

Chapter 83

Environmental Education through Envkids Didactical Framework and ICT Tools

Hariklia Tsalapata
UTH, Greece

Rene Alimsi
CERETETH, Greece

Olivier Heidmann
CERETETH, Greece

ABSTRACT

Global awareness on the need to change everyday behavior towards some more environmentally friendly practices has been on the rise over the last few years in the face of emerging phenomena such as global temperature rising, desertification, extreme weather, sea water level rising, and the potential resulting disruption to everyday life for large populations. Even if in most European countries a certain amount of environmental objectives for primary education are defined, teachers in the field feel a substantial lack of supporting implementation guidelines, especially for digital deployment in the classroom. Addressing this need, the work presented in this paper aims at the development of blended learning activities that deploy an explorative and collaborative didactical framework towards environmental sustainability training for primary education through a combination of in-class instruction, virtual experimentation, storytelling practices, and on-line collaboration. The validation activities carried out so far demonstrate a positive teacher and learner reaction and an easy integration of the methodologies and demonstrators into existing school practices.

INTRODUCTION

Mark Prensky (2001, p. 1) highlights the fact that ‘todays’ students are no longer the people our educational system was designed to teach’. According to Prensky (2001, p. 1), students are

used to interact with a ubiquitous environment where ‘computer games, email, the Internet, cell phones, and instant messaging’ play a critical role. Such interaction has an impact on the way students think and interpret data. Beyond all dispute students’ *thinking patterns* have changed and this is something that should not be ignored during

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the process of designing learning experiences (Tsalapatas, Heidmann, Alimisi, & Stav, 2010).

This consideration is well in line with opinions expressed by Resnick (2007, p. 18). Resnick (2007a) introduces the conception of a 'Creative Society' where human creativity is the vital turning point of any development and therefore it is important for students 'to learn to think creatively, plan systematically, analyse critically, work collaboratively, communicate clearly, design iteratively, explore and learn continuously' (Resnick, 2007, p. 22). The engagement of students in a learning experience that provides them with opportunities to learn through designing, creating, collaborating, exploring, and reflecting constitutes a challenge for new technologies and pedagogies (Alimisi & Winters, 2010; Resnick, 2007).

Crucially, there is need for changes in the schooling curriculum to be encouraged in order to make school activities more meaningful for young children (Tsalapatas, Mogli, Karagiannis, Tallvid, Protivova, Heidmann, s& Larsson, 2010; Tsalapatas, Heidmann, Alimisi, & Stav, 2010). This need has led to the emergence over the past years of learning approaches that update the existing instructional ones followed by the schools (Tsalapatas, Heidmann, Alimisi, & Stav, 2010). This need is obvious in the area of primary environmental education as well. Nevertheless in most European countries a certain amount of environmental objectives for primary education are defined, teachers in the field feel a substantial lack of supporting implementation guidelines and learning tools, especially for digital deployment in the classroom (Tsalapatas, Mogli et al., 2010). The Envkids project tries to fulfill such a need by exploiting emerging didactical models towards the introduction of value-adding learning tools for environmental education that will be easy to integrate into wider blended learning activities. With respect on the already used methods EnvKids aims at extending them and reshaping them so that meaningful learning to occur.

This paper is structured as following: First, the two core aspects of the Envkids didactical framework collaborative and explorative learning are presented. Addressing single definitions for these approaches is beyond the aims of the paper. However, issues and debates concerning the educational benefits of these learning approaches are brought into focus. Second, we briefly present the way in which the EnvKids didactical framework was further enriched with other pedagogical approaches and strategies. The implementation stage and the demonstration of the EnvKids learning tools come next. The paper concludes with some preliminary results retrieved from early stage evaluation.

COLLABORATIVE LIES AT THE ROOT OF ENVKIDS DIDACTICAL FRAMEWORK

The EnvKids project aims at the development of explorative and collaborative learning frameworks towards environmental education for primary school children (The EnvKids Project Proposal, 2009). Exploration and collaboration are seen to play a significant role in Resnick's creative spiral (2007) and it was decided to be placed in the root of the EnvKids design.

According to Smith and MacGregor (1992, p. 1) 'collaborative learning is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together'. The term *collaborative learning* is used in wide learning during which researchers and instructors may focus on different aspects of the approach (Daniel, 1995; Verdejo, 1996). Though collaborative learning takes on a range of forms and interpretations, in each form there is a shift away from the typical roles held by the teachers and the learners. In fact, collaborative learning constitutes 'a significant shift away from the typical teacher-centred or lecture centred

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