research defined teacher identity as an inflexible and permanent concept whereas currently it is seen as something in constant construction and evolution throughout the teaching career (Trent, 2010). Research has highlighted a number of different aspects to the construction of professional identity by teachers.

In this construction, emotions are an important element. In fact, emotions are considered to be at the centre of teaching, and both positive and negative emotions are argued to be crucial (Shapiro, 2010). Among the positive emotions, research has highlighted feelings such as care, affection and love towards students; passion, excitement towards content and student learning; and, satisfaction and enjoyment in successful learning contexts. Among the latter, research has documented anger due to both lack of institutional support or student misbehaviour, and loneliness (Shapiro, 2010, p. 617). Teacher identity has been posited as the justification for emotional decisions and caring professional behaviour in secondary school teachers (O'Connor, 2006).

Another element that constitutes teacher identity are beliefs or ideas that influence the concept of teaching (Ng, Nicholas, & Williams, 2010). Students enter university teacher education programmes with a "strong set of beliefs, attitudes and preconceptions" of what it is to be a teacher, which is also a resilient and powerful set of ideas for the construction of teacher identity (Chang-Kredl & Kingsley, 2014, p. 29). Therefore, there is a need for challenging teacher education programmes to change this previous image of what is teaching and the teacher that one wants to become (Harlow & Cobb, 2014).

A wide variety of aspects influence student teachers beliefs, which in turn determine professional identity, for instance, memories, prior experiences, and early learning experiences.

Memories and prior experiences are the core reasons cited for becoming a teacher and embedded within them are students' expectations about their future teacher identity (Chang-Kredl & Kingsley, 2014). It has been claimed that students' prior schooling experiences and observation of learning and teaching help to form the self-images of prospective teachers (Britzman, 1986; Mayer, 1999). On the other hand, early learning experiences have been considered as paramount in the influence of beliefs (Pajares, 1992). Chang-Kredl and Kingsley (2014, pp. 34-35) have distinguished four implications for the construction of identity based on the teaching expectations of a group of pre-service early childhood teachers: the emotional subjective lens from which student teachers analyse their prior experiences and their pedagogical knowledge; the importance of being aware and articulating expectations about teaching, which include their expectations about childhood; the role model provided by favourite teachers; and political convictions such as "social responsibility, equity and justice".

Beliefs about two important and different aspects of teaching have also been argued as highly influential on student teachers' attitude. The first is related to epistemological beliefs and the latter is related to Information and Communication Technologies (ICT) for learning. Both can be equally relevant in the construction of pre-service teacher identity.

Epistemological beliefs - beliefs about the nature of knowledge - have been studied in relation to pre-service teachers conception of learning and teaching (Cheng, Chan, Tang, & Cheng, 2009; Aypay, 2010). These studies analyse four dimensions considered in a continuum from "naive" to "sophisticated" beliefs. The former conceptualises knowledge as simple, certain, unchanging, the fruit of authority and of an innate ability. The latter considers knowledge as complex, uncertain, and the fruit of gradual processes built by the learner. Concepts of teaching and learning are similarly polarised into a traditional versus constructivist approach. The studies conclude by equating naive beliefs about knowledge with the traditional approach to teaching and learning, whilst beliefs at the sophisticated end of the continuum are linked to constructivist methodologies. The implication of this arguments is that reflection needs to be actively promoted in order to scaffold the shift from traditional and simple epistemological beliefs to constructivist and complex ones (Brauer & Wilde, 2014; Rebmann et al., 2014).

Beliefs about technology have also been argued as key elements for the successful use of ICT for learning by teachers (Asing-Cashman, Gurung, Limbo, & Rutledge, 2014; Teo, 2009). Research has related these beliefs to teachers' adoption of ICT in schools (Hermans, Tondeur, van Braak, & Valcke, 2008). Barriers have been identified to the use of technology by teachers (Ertmer & Ottenbreit-Leftwich, 2013). Currently, second-order

barriers, related to teacher beliefs and attitudes, are being addressed (Ertmer & Ottenbreit-Leftwich, 2013), and numerous learning activities in teacher education address the use of ICT for learning in order to mitigate resistance in their future professional careers (Matrosova Khalil, 2012; Tur & Marín, 2015).

This study is based on the idea that teacher identity is an evolving and unstable concept, which needs to be constructed through reflective processes.

Reflection

Reflection is usually described as a process of recounting a past event in order to learn from it. This is a process which is the foundation of much professional supervision as well as of professional practice education (Boud & Walker, 1998; Moon, 1999). However, cycles of reflection (see for example Gibbs, 1988) also involve the creation of an envisaged or future "story" – a place for professionals to "re-vision" their practice (Collier, 2010).

Moon (1999), cites Eisner (1991) in stating that learning occurs *in the process of representing learning* – that is, in expressing what has been learnt in writing, through oral expression, or indeed through more creative or artistic media. The use of imagination, creativity and imagery involves making manifest some aspects of knowing that are not fully conscious but which are felt at a bodily level (Collier, 2010), emphasising again the importance of emotion in the reflective process.

Moon (1999) described the levels of learning as five steps that are summarised as Noticing, Making Sense, Making Meaning, Working with Meaning and Transformative Learning with reflection as the process that enables the learner to move to the higher levels (see Figure 1). Specifically this happens between Making Meaning and Working with Meaning as up to that point the new learning is simply being accommodated within existing cognitive structures. Therefore, the levels from Noticing (memorized representations), to Making meaning (meaningful, well integrated and linked ideas) would be considered mostly surface learning and would not imply genuine reflection. Repeated and deliberate reflection could potentially take the student from the level of Working with Meaning to the level of Transformative Learning where the student may begin to evaluate their own frame of reference or even the process of knowing itself.

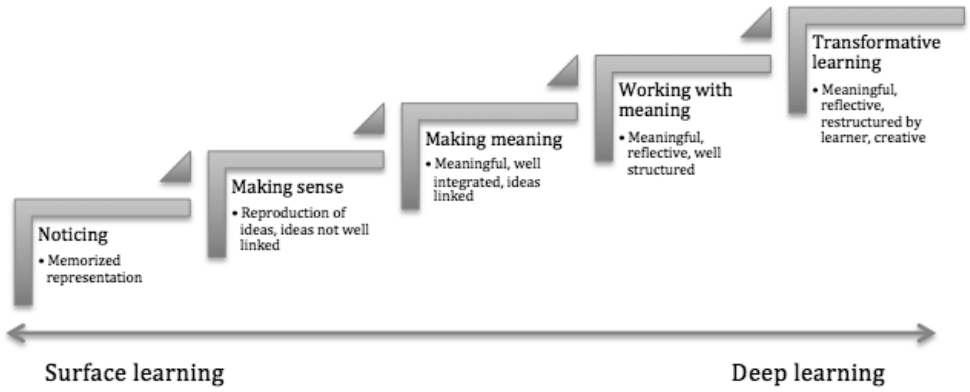

Figure 1: Adapted from Moon's Map of Learning (1999)

Moon's comprehensive model would appear to be highly suited to the analysis of reflection in teacher education. Moon developed her map of learning (1999) as part of a consideration of professional education, which included the education of teachers. Furthermore, the networked vision of learning by Moon highlights the connection between knowledge and, feelings and emotions (Taylor, 2015), which are important elements in the construction of teacher identity as the literature review has demonstrated. Early learning experiences have been argued as having significance for teacher's beliefs (Hermans, Tondeur, Braak & Valcke, 2008); so a model in which change is core is useful in articulating students' progression from reproductive to transformative learning. Previous research has demonstrated the validity of Moon's framework in leading students through learning stages (Smith, Clegg, Lawrence & Todd, 2007) although challenges such as a surface approach have also been observed – for instance, not all students developed deep reflective skills and most of them seemed to upgrade only from "making sense" to "making meaning". Whilst Moon (2001) envisages the stages of learning as a continuum denoting progressively deeper approaches to learning, she also notes that students may sometimes adopt more surface approaches to learning depending on the task.

Reflection can be carried out in diverse learning activities such as reflective writing (Jenson, 2011; Park & Son, 2011) or multimedia creation (Correa, Jiménez & Gutiérrez, 2009). In this study, students reflected on teacher identity through the construction of a multimedia digital artefact built as an Open Educational Resource (OER).

Open Educational Resources (OER)

Emerging digital technologies provide new possibilities for creative approaches to reflection and the development of narratives, for example, as here, permitting students to quickly and easily produce videos and other multimedia artefacts (Hall, 2011). The student's use of OERs can be seen as situated on a continuum that is analogous to – and to some extent mirrors – the stages on the map of learning (Moon 1999). For example, a student at the level of Noticing may simply include an image that is used in a literal sense (for example, an image of a staircase alongside mention of climbing stairs) or in a metaphorical sense (re-purposing the same image to illustrate the concept of ambition). This latter use could indicate the student is at the stage of Working with Meaning. The student creating his or her own original media and publishing this as OER might represent Transformative Learning. It is in this context that we address digital Open Educational Resources (OER) which is a phenomenon that derives from the open source philosophy. Here, open is used to refer to two main aspects (Hylén, 2005): free availability on the Internet and few restrictions on the use of the resource. Therefore, the user should be able to use, adapt, reuse and build upon the resource, with the proviso that the original creator is recognised as the author of his/her work.

According to Tuomi (2013, p. 61), OER can be defined as "accumulated assets that are available in a non-discriminatory way to educators, students and self-learners for learning and education". These assets can be learning content (courses, learning objects,...), tools (to support the development, use, reuse and delivery of learning content) and implementation resources (intellectual property licenses to promote open publishing of materials) (OECD, 2007). As for the implementation resources, Creative Commons licenses are widely known. (http://creativecommons.org). According to Geith (2008), a growing number of open resources are using this type of license, which enables free use and reuse of the resources and aids the rapid growth of OER.

The OER movement, including the new Web 2.0 technologies that are being used in multiple contexts, is creating the conditions for the emergence and promotion of more open and participatory practices in learning (Brown & Adler, 2008; Conole, 2012a), as for example in this case, where digital tools are used in reflections on teacher identity. However, Conole (2012b, pp. 112-113) argues that teachers are still not adopting open education practices (OEP) defined as "practices which support the production, use and reuse of high quality open educational resources (OER) through institutional policies, which promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path". Therefore, OER is an important phenomenon that needs to be addressed in teacher education so as to foster open education practices.

OER artefacts produced by students highlighted the affordances of digital tools in creating reflective objects for the construction of teacher identity. In this learning activity, digital artefacts become OER since students must respect open licenses both for the resources they

use and the product they create. So, the task of making a digital work is enriched by the OER perspective: building upon others' work and opening one's own project totally transforms the process in itself. The learning activity was designed to go beyond the mere use of tools to develop a meaningful process in which students could reflect on their professional identity as future teachers.

Most studies on the construction of teacher identity refer to the use of interviews, surveys, as well as written texts by students (see for example research by O'Connor, 2008; Harlow & Cobb, 2014; Scherff, 2008). This study demonstrates other, richer possibilities for the way students can reflect on and construct professional identity.

THE STUDY

Context and participants

The study was conducted with 37 first year student teachers on a Didactics and Curricular Design module of the Teacher Education programme (including early childhood education and primary education) at the University of the Balearic Islands (UIB) in Ibiza during the academic years 2011/12, 2012/13, and 2013/14. The research analyses data derived from a learning activity carried out by three successive cohorts under the leadership of one of the authors.

At the beginning of the module, students were asked to create digital artefacts to express their initial ideas about their professional identities as future teachers. First, they read a book about the teacher task and the commitment for the improvement of the quality of education, written in an emotional tone instead of a theoretical one. Then, they had to work in small groups of 2, 3 or 4 students, through a process of discussion and co-creation, to answer the posed question "What kind of teacher do you want to be?" in a digital format. In addition, they also had to reflect on their digital artefact individually in their eportfolios. The task involved active learning and collaboration as is posing higher level questions for students to answer (Gul et al., 2014). This was an assignment in which students were required to create a simple digital artefact with multimedia (images, music and text), open and Creative Commons elements, thus introducing students to the open movement in education (OER) at the same time as they were introduced into ICT for learning and teaching. The digital artefacts were to be created in a slideshow format using the tool Photopeach or in a video format uploaded to Youtube.

The task produced a total of 18 digital artefacts[1] created by the students, which were analysed afterwards according to the methodology explained below.

[1] URL: http://www.gemmaturferrer.com/teacher-identity/

Research questions

This research aims to analyse digital artefacts created by students from the point of view of levels of reflection, the development of teacher identity and the use of OER. The study is important in addressing how new technologies facilitate the process of reflection and identity construction and introduce innovative forms of learning and assessment into teacher education, both of which in turn have implications for the use of OER in teachers' future practice.

This is further broken down as:

- How do students envision their identity as future teachers?
- Where on Moon's (1999) continuum of levels of learning are students' situated?
- What are the characteristics of the digital artefacts as OER?
- Is there any parallel between the use of open resources by students and the reflective level shown in their artefacts?

Methodology

Analysis of the student teachers' artefacts created by the students was the main technique used to address the research question. The main goal in using this technique is to systematically examine communicative material (in our case, digital artefacts that include images, text and audio) (Mayring, 2004). The aspects analysed in each artefact were the level of reflection, the vision of teacher identity and the digital characteristics of the artefacts as OER.

The process of thematic analysis is aimed at identifying, analysing and reporting themes within datas as follows (Braun & Clarke, 2006): 1) identify the relevant themes from the whole data, 2) assignation of various themes, 3) classification of relevant information.

To organise and describe the information derived from the digital artefacts of the students, three instruments, one for each aspect derived from the literature search, were created ad hoc during the process of analysis for this study.

Instruments

The instruments were:

- An analysis of reflectivity based on an assessment of the depth of learning by students according to the levels of learning defined by Moon (1999), as evidenced through the organisation of their digital artefacts. This instrument connects directly with the research question "What is the level of reflection displayed by the students in their artefacts?"
- An analysis on the construction of an OER including the following aspects: the use and citation of Creative Commons resources (images and audio), the use of

symbolism within the images (metaphors) and the use of the students' own photographs. This instrument connects directly with the research question "What are the characteristics of the digital artefacts as OER?"

- An analysis of the construction of the teacher identity, through the text included in the artefacts, with the following dimensions: emotional aspects, the role of modelling, political values, prior experiences, caring, epistemological beliefs and the use of ICT in education. This instrument connects directly with the research question "How do students envision their identity as future teachers?" The dimensions were defined based on the theoretical framework and five main ones established (emotions, political values, caring, epistemological beliefs and ICT). The diverse categories in each dimension were established after the analysis of the first set of artefacts made by students. Following this first analysis, the dimensions "the role of modelling" and "prior experiences" were deleted from the instrument since no artefact included a mention to them; likewise, a category in the dimension about epistemological beliefs was deleted (naïve beliefs) because of a lack of references, and the other dimension was renamed as "sophisticated beliefs". The final draft of the instrument is the following:

Dimensions	Category
Emotions (E)	Unforgettable
	Smiling
	Teaching with Passion
	Sense of humour
	Happiness
	Excitement
	Pride
	Feels a bond with student
	Loving learning
Political values (PV)	Social equity and justice
	Commitment-offering help
	Environmental education

	Cultural diversity
	Attending students' needs
	Collaboration with families
	Living together
Caring (C)	Mutual need
	Taking care while learning
	Awaken curiosity and willingness to learn
	Making them happy while learning
	Answer their questions
	Overcoming challenges together
	Giving them confidence
	Commitment to 21st century education
	Respect their innocence
Sophisticated beliefs (SB)	Team work
	Fostering thinking
	Experimenting- learning by doing
	Learning by playing
	Promoting creativity
	Learning from the context
	Autonomous learning
	New school
	Against old methodologies
	Continuous development

	Family collaboration
	Teacher as a guide
	Continuous professional development
ICT (ICT)	Digitalisation of classrooms
	Using ICT

Table 1: Dimensions and categories of thematic analysis on the artefacts.

Results

Vision of teacher identity

In the construction of teachers' identity in the transition through the first year at University, students include concepts related to five of the dimensions considered due to the previous literature review – sophisticated epistemological beliefs, emotions, caring, political values and ICT. What seems most remarkable is the fact that none of the groups of student teachers refer to the modelling roles of their own teachers and their own prior educational experiences. In general, it seems that most of artefacts repeat the same patterns since most of them include sentences in relation to the following topics: positive emotions about teaching and the political values that must drive education; and the demonstration of commitment to their own future students. In addition, all artefacts include sentences about concepts related to epistemological beliefs in the category of sophisticated knowledge and constructivist methodologies. This analysis of the students' digital artefacts suggests that their concept of teacher identity is based on emotional aspects such as commitment and caring but also ideas of social justice.

From the total of 167 references in the 18 artefacts, an average of all the dimensions addressed by students allows us to observe that nearly half of the discourse that emerges from these artefacts is based on sophisticated epistemological beliefs (70 references- 43%). Students, when addressing the educational methodology with which they most identify, cite teachers as a guide for learning with the highest number of citations, followed by teamwork experimentation, and learning by playing.

The narrative concerning emotions has woven into it a wide range of concepts which are diverse and infrequently repeated across the different artefacts (26 references in total- 16%). This means that the artefacts present nuances in the expression of feelings, although always related to positivity. For example, words which frequently occur in this category are "smiling" "bonds" [between child and teacher], "excitement" and "unforgettable". In a similar to that of emotions, there is one further category - the dimension about childhood

caring, which has a total of 25 repetitions (15%), and is about ideas such as mutual need, confidence, commitment, innocence among others.

Political values have an important presence in students' artefacts both because there are numerous categories (a total of 14) but also because they are frequently repeated (31 references - 19%). Thus, this dimension is not only present in all artefacts but also each artefact includes more than one facet of political values. The most common category is social equity and justice, followed by the concern about environmental education and cultural diversity.

In contrast, the category of ICT is the one with lowest diversity and frequency as there are only eleven references (7%) related to a commitment to use ICT in their future teaching.

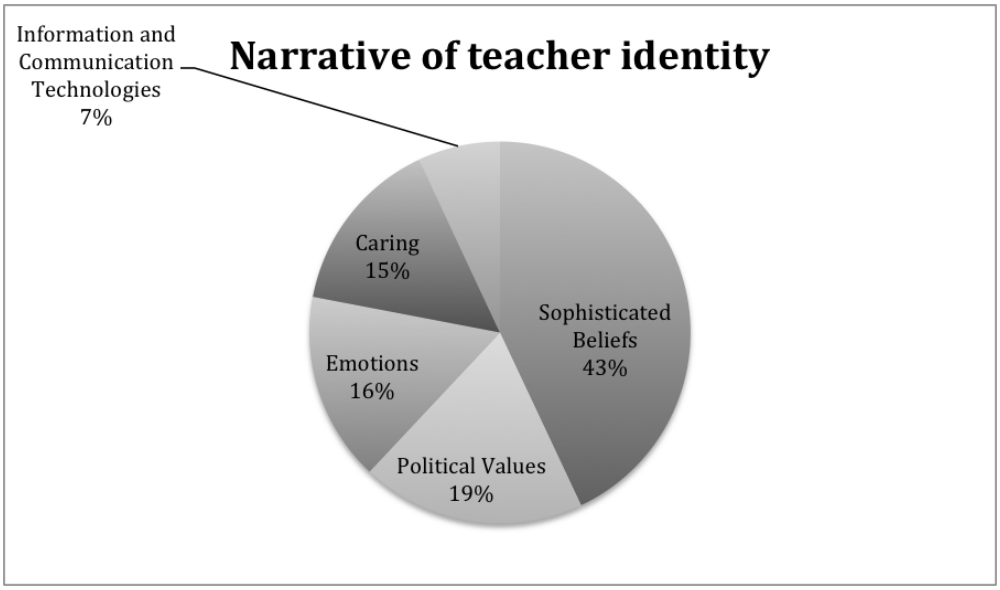

Figure 2: Narrative of teacher identity

Level of reflection

The analysis of levels of reflection was carried out using Moon's Map of Learning or Stages of the Best Possible Representation of Learning (1999), in which the potential for students to move from surface to deeper forms of learning, including transformative learning, through the use of reflection is described. This makes some initial analysis possible as it is at the points between Making Meaning and Working with Meaning, and between Working with Meaning and Transformative Learning (previously described) that we the process of reflection on the part of the student helping them to develop a deeper understanding of their professional identity.

Based on the best possible representation of learning of each level (Moon, 1999), an examination of the students' expression of what has been learnt enables us to make some basic assumptions about the depth of reflection that they employed in the construction of their artefacts.

Noticing - Sense Making

There is noticing, acquisition and reproduction of ideas in eight of the artefacts, and a deliberate organising of the material (teaching, learning, environmental awareness, anti-discriminatory practice, etc). Mostly these ideas are simply listed as single words or short phrases accompanying an illustrative image: usually of children in an educational setting. In some cases – e.g. Artefact 7, longer sentences have been used and Artefact 8 starts and finishes with the title or key message "I want to be a teacher of the 21st century", which provides some structure, but in both cases the main ideas are not clearly linked into a cohesive narrative.

Making Meaning

In eight cases there is greater coherency as the material is well organised and viewed more holistically. For example, artefacts 9 & 10 use quotations about education and the role of the teacher, making a specific link between the ideas presented and a wider body of learning and theory (the discipline), which in turn provides context and meaning. In addition, the images used are more metaphorical as in Artefact 4 which makes a deliberate link between a clearly antique page of print in the first image and the outmoded idea of teaching children sitting in rows in the second. It also deliberately juxtaposes an image of children engaged in using technology with the idea of creating citizens for the 21st century.

Working with Meaning/Transformative Learning

Just two artefacts display a higher level of reflection. Artefact 15, for example, clearly evidences some sophistication in its construction. The images used are the students' own and have been created expressly for this project - including video snippets of children's interactions - in order to illustrate the points being made. This artefact also demonstrates a degree of technical skill in the creation of the digital artefact which interposes still and video images, background music and recorded speech. This could be said to represent Transformative Learning in Moon's (1999) terms as the task itself has been creatively reorganised and restructured by the learner.

Students' use of OER

With regard to the digital characteristics of the artefacts as OER, more than a half of the artefacts include one or more photographs taken by the students themselves. Most of these depict their own childhood and show moments of play, free time and happiness. Photographs with Creative Commons licenses also tend to depict images of children/childhood and in one case used to communicate metaphoric meaning: Artefact 10 represents the figure of the teacher using a compass (see Figure 3). Therefore, this means that students have only used or adapted existing resources in their artefacts showing they "noticing" or "making sense" level of reflection.

Figure 3: Metaphoric meaning with a compass in Artefact 10

Almost all artefacts respect the main rules about correct citation and authorship of photographs, with the exception of those using their own photographs as this was a prerequisite for students to be able to submit their work for assessment. Thus, all artefacts include some slides which provide URLs of the images used in order to attribute authorship. However, music is not used in any of the artefacts with the same respect to free licenses as current popular songs, which are subject to copyright, have been used in many cases.

DISCUSSION AND CONCLUSION

Leaving aside the analysis of the quality as an OER, all artefacts were analysed from two points of views: the reflective level demonstrated and the topics represented. Thus, messages in the artefact were classified both according to Moon's stages and as a category from the thematic analysis. For this study, both the text and the metaphors represented by

the selection of images and music were considered globally. For example, texts in artefact 1[2] were classified into four categories (emotions, political values, caring and sophisticated beliefs); as for the reflective level, there was a lack of a complex discourse of ideas that could have shown the beginning of a change in professional beliefs and also a lack of visual metaphors, which suggested the classification of the artefact as level 1. This usage of images, that mainly consists of using others' pictures and integrating them in similar contexts, is aligned with their initial reflective skills. Findings from this analysis allow us to discuss the representation of teacher's identity, the depth of reflection and the students' progress towards transformative learning.

To answer the first research question - about teacher identity - it can be said that the identity outlined by student teachers during the transition of their first year at university is complex and corresponds to that previously highlighted in the literature review. Student teachers at the UIB in Ibiza centre can be said to have a view of professional identity which is commonly shared by teachers around the world, since the literature review covers international studies. The analysis of identity through digital artefacts is a research method that could therefore be relevant for Teacher Education programmes in other countries.

An analysis of the most common categories allows us to observe a certain agreement among students as to the relevance of the political values that drive teaching and an emphasis on new methodologies in teaching. Student teacher's professional identity seems to be built from the very start on competences related to "knowing how to do and how to be". In addition the diverse range of concepts cited by students about feelings and caring allows us to observe a highly emotion-driven identity, which is in line with conclusions by Shapiro (2010) and O'Connor (2006).

The very low number of categories in relation to ICT suggests that teacher identity at this stage does not include an understanding of the role of technology for learning and teaching. This has significance for the design of teacher education programmes which need to have technology enhanced learning experiences fully integrated within them at all levels. It has been stated that the earlier teachers have learning experiences involving ICT, the better it will improve their attitude towards the use of technology in their future professional careers (Hermans, Tondeur, van Braak, & Valcke, 2008; Matrosova Khalil, 2012; Tur & Marín, 2015).

The identity built by students partially corresponds to the profile defined in previous research by Chang-kredl and Kingsley (2014). Thus, the image projected by students suggests an emotional "lens" that shapes their expectations as well as foregrounding the issue of social responsibility. In line with Ng, Nicholas and Williams (2010), student teachers demonstrate a great deal of care towards their future young pupils.

[2] URL: http://photopeach.com/album/nhp9wx?ref=est

There is little evidence within the artefacts themselves to suggest that the students' expectations about teaching are determined by earlier experiences or the modelling role of their own teachers, as suggested in previous research (Britzman, 1986; Chang-Kredl & Kingsley, 2014; Mayer, 1999). On the other hand, it is interesting to see that in this early stage of their education as future teachers, all groups of students seem to view the nature of knowledge from the perspective of sophisticated beliefs and constructivist educational methods, according to the dimensions explored by various authors (Aypay, 2010; Cheng, Chan, Tang & Cheng, 2009). However, from the data obtained, it cannot be clearly ascertained whether there are inconsistencies among individual students or whether, for instance, the resulting identities are a result of compromise - a reconciling of opposing views within the group - or of just one view dominating.

In terms of reflection, the digital artefact produced by the students was intended as the beginning stage of an e-portfolio activity which, by its design, seeks to enhance reflective thinking. Reflection on teacher identity is considered paramount to help students to become self-regulated professionals. (Ng, Nicholas, & Williams, 2010). The low levels observed of reflection in these artefacts are similar to those observed in the e-portfolio processes studied in the same context of Teacher Education at UIB (Tur & Marín, 2015). So, to answer the research question on levels of reflection, there is little evidence that these were particularly deep or critical although some students have demonstrated the beginnings of a higher level of reflection where they have transcended the question of individual identity and considered the broader purpose of education. This fact allows us to highlight the need for feedback and scaffolding to lead pre-service teachers to higher levels of reflection in line with research by Rebmann et al. (2014) and Brauer and Wilde (2014). That these early practitioners may not yet have embarked on the full process of reflection is unsurprising in the light of Moon's (1999) schema, because in reality they have created artefacts which represent only their first attempts at sense-making about teacher identity.

Data obtained about the digital artefacts built by students suggest that students know how to use material published on the web and that they are aware of creative commons licenses and their meaning. For this reason, the research question about OER can be answered in positive terms as these artefacts meet the challenge of "openness". In the main they respect licences in relation to the use of images although in the case of music there are some problems in attribution. However, the fact that student teachers have complied with open practice in carrying out the activity is no guarantee that their attitude towards it is favourable. Based on Conole's observation about teachers' resistance (2012b), further research could explore student teachers' attitudes towards OER and observe the possibilities for their future adoption. Furthermore, students have mainly used or adapted open resources from others, which is coherent with the difficulties observed to upgrade their reflection from lower to deeper levels in Moon's (1999) model.

The employment of specifically digital platforms through which to present reflections on teacher identity was intended to introduce students to OER and to enhance their skills in the

use of technology for teaching purposes. Digital tools have possibilities which are relevant here for the development of reflective practice: in contrast to traditional essays and reports, digital artefacts, in common with other creative media such as drama, poetry, painting, and storytelling, permit the symbolic representation of cognition and emotion, with all the accompanying affective resonance that symbolisation or the use of metaphor evokes (Collier, 2010; Hall, 2011). They therefore enable a much richer picture to emerge - quite literally – of "the teacher I want to be".

As can be observed, most of the data obtained largely confirms previous research into the development of teacher identity. The innovative nature of this study is the digital and multimedia context in which students carry out reflection. The use of digital tools in an early learning activity has been shown to promote the open approach in education (Ruiz Palmero & Sánchez Rodríguez, 2012; Tirado-Moreta & Aguaded-Gómez, 2014).

The present study has limitations in that it was confined to a single institution and programme of study in Spain. It would be interesting to see to what extent this approach to the development of a professional identity through reflection could be translated into other professional courses of study in other countries. The artefacts built so far could potentially be used in international contexts as a starting point with new students. Although there are challenges in relation to the use of different languages, the use of music, pictures and keywords would be helpful to address possible problems derived from the multilingual context. Another line of research already initiated by the authors is the development of a second reflective learning activity using digital tools at the end of the course of study, allowing comparisons to be made between initial and final artefacts of developments in the students' capacity for reflection.

REFERENCES

Asing-Cashman, J., Gurung, B., Limbo, Y., & Rutledge, D. (2014). Free and Open Source Tools (FOSTs): An Empirical Investigation of Pre-Service Teacher's Competency, Attitudes, and Pedagogical Intentions. *International Journal of Teaching and Learning in Higher Education, 26* (1), 66-77. Retrieved from http://www.isetl.org/ijtlhe/pdf/IJTLHE1754.pdf

Aypay, A. (2010). Teacher education student's epistemological beliefs and their conceptions about teaching and learning. *Procedia Social and Behavioral Sciences 2*, 2599–2604. doi: 10.1016/j.sbspro.2010.03.380

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101. doi:10.1191/1478088706qp063oa

Brauer, H. & Wilde, M. (2014). Pre-service Science Teachers' Development of Epistemological Beliefs. *Reflecting Education, 9*(2), pp. 44-62. Retrieved from http://www.reflectingeducation.net/index.php/reflecting/article/view/128

Britzman, D. (1986). Cultural myths in the making of a teacher: Biography and social structure in teacher education. *Harvard Educational Review, 56*(4), 442-456. Retrieved from http://hepg.org/her-home/issues/harvard-educational-review-volume-56,-issue-4/herarticle/biography-and-social-structure_498

Brown, J. S. & Adler, R. P. (2008). Minds on Fire: Open Education, the Long Tail, and Learning 2.0. *Educause Review, 43*(1), 16–20. Retrieved from http://reed.cs.depaul.edu/peterh/class/hci450/Papers/MindsonFire.pdf

Boud, D. & Walker, D. (1998). Promoting reflection in professional courses: The challenge of context. *Studies In Higher Education, 23*(2), 191-206. doi: 10.1080/03075079812331380384

Chang-Kredl, S. & Kingsley, S. (2014). Identity expectations in early childhood teacher education: Pre-service teachers' memories of prior experiences and reasons for entry into the profession. *Teaching and Teacher Education, 43*, 27-36. doi: 10.1016/j.tate.2014.05.005

Cheng, M.M.H., Chan, K.W., Tang, S.Y.F., & Cheng, A.Y.N. (2009). Pre-Service Teacher Education Student' Epistemological Beliefs and Their Conceptions of Teaching. *Teaching and Teacher Education, 25*, 319-322. doi: 10.1016/j.tate.2008.09.018

Collier, K. (2010). Re-imagining reflection: creating a theatrical space for the imagination in productive reflection. In H. Bradbury, N. Frost, S. Kilminster, & M. Zukas (Eds.), *Beyond reflective practice: New approaches to professional lifelong learning* (pp. 145-154). London and New York: Routledge.

Conole, G. (2012a). *New approaches to openness: Beyond Open Educational Resources*. University of Leicester. Retrieved from http://www.slideshare.net/GrainneConole/new-approaches-to-openness-beyond-open-educational-resources

Conole, G. (2012b). Integrating OER into Open Educational Practices. In J. Glennie, K. Harley, N. Butcher, & T. van Wyk (Eds.), *Open Educational Resources and Change in Higher Education: Reflections from Practice* (pp. 111–122). Vancouver, Canada: Commonwealth of Learning.

Correa, J. M. C., Jiménez, E. J., & Gutiérrez, L. P. (2009). El e-portafolio en el proyecto elkarrikertuz: Las narrativas audiovisuales en el aprendizaje de la cultura escolar y la formación inicial del profesorado reflexivo. *Red U- Revista De Docencia Universitaria. Número Monográfico III. Portafolios Electrónicos Y Educación Superior En España*, 1-17. Retrieved from www.um.es/ead/Red_U/m3/upv.pdf

Cózar, R. & Roblizo, M.J. (2014). La competencia digital en la formación de los futuros maestros: percepciones de los alumnos de los Grados de Maestro de la Facultad de Educación de Albacete. RELATEC. *Revista Latinoamericana de Tecnología Educativa 13*(2), pp. 119-133. Retrieved from http://relatec.unex.es/article/view/1397

Durán, J.F & Vega, M.R. (2013). Las Tecnologías de la Información y de la Comunicación en las Facultades de Educación. *Historia y Comunicación Social, 18*, pp. 313-326. doi:10.5209/rev_HICS.2013.v18.44245

Ertmer, P.A (2005). Teacher pedagogical beliefs: the final frontier in our quest for technology integration? *Educational Technology Research and Development, 53* (4), 25–39. Retrieved from http://blog.lib.umn.edu/cehd/teri/ertmer_2005.pdf

Ertmer, P.A. & Ottenbreit-Leftwich, A. (2013). Removing obstacles to the pedagogical changes required by Jonassen's vision of authentic-enabled learning. *Computers & Education 64*, 175-182. doi:10.1016/j.compedu.2012.10.008

Europortfolio (2015). *Informe ejecutivo nacional: ePortfolio en España*. Retrieved from http://www.europortfolio.org/sites/default/files/NationalExecutiveReportSpain.pdf

Fook, J., Gardner, F., & White, S. (2006). *Critical Reflection in Health and Social Care*. Maidenhead: Open University Press.

Gee, J.P. (2000). Identity as an analytic lens for research in education. *Review of Research in Education, 25*, 99-125. Retrieved from http://www.jstor.org/stable/1167322

Geith, C. (2008). Teaching and Learning Unleashed with Web 2.0 and Open Educational Resources. In *The Tower and The Cloud* (pp. 219–226). Washington, DC: Educause. Retrieved from http://www.educause.edu/research-and-publications/books/tower-and-cloud

Gibbs, G. (1988). *Learning by Doing: A guide to teaching and learning methods*. Oxford, UK: Further Education Unit.

Guasch, T., Guàrdia, L., & Barberà, E. (2009). Prácticas del portafolio electrónico en el ámbito universitario del estado español. *Red U- Revista De Docencia Universitaria. Número Monográfico III. Portafolios Electrónicos Y Educación Superior En España*, 1-11. Retrieved from http://www.um.es/ead/red/M8/uoc.pdf

Gul, R., Khan, S., Ahmad, A., Cassum, S., Saeed, T., Parpio, Y., Profetto-McGrath, J., & Schopflocher, D. (2014). Enhancing Educators' Skills for Promoting Critical Thinking in Their Classroom Discourses: A Randomized Control Trial. *International Journal of Teaching and Learning in Higher Education, 26*(1), 37-54. Retrieved from http://www.isetl.org/ijtlhe/pdf/IJTLHE1684.pdf

Hall, T. (2011). Digital Renaissance: The Creative Potential of Narrative Technology in Education. *Creative Education, 3*(1), 96-100. doi: 10.4236/ce.2012.31016

Harlow, A. & Cobb, D.J. (2014). Planting the seed of teacher identity: nurturing early growth through a collaborative learning community. *Australian Journal of Teacher Education, 39*(7), 69-88. Retrieved from http://ro.ecu.edu.au/ajte/vol39/iss7/5

Hermans, R., Tondeur, J., van Braak, J., & Valcke, M. (2008). The impact of primary school teachers' educational beliefs on the classroom use of computers. *Computers & Education, 51*, 1499- 1509. doi: 10.1016/j.compedu.2008.02.001

Hylén, J. (2005). *Open Educational Resources: Opportunities and Challenges*. Retrieved from http://www.oecd.org/edu/ceri/37351085.pdf

Jenson, J. (2011). Promoting self-regulation and critical reflection through writing students use of electronic portfolio. *International Journal of EPortfolio, 1*(1), 49-60. Retrieved from www.theijep.com/pdf/IJEP19.pdf

Mayring, P. (2004). Qualitative Content Analysis. In U. Flick, E. von Kardoff, & I. Steinke (Eds.), *A Companion to Qualitative Research* (pp. 266-270). London, California & New Delhi: SAGE Publications.

Matrosova Khalil, S. (2013). From resistance to acceptance and use of technology in academia. *Open Praxis 5*(2), pp. 151-163. Retrieved from http://openpraxis.org/index.php/OpenPraxis/article/view/5/pdf

Mayer, D. (1999). Building teaching identities: Implications for preservice teacher education. *AARE Annual Conference Melbourne 1999*. Retrieved from http://www.aare.edu.au/publications-database.php/2570/building-teaching-identities-implications-for-preservice-teacher-education

Moon, J.E. (1999). *Reflection in Learning and Professional Practice*. Oxford, UK: Routledge.

Moon, J. E. (2001). *Reflection in higher education learning. Working Paper 4.* York, UK.: The Higher Education Academy.

Navarro, M. (2014). Proceso de autorregulación del aprendizaje en el e-portafolio: narrativas digitales de estudiantes de doctorado de la Universidad Pedagógica de Durango. *Cuadernos de desarrollo aplicados a las TIC, 3(4)*. Retrieved from http://ojs.3ciencias.com/index.php/3c-tic/article/view/216

Ng, W., Nicholas, H., & Williams, A. (2010). School experience influences on pre-service teachers' evolving beliefs about effective teaching. *Teaching and Teacher Education 26*, 278–289. doi: 10.1016/j.tate.2009.03.010

O'Connor, K. E. (2006). "You choose to care": teachers, emotions and professional identity. *Teaching and Teacher Education 24*, 117–126. doi: 10.1016/j.tate.2006.11.008

OECD (2007). *Giving Knowledge for Free. The emergence of open educational resources*. OECD Publishing. Retrieved from http://www.oecd.org/edu/ceri/38654317.pdf

Pajares, M. F. (1992). Teachers' beliefs and educational research: cleaning up a messy construct. *Review of Educational Research, 62*(3), 307–332. doi: 10.3102/00346543062003307

Park, J. Y., & Son, J. B. (2011). Expression and connection: The integration of the reflective learning process and the writing process into social network sites. *Journal of Online Learning and Teaching, 7*(1), 170-178. Retrieved from http://www.jolt.merlot.org/vol7no1/park_0311.htm

Pérez Fernández, F. & Vílchez, J.E. (2012). El uso de los videojuegos y redes sociales como predictores de la integración curricular de las TIC en estudiantes de Magisterio. *Sphera Pública, 12*, pp. 199-215. Retrieved from http://www.redalyc.org/articulo.oa?id=29729577013#

Rebmann, K., Schlömer, T., Berding, F., & Paechter, M. (2014). Pre-service Teachers' Assumed and Own Epistemic Beliefs and Their Relation to the Propagated Teaching Philosophy in Vocational Schools and Colleges in Germany. *Reflecting Education, 9*(2), 5-43. Retrieved from http://www.reflectingeducation.net/index.php/reflecting/article/view/127

Ruiz Palmero, J. & Sánchez Rodríguez, J. Expectativas de los centros educativos ante los proyectos de integración de las TIC en las aulas. *Revista de Educación, 357*, 587-613.

Scherff, L. (2008). Disavowed: The stories of two novice teachers. *Teaching and Teacher Education, 24*, 1317–1332. Doi: 10.1016/j.tate.2007.06.002

Shapiro, S. (2010). Revisiting the teachers' lounge: reflections on emotional experience and teacher identity. *Teaching and Teacher Education 26*, 616–621. doi: 10.1016/j.tate.2009.09.009

Shim, W. & Walczak, K. (2012). The Impact of Faculty Teaching Practices on the Development of Students' Critical Thinking Skills**.** *International Journal of Teaching and Learning in Higher Education, 24*(1), 16-30. Retrieved from http://www.isetl.org/ijtlhe/pdf/IJTLHE1128.pdf

Smith, K., Clegg, S., Lawrence, E. & Todd, M.J. (2007) The challenges of reflection: students learning from work placements. *Innovations in Education and Teaching International, 44*(2), 131-141. doi: 10.1080/14703290701241042

Taylor, S. (2015). *Case Studies in Learning to Coach Athletes with Disabilities* (Doctoral dissertation, University of Ottawa). Retrieved from http://hdl.handle.net/10393/32234

Teo, T. (2009). Modelling technology acceptance in education: A study of pre-service teachers. *Computers & Education, 52*, (2), 302-312. doi: 10.1016/j.compedu.2008.08.006

Tirado-Morueta, R. & Aguaded-Gómez, J.I. (2014). Influencias de las creencias del profesorado sobre el uso de la tecnología en el aula. *Revista de Educación,* 363, 230-255.

Tur, G. (2013). *Projecte de portafoli electrònic amb eines de la Web 2.0 als estudis de grau d'Educació Infantil de la Universitat de les Illes Balears a la seu d'Eivissa. Estudi de cas*. Doctoral thesis. Universitat de les Illes Balears. Retrieved from http://hdl.handle.net/10803/111339

Tur, G. & Marín, V. I. (2015). Exploring Student teachers' attitudes and beliefs towards e-portfolios and Technology in education. *Revista Enseñanza & Teaching, 33* (1). doi: 10.14201/et20153315782

Trent, J. (2010). From rigid dichotomy to measured contingency. Hong Kong preservice teachers' discursive construction of identity. *Teaching and Teacher Education 26*, 906-913. doi: 10.1016/j.tate.2009.10.031

Tuomi, I. (2013). Open Educational Resources and the Transformation of Education. *European Journal of Education, 48*(1), 58–78. doi: 10.1111/ejed.12019

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