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CIRO

"Introducing the importance of the coming European "green" energy model in School Education"

Project

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Main conclusions about educational models and methodologies in Europe and analysis of teachers and students feedback about environmental friendly technologies at Schools

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During this first period of the CIRO project, the Consortium has analysed the current educational models that are valid and implemented in the countries participating in CIRO project, i.e. Germany, Greece, Spain and the UK, as well as of the educational model on a European level. Also, has developed a survey questionnaire regarding the knowledge of students and teachers about climate change, sustainability, renewable energies, energy storage systems (emphasizing in hydrogen technologies) and its final applications. Furthermore, this survey questionnaire pursues to know the preferent methods of learning of teachers and also the opinion of the students.

Main conclusions of both analysis are summarized below.

First of all, this study has appreciated relevant coincidences between subjects which include environmental contents, being able to assert in the end that basically STEM subjects are the ones where the CIRO project will be more successful because they are the subjects with a general curriculum closer to the basis of CIRO objectives; Furthermore, STEM subjects clearly depend one another so it allows teamworking and the introduction of new and active methodologies, associating ideas and knowledge with real situations and making the process of learning a useful and invaluable tool to form active European citizens prepared to face future careers that can productively improve our world.

On the one hand, the survey highlights a general students lack of knowledge about hydrogen technologies, either for there are contents that are not taught as they are not included in the curriculum; or although they are provided, as in the case of Germany, are not enough to let students know it in depth. In this context, the main part of students and teachers respondents refers to spend, at least, 2-4 clases monthly about these contents.

On the other hand, it seems that the ages chosen for CIRO (14-17 years) are well selected because they belong to upper-education in all European countries (obligatory or not) so students have enough skills to carry this project out. Furthermore, this knowledge will allow them to cope future universitary studies related to RES.

Therefore, we can conclude that CIRO project can be a success in European schools if we manage to insert it in the common European Educational models on environmental education, with the interrelation on main subjects working together to achieve the objectives.

As methodologies is concerned, despite of the different degree of freedom regarding the teaching methods that have the different European countries, the most usual methodological approaches used in all countries are somehow common, including demonstrations (including experiments performance), discussions, brainstorming, video

learning (flipped learning), teamwork, presentations, the use of didactic kits, and visits to laboratories and /or places of scientific interest.

The digital upgrade that characterises the education in all levels includes, as part of the teaching tools, the use of tablets, PCs in classrooms, interactive boards, laptops, Wi-Fi, video projectors, laboratory courses, etc., which covers the needs and skills of young students and teachers have the possibility to implement experiment for a more in-practice learning.

Following the answer of the students regarding the use of e-learning tools in their classes, they also prefer to work in a team and include practical demonstrations/experiments.

On the basis of the above, this analysis concludes that both as regards methodologies and subjects or ages proposed by CIRO project fit with the current educational European System.