CERME 10

Proceedings of the Tenth Congress of the European Society for Research in Mathematics Education

Editors: Thérèse Dooley and Ghislaine Gueudet
Organised by: Institute of Education, Dublin City University
Year: 2017

erme
european society for research in mathematics education

DCU

Publisher: Institute of Education, Dublin City University, Ireland, and ERME

ISBN 978-1-873769-73-7

Recommended citation:
Dooley, T., & Gueudet, G. (Eds.). (2017). *Proceedings of the Tenth Congress of the European Society for Research in Mathematics Education (CERME10, February 1-5, 2017)*. Dublin, Ireland: DCU Institute of Education and ERME.

Kids Inspiring Kids for STEAM (KIKS)

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Keywords: STEAM, STEM, collaborative work, motivation and cross-cultural work.

STEAM

STEM (Science, Technology, Engineering and Mathematics) is an educational approach based on the interdisciplinarity and applicability of scientific and mathematical knowledge to technology and engineering. STEAM integrates Art into STEM in order to promote children's creativity (Fenyvesi, Téglási and Szilágyi, 2014). In many European countries, the number of graduates in science, maths, technology and engineering areas is clearly insufficient for the needs of their companies and industries. To stimulate students' interest in these areas and art, the European Union has dedicated a lot of resources and effort, developing a large number of projects for pre-university classrooms. For a review, see Rocard, Csermely, Walwerg-Henriksson and Hemmo (2007).

KIKS project

KIKS, Kids Inspiring Kids for STEAM is a European Erasmus+ Project, which involves four European institutions: Metropolitan University of Budapest (Hungary), STEM Team East (Cambridge, United Kingdom), University of Jyväskylä (Finland) and University of Cantabria (Spain). The project started in March 2016 and its main aim is to promote secondary education students' interest on the STEAM areas, by developing activities and presenting them to other students locally and internationally. Many students and teachers do not enjoy or have confidence in maths and STEM: they have anxiety even maths/technophobia and drop it as soon as they can. So we seek to promote the creativity and motivation for learning of these less confident students, working interdisciplinary, using technology, and fostering communication and the transfer of ideas/knowledge across cultures. From a research point of view, KIKS aims to compare cross-culturally the elaboration and resolution of STEAM activities at secondary education level.

Development of activities

Students, in teams of fives and led by at least one teacher, are asked to elaborated STEAM activities or projects under the following approach: How would you get your schoolmate to love Maths? The activities or projects can emerge from a teacher, a pupil, or a KIKS coordinator's idea. Once the idea emerges, it is developed into an activity or project. It should involve different STEAM areas, but its duration and degree of difficulty can vary according to teams' availability. Once an activity is elaborated, the team presents it to their local homologous (in face to face events) and to their international homologous (through video conferences). Schools from different countries are invited

to participate in the project, at the moment we have more than 25 participant schools from different countries and backgrounds.

Products to be developed by the students

Each participant team has to elaborate a written document, an explanatory video, and a presentation of its work. (1) The written document (Word Doc or Power Point) has to include a presentation of the team members, and a description of the activity with the main results and the material used. (2) The edition of the video has to include the practical or technical aspects of activity, which are difficult to explain on paper. For example, the manipulative construction of objects, the use of measurement tools, etc. All the products have to be developed in the English language. The limited scope of this paper does not allow us to include here examples of the activities already developed by our teams, but they can be found at our website (http://www.kiks.unican.es/en/actividades/).

KIKS support

KIKS provides support to the teams through different platforms including Goggle Drive, YouTube, Facebook and a Website (www.kiks.unican.es). The Google Drive and Facebook platforms function as storages of information— where teachers and coordinators can exchange ideas— as well as repositories of documents elaborated by the teams. The YouTube Canal works as repository of videos, and the Website provides different and meaningful information about the ongoing process of the project. Apart from the above, KIKS provides support to the teams proposing activities, helping in aspects related to the English language, and furnishing technical support for video edition, online connections, etc.

Evaluation

Parallel to practical work of the project, we are undertaken a research study aiming to evaluate the strengths and weakness of KIKS. Firstly, this research aims to assess cross-culturally teachers' and students' perceptions about STEAM. Secondly, we aim to characterise the STEAM activities elaborated by the teams, according to the cognitive (competences, capacities, skills) and motivational (attitudes, emotions) dimensions they may develop in the learners. In short we seek to evaluate the impact of STEAM activities in the learning process. Tools for evaluating these two dimensions are currently under construction.

References

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