

STEAM activities with KIKS format

Zaira Ortiz-Laso

Universidad de Cantabria

Abstract:

Most European countries have adapted their curricula towards the acquisition of Key competencies in education. This implies students applying school knowledge to solve a problematic situation, being themselves responsible for their own resolution process. In Spain, this way of learning is regulated by Order 65/2015, January 21. To promote the training of high school students in STEAM subjects (Science, Technology, Engineering, Arts, and Mathematics), the Open STEAM Group (<https://www.opensteamgroup.unican.es/>) has promoted different initiatives. These initiatives are based on the elaboration of activities with KIKS format: students in groups of 3-4 members solve activities that involve at least two STEAM areas supervised by several teachers. Each group develops at least two activities over a period of two years in the English language and presents them in different events to a variety of audiences (Blanco, Ortiz-Laso & Diego-Mantecón, 2019; Diego-Mantecón et al., 2017). These activities are framed in different projects according to the characteristics of the subjects to be instructed. For example, the STEMforYouth project (<https://stemforyouth.unican.es/>, Horizon 2020) is aimed at secondary school students who follow the regular curriculum, while the EAMARE-STEAM project (<https://www.inclusivemathsthroughsteam.unican.es/>, Spanish Ministry of Education) seeks to motivate secondary school students at risk of exclusion. In evaluations of both projects it has been observed, though at different levels, a significant improvement in the development of the main key competences highlighted by the European Union. Importantly, both project rely heavily on the design and students' elaboration of High-Tech activities (Diego-Mantecón, Arcera, Blanco & Lavicza, 2019).

Acknowledgments: Work carried out within the framework of the STEMforYouth project (Horizon 2020 Program of the European Union with contract No. 710577) and EAMARE-STEAM (FEDER/Ministerio de Ciencia, Innovación y Universidades – Agencia Estatal de Investigación/ Proyecto EDU2017-84979-R).

References:

Diego-Mantecón, J. M., Arcera, Ó., Blanco, T. F., & Lavicza, Z. (2019). An Engineering Technology Problem-Solving Approach for Modifying Student Mathematics-Related Beliefs: Building a Robot to Solve a Rubik's Cube. *International Journal for Technology in Mathematics Education*, 26(2).

Diego-Mantecón, J. M., González-Ruiz, I., Blanco, T. F., Istúriz, M. P., Gorgal-Romarís, A., Búa, J. B., & Recio, T. (2017). Interacción y difusión de los productos KIKS. In Federación Española de Sociedades de Profesores de Matemáticas (Ed.), *Actas del VIII Congreso Iberoamericano de Educación Matemática* (pp. 67-71). Madrid, España: FESPM.

Blanco, T. F., Ortiz-Laso, Z., & Diego-Mantecón, J. M. (2019). Proyectos STEAM con formato KIKS para la adquisición de competencias LOMCE. In J. M. Marbán, M. Arce, A. Maroto, J. M. Muñoz-Escolano y Á. Alsina (Eds.), *Investigación en Educación Matemática XXIII* (pp. 614). Valladolid, España: SEIEM.