

WeAreEurope SD: A Playful Sustainable Development Education Approach for Primary School Level

Tharrenos Bratitsis¹, Gonalo Meireles² and Iro Koliakou³

¹University of Western Macedonia, Florina, Greece

² Advancis - Business Services, Lda, Portugal

³ Anatolia College, Greece

bratitsis@uowm.gr

g.meireles@advancis.pt

koliakou@anatolia.edu.gr

Abstract: Sustainable Development (SD) has been in the EU's political Agenda for the past decades. In 2001, the EU established a SD Strategy and more recently contributed to the UN's 2030 Agenda for SD, reaffirming the political importance it attributes to this pressing matter. Education for Sustainable Development (ESD) plays a vital role in pushing forward the Agenda for SD. The WAE-SD project has been designed so as to offer a variety of complementary learning solutions that use active learning, game-based learning, and storytelling, among others. These solutions have the potential to engage children, address more complex concepts in a comprehensive manner, contribute to the development of other XXI century and basic competencies, like literacy, teamwork, social competences, ICT skills, among others. The WAE-SD project addresses the educational needs of children (6-10 years old) at 3 levels: a) Envision the future: depict what might happen if we don't change our lifestyles, so that they better understand what's at stake, b) What needs to change: learn about the UN's SD Goals, so that they better understand what should be addressed/emended to create a more sustainable world, and c) Call to Action: learn what we can do as individuals and as part of a community to reach the UN's SD Goals, and act. To this purpose, the project delivers three results: a) an eBook to illustrate a future scenario for the Planet if we keep up with our lifestyle, b) A Game Add-on to the pre-existing WeAreEurope Digital Game, to introduce and explore the UN's SD Goals, thus presenting children with what needs to be changed for a more sustainable Planet, and c) an Action Kit, consisting of guidelines for the implementation of SD projects/activities for schools and other settings, thus promoting real change in behaviours and attitudes. This paper focuses on the designed material and the proposed ways of utilizing them in classroom settings

Keywords: Sustainable Development (SD), Digital Games, Primary Education

1. Introduction

As Earth and human development face enormous and increasingly complex challenges such as climate change, global warming, overpopulation, and inequalities, the search for solutions takes the political stage. A widely accepted response to these challenges is the notion of Sustainable Development (SD), referring to a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). SD has been in the EU's political Agenda for the past decades. In 2001, the EU established a SD Strategy and more recently contributed to the UN's 2030 Agenda for SD, reaffirming the political importance it attributes to this pressing matter. Education for Sustainable Development (ESD) plays a vital role in pushing forward the Agenda for SD.

According to the United Nations (UN, 2018), all educational institutions ranging from preschool to tertiary level should consider it their responsibility to address SD and foster the development of key crosscutting competencies related to sustainability. Following this direction, the WAE-SD project offers learning materials that use active learning, game-based learning, and storytelling. These materials have the potential to engage children by addressing more complex concepts in a comprehensive manner, while also cultivating transversal competencies. The project proposes to address SD with children (6-10 years old) at 3 levels: a) Envision the future: depict what might happen if we don't change our lifestyles to better understand what's at stake, b) What needs to change: learn about the UN's SD Goals to better understand what should be addressed/emended to create a more sustainable world, and c) Call to Action: learn what we can do as individuals/community to reach the UN's SD Goals, and act.

To this purpose, the project aims at delivering 3 Results:

- An eBook to illustrate a future scenario for the Planet if humanity keeps up with the current lifestyle
- A digital Game, to introduce and explore the UN's SD Goals, thus presenting children with what needs to be changed for a more sustainable Planet.
- An Action Kit, consisting of guidelines for the implementation of SD projects/activities for schools and other settings, thus promoting real change in behaviours and attitudes.

In the next section, the eBook and the game are presented, as the project is still a work in progress, before the concluding remarks and the future plans.

2. The WAE-SD Approach

Overall the approach was a follow-up of a previous WAE project about European citizenship education (Bratitsis et al., 2016; 2017; Bratitsis, 2018) and thus utilized the same narrative. This concerned 4 children who got lost in time and had to travel back to today. Three main outputs were designed for WAE-SD.

The first output is an eBook which aims to raise children’s awareness about SD and the need to take action. Stories have the potential to create engaging narratives and scenarios that can be used to illustrate and explain more complex topics, deconstructing them and levelling them down, making it also more inclusive (Bratitsis, 2017). In the story (Figure 1) the 4 characters travel to the future. There they get a glimpse of the consequences that today’s lifestyle might impose to the planet if nothing changes. The aim is to cultivate the children’s disposition to the learning process, involving the other outputs.



Figure 1: The frontpage and the main characters of the WAE-SD eBook

The characters visit known places in Europe in their search for parts of a medallion, required to activate a Time Portal for their return. During their adventure they find out that humans have mistreated nature with disastrous consequences. Despite the scientific advances in various areas, they neglected to look after the Planet and failed to create a better society. Thus, the children see the results of such actions which are water acidification, climate change, sea level rise and biodiversity loss (Figure 2).



Figure 2: Pages from the WAE-SD eBook

The eBook is accompanied by an educators’ guide to help them explore the story with children in the classroom. It contains questions and lesson plans to explore situations in the story, characters’ behaviours, etc. Also, it includes additional contents/explanations to encourage further reflection and class discussion. The lesson plans are pilot tested while this paper was being written. The material is freely available in 5 languages (English, Greek, Portuguese, Polish and Italian) on the project’s website (<http://wreurope.eu/>).

The main project’s output, the focus of this paper is the WAE-SD game, which is based on the pre-existing WeAreEurope Game (Bratitsis et al., 2017). The design process followed the same approach (Bratitsis, 2018). It allows a more effective children’s engagement, as the provided context and the immersed activities, allow to create a more challenging and yet very inclusive learning environment. The main objective is that children learn

about the UN's SD Goals and required action plan. Moreover, they can experiment in order to understand at what levels to revert, stop or reduce the negative impact of human behaviour on the Planet.

The game can be played individually or in a group setting. Figure 3 depicts the game roadmap and introductory page. A short video introduces the game context. The players would have to navigate within the map of Europe to reach specific checkpoints. There they would have to go through challenges, also allowing them to see some information about the corresponding SDGs.

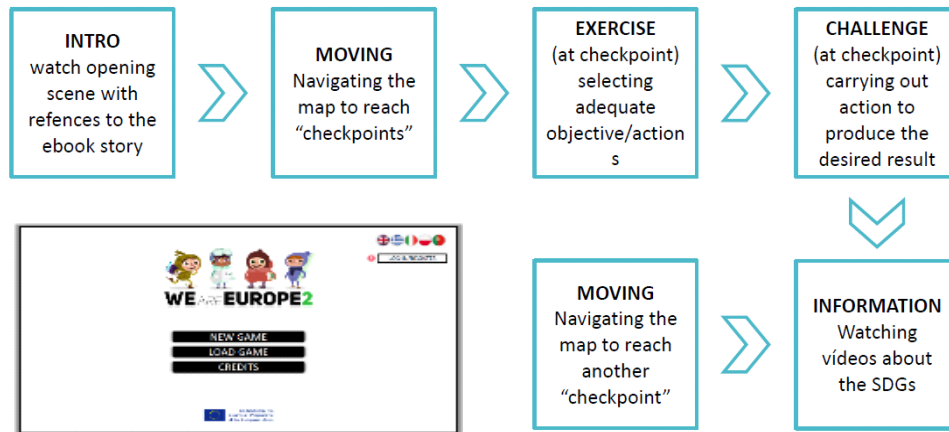


Figure 3: The roadmap and the introduction page of the WAE-SD game

The game pictures a near future where Europe is suffering from the consequences of the lack of response to the Sustainability issues. The characters go through a Time Portal, arriving to the future where they find a different Europe: pollution is hard to bear, extreme climatic phenomena are frequent, economy has depleted, there is a huge unemployment rate, poverty and famine are spreading. Their aim is to uncover the chain of events that led/pushed Europe to a precarious situation and to find their way back to the present where they still can make a difference and prevent that terrible future.



Figure 4: The map of the WAE-SD game

The game starts with a map of Europe (Figure 4), identifying 6 checkpoints which the players must visit. They correspond to places mentioned in the eBook story. In each checkpoint, the players must solve a challenge which will contribute to evade the future problems described in the eBook. The challenge in each checkpoint is connected to SDGs and SD problems as they are described in the eBook. Upon completion, a 7th checkpoint reveals a secret place where another character, David, is being held by the Time Agents and the players will attempt to free him. David was a mentoring character, present also in the first WAE game.

To reach the checkpoints, players must navigate the map using the cursor keys or a mouse. While doing so, players should avoid the Time Agents. These Agents try to catch the players. If they do, players will have to answer correctly to a question to mislead the Time Agents into believing they should be released. The questions are connected to SD topics. Some examples are: “What is ocean acidification?”, “Which of the following are examples of cleaner energy”, “Give examples of consequences of the global warming”.



Figure 5: Checkpoint 1, the hometown mockup

In each checkpoint, different SD aspects are treated. For example, in the first checkpoint (Figure 5) the players see their hometown which has become unrecognizable. The players need to choose from a list of objectives to achieve, following the eBook story. Upon selecting the correct ones, they are asked to complete a challenge. In this case (Figure 5), that is to examine their hometown as it is today and plan its future form through drag-and-drop actions, thus adding buildings and elements of infrastructure in the empty spaces. They may add, for example, wind turbines and replace coal plants, add mass transportation systems, recycling factories, green areas, etc. All these actions result in a more sustainable city, meeting the initially selected objectives. During the challenge they can see 3 indicators: Pollution, Economy and Clean Energy (top left of the screen). The indicators are initially slightly negative and may improve through the players’ actions. Tooltips for all main items on the map may provide explanations. The empty map spaces designate the available number of changes to be applied. When players define their plan, they “submit” to get feedback.

Depending on the actions, algorithms have been designed to calculate the value of each indicator. For example, installing solar panels on roofs give +0.25 point for a maximum of 8 panel sets. After the puzzle is solved correctly, the players are presented with information about the specific SDG related to the checkpoint, namely videos from the UNESCO or other sources that explain in more detail what each SDG is all about. The SDG/videos may repeat in checkpoints as some topics are recurrent, but if the repeated video was watched before it will show in faded colour.

The game itself serves mainly the purpose of raising awareness and providing a tangible perspective on the consequences of human activity on the planet. Thus, as an educational resource it should be utilized with the accompanying material, including the eBook. The designed lesson plans address this requirement.

Up to this point, 3 of the 6 checkpoints have been implemented and are being tested with students. The game has been developed in HTML5 and the backoffice relies on PHP5 and MySQL database.

3. Future Plans

Upon completion of the game development, including testing and refinement, a third output is planned, an Action Kit. It consists of a set of proposed SD projects/activities for implementation in schools and other settings. It includes detailed guidelines, examples and, in some cases, demonstration videos and other materials. This learning activity and resource applies active-learning methodologies that are known for their positive impact on the inclusion of the learning process. The projects/activities might include things like (examples): a) preparing and making a campaign in school or in the community for saving water, b) writing and performing a theatre play about the subject of poverty, and c) designing specific measures to promote gender equality in school.

All these projects are being co-created with pupils from the partner schools in order to benefit from children’s perspective and imagination and generate immediate impact on those involved, namely by encouraging a real change in behaviours and attitudes.

Upon completion, all the project material will be freely available through the official website.

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