VALUATIONS OF INNOVATIVE ICT ACTIVITIES IN ENVIRONMENTAL EDUCATION BY TRAINING TEACHERS

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In a training proposal, consisting of five phases which are divided into two roles for the Pre service Secondary Science Teacher (PSST) -firstly, in the role of student, and secondly in the role of PSST- this work analyzes, according to the second role, the evaluations carried out by the PSST from the Master's Degree in Teacher of Science Education (MDTSE) at the University of Málaga (Spain) on ICT activities, using the annotations on video in a significant environmental situation. Regarding these evaluations, they had to identify contents and educational competences, as well as highlight and argue the advantages and disadvantages of the annotations on video as a teaching resource. The results show a majority tendency to associate the contents with ecological sciences over environmental sciences; for its part, the most frequently cited competition is that of science and technology. Finally, the development of digital skills and the motivating component stand out as advantages.

Keywords: Initial Teacher Education (Pre service); Society and Environment Education; ICT Enhanced Teaching and Learning.

INTRODUCTION

Teaching innovation is an important strategy to favour a transcendent teacher education. The Educational Innovation Projects (EIP) mean, at the University of Málaga, an environment for the development of lines of research, such as those which are integrated in this work, EIP 17-043 "Environmental Education in university teacher education", and EIP 17-062 "Initial teacher training for the development of scientific and professional skills through the use of e-rubrics, annotations on videos, augmented reality and gamification tools".

This work is part of the research from the Area of Knowledge in Didactics of Experimental Sciences, which are related to the evaluation and teaching of teachers' skills in initial training, and its training for reflection on practice (Acebal, Brero, Rueda and Martin, 2017; Rueda, Blanco, España and Brero, 2017; Blanco, España and Franco, 2015).

Justification

In the initial teacher training, significant progress is being made in the use of Information and Communication Technologies (ICT), incorporating new tools, such as annotations on OVA (Open Video Annotation) (Cebrián, Raposo and Accino, 2007), as well as strategies that favour their use for the development of scientific competences in the initial teacher training in the MDTSE.

The role of ICT can be equated to a competence by itself, and it is included in the

current curricula the digital competence, which "implies the creative, critical and safe use of information technologies" and communication to achieve the objectives related to work, employability, learning, the use of free time, inclusion and participation in society "(MEC, 2015, p.6995). Thus, the integration of ICT in the classroom will depend on "the ability of teachers to structure the learning environment in a non-traditional way, merge ICT with new pedagogies and encourage dynamic classes at the social level, stimulating cooperative interaction, collaborative learning and group work "(UNESCO, 2008, p.7).

For the development of these teaching competences, it is essential to consider that they are divided into three cumulative levels: competences related to mastery of the knowledge bases that support the use of ICT (level 1); precise competences to a) design, b) implement and c) evaluate actions with ICT (level 2); and relevant competences, so that the teacher reflexively and critically analyzes the action taken with ICT, either individually or in collective contexts (level 3) (Gutiérrez and Prendes, 2011).

The variety of ICT tools and resources, and their number, make it impossible, as of today, to address all what would be desirable. In this case, we confine ourselves to digital video technologies in their different ways of creating comments or "annotations" on the video, which allows interesting opportunities to analyze teaching practices and develop different methodologies within the classroom. There are reasons that make it attractive the use of videos and annotations in education, in general, and for all areas of knowledge, especially in those situations that are difficult to replicate, as is the case of environmental problems, with which it is possible to access and manage them in the classroom (Acebal, Brero y Rueda, 2018).

A prior step to encourage teachers to use these educational tools, specifically the annotations on videos, is the reflection and recognition of their educational potential. Therefore, in order to evolve professionally, it is essential to involve oneself in tasks of development and evaluation of didactic materials (Beyer and Davis, 2011).

Methodology

The global proposal, in which this work is framed, consists of five phases. In the first one, the PSSTs -in the role of secondary school students-, perform an activity of annotations on video. In the second phase, which is the subject of this work, the PSSTs assess the strengths and weaknesses of the activity, highlighting -from their point of view- the educational benefits. The remaining phases refer to the design, implementation and evaluation of a new similar activity. The sample of PSSTs is constituted by the students of the specialties of Biology and Geology from the MTSE, a total of 34 (21 students and 13 students), and the activity will be carried out in the subject of "Design and development of programming and training activities", as well as in "External Practices".

The activity to be evaluated uses a YouTube video about the Posidonia grasslands in the Alboran Sea, a protected species at risk of disappearing.

According to it, the PSSTs -in the role of teachers- must perform the following tasks: 1) Identify, differentiate and record: a) contents that are addressed, b) competences whose development is favoured; 2) Evaluate, from the educational point of view, the advantages and disadvantages of annotations on videos as a teaching resource.

Analysis of results

The frequencies of the PSSTs' responses show the following tendencies. In terms of conceptual contents, most of them are conceived as strictly ecological contents, duplicating the frequency of those doing it from an environmental point of view. A lower level of frequency circumscribes them to morphological and physiological aspects. They show a high frequency of confusion about the procedural contents. The identification of attitudinal contents is preferred to environmental awareness and assessment, and to a lesser extent to proactivity. The competences they relate to the activity, in order of frequency, refer to: basic competences in science and technology, digital competence and social and civic competences.

Regarding the evaluation as an educational resource, the development of digital competence and the motivating component stand out as advantages. And as disadvantages, the technological difficulty of its use and the complexity of its educational implementation are found.

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