

Introducing Artificial Intelligence and Machine Learning in K12 education to foster 21st century skills: from theory to practice

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Abstract

This paper focuses on the interdisciplinary and collaborative pedagogical approach underpinning the European funded project Edu4AI “Artificial Intelligence and Machine Learning to Foster 21st Century Skills in Secondary Education”. The methodology has been conceived to enhance the practice of teaching, from course design to content delivery, drawing inspiration from social constructivist theories and inquiry project-based learning instructional methods, combining elements from the maker movement and the educational robotics platforms. The output of this process has been the development of a particle handbook that comprises ready to use toolkits, suitable to guide the introduction of Artificial Intelligence and Machine Learning in K12 school curricula, including non-scientific ones. The paper details one of the toolkits created cooperatively with the teachers’ community and piloted in the school real contexts for validation. The toolkit project is presented in the article outlining the corresponding learning goals in terms of both hard and transversal life skills acquired, in order to ensure correspondence with students learning outcomes evaluation.

Keywords: AI, Education, K12, Innovative-Pedagogy, Problem-Based-Skills