

ASSESSMENT OF PRE-SERVICE ELEMENTARY SCIENCE TEACHERS ABOUT A PROGRAMME OF INITIATION TO ACTIVISM THROUGH THE PRODUCTION OF VIDEOS ON LOCAL PROBLEMS

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This paper describes the implementation of a science-based activism training programme with pre-service elementary science teachers at the University of Malaga (Spain). The programme consists of three phases: I) Presentation of a video on illegal mining in Venezuela as an example of awareness-raising; II) Explanation and investigation of a local problem; III) Creation and projection of activist videos. This paper also shows the students' perceptions of the training programme obtained from the analysis of their responses to an assessment questionnaire. Students show a positive attitude towards the development of science-based activism in primary classrooms and especially value the training programme's focus on nearby problems. The greatest difficulties were encountered in the production of the videos. Finally, students make a final consideration in relation to the improvement of the program, especially in relation to the time and orientations for producing the videos.

Keywords: Initial Teacher Education (Pre-service); Socioscientific Issues; Video Analysis

INTRODUCTION

In an increasingly globalized society, it is necessary to encourage reflection and criticism on the frequent and important changes in scientific, technological, social, economic, political and cultural fields (Carter, 2008). For this reason, educational projects such as 'We Act' (Reis, 2014) that seek to create a framework for training competent citizens through collective activism based on scientific research are of great importance. Projects like this one pursue the development of methodologies and educational materials that allow supporting both the teachers and students in the realization of science-based actions on social problems, but that have a close relationship with the science and the environment (socio-scientific and socio-environmental problems). Activism contributes to the promotion of inquiry-based learning by focusing on real controversial contexts and stimulates student participation in democratic and collective problem solving (Reis, 2014). Approaches based on the production and dissemination of videos can be quite powerful for the implementation of collective activism on socio-scientific and socio-environmental problems (Marques & Reis, 2017). YouTube is one of the most visited platforms because of the number of videos it contains, so it can be useful to democratize and transform pedagogy and be used as an activist medium (Kellner & Kim, 2010). The aim of this work is the design, implementation and assessment of a science-based activism training programme centred on video production and dissemination by pre-service elementary science teachers (PESTs).

METHOD

The present work has been carried out with two groups of PESTs, in the "Science Teaching" subject – included in the third grade of Primary School Teachers" course – at the Faculty of Education Sciences of the University of Malaga (Spain) during the academic year 2017/18. It was developed in three phases with each one of these corresponding to a class session. The objective of the first phase is the presentation of an example of activism in video format so that later the students can make a similar production about some

local problem. The video shown is about “Illegal mining in the Venezuelan Amazon”¹. The task was to view the video and individually select video fragments and type annotations using the application *coannotation.com* to answer the questions posed to them with the aim of identifying the issue posed in the video, the evidence that they believe justifies the existence of the issue, the proposed solutions that they consider most appropriate to solve the issue and the proposed improvements to the video. The second phase aimed to train the PESTs in the investigation of a local problem – previously selected by them – in order to seek possible solutions. To this end, they produced a group report that included the justification of the local problem selected, its causes, its repercussions and controversies, connections with science, evidence and proposals for solutions to the problem. The aim of the third phase **was** to train PESTs in a way of intervening in society, through the group production of videos aimed at raising people’s awareness about the problems they had investigated. Subsequently, with the help of mobile devices and/or computers, they accessed a digital evaluation or e-rubric (*corubric.com*) to evaluate the 27 videos produced by the different groups. At the end of the training programme 91 PESTs completed a questionnaire with four open-ended questions to assess the activity carried out: Q1) Do you think activism is an interesting activity to work on with primary school students? Justify your answer; Q2) What did you like the most about the activity? Explain your answer; Q3) What did you like the least about the activity? Explain your answer; Q4) What would you change in the activity? Explain your answers. The students' answers to this questionnaire have been analysed following a procedure of qualitative categorisation.

RESULTS

Almost all of the participant students consider activism to be an interesting activity to work on in primary education. The reasons they gave have been categorized into four dimensions: on the development of activism (66 PESTs) because, for instance, *"Students must know the reality that surrounds them, that is, they must know the problems of society. In the same way, it is beneficial for them to acquire the tools and skills to provide solutions or become aware of them."* (Student 246F); on the development of competences (23 PESTs) such as: *"It is a way of training critical students and creators of knowledge"* (Student 207A); on the stimulation of student’s motivation (16 PESTs) such as: *"I think it is a very interesting activity as it arouses the interest of the student thanks to the research work..."* (Student 323W). A student answer may belong to more than one category. As regards the assessment of the training programme itself (questions 2, 3 and 4), five categories have resulted. *The activity has caused the whole class to become aware of the problems that are affecting us and to be aware of them in order to try to solve them or at least reduce their impact if they are related to our actions* (Student 063E). As far as the videos are concerned, the production phase is where the students' assessment has revealed more difficulties or aspects that they did not like (40% of the students), especially related to the fact that they did not have enough time to produce the videos: *"Perhaps the little time to prepare and assemble the videos"* (Student 154B). A similar percentage of students indicated that what they liked the most was the videos produced: *"See that we have achieved a video of activism that really raises awareness among the population"* (Student 108G). Other aspects of the program were **appreciated** by students, for example, in relation to group work: *"What I liked most about the activity is working in groups with my colleagues because I know them better, not only their way of working but ideas and reflections on that topic"* (Student 489J).

CONCLUSIONS AND PROPOSALS FOR IMPROVEMENT

This work showed positive impacts of the training programme in improving students’ reflection and knowledge about local problems and empowering them to democratic and active participation in society. All

¹ Video "Illegal mining in the Venezuelan Amazon" on YouTube (<https://www.youtube.com/watch?v=KdQzs3IoCWM>)

the students indicated the importance of applying this activity in primary schools, in the first place to train citizens in social activism taking into account the complexity of the issues of today's society. In addition, PESTs present other reasons such as competence development and/or increased motivation. The students find it interesting to work from nearby problems, to inquire about them and to produce videos to sensitize the population about the problems raised. However, the greatest difficulties were found in the production of videos, as they considered that they had had little time to make them and that they did not receive specific training for their editing. For this reason, it is proposed for future work to improve the training program by increasing the time for the development of videos by students and provide them with a guide with guidelines for editing videos.

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