From STEM to STEAM Integration: Theoretical Aspects and Implications for Educational Practice

With an emphasis on holistic, non-linear design of complex systems of human activity, the 21st century has opened a horizon of new approaches to both work and education where neither can afford ignoring the intersections between them. Interconnectivity, communication and interaction are attributes of knowledge and learning (OECD, 2018) which educational practices everywhere are called upon to meet.

Integrated STEM education was defined as an effort to combine the four disciplines of science, technology, engineering and mathematics into one class, unit or lesson that is based on connections among these disciplines and real-world problems (Moore & Smith, 2014). STEAM is an educational approach to learning that includes Arts among the disciplines used as access points for guiding student inquiry, dialogue, and critical thinking for the purpose of students taking thoughtful risks, engaging in experiential learning and persisting in problem-solving (Education Closet - What is STEAM?)

With reports emphasizing the benefits of learners' exposure to an enriched integrated approach to STEAM on a number of aspects such as stimulating learners' creativity and flow (Conradty & Bogner, 2018), enabling creativity and collaboration at all levels of learning (Kim et al., 2019), or promoting learners' creativity and social empowerment (Allina, 2018), the topic has gain significant interest in the educational literature, but it also stimulated interesting debates over the theoretical and practical implications, culminating with the expressed concern that, whilst the movement towards STEM/STEAM serves as a good example of interdisciplinarity with purpose , there might be a chance that it can be perceived as a reason for curriculum overload (OECD, 2019).

In the 2/2019 issue of RSE Journal we are inviting contributions discussing theoretical aspects of the STEM/STEAM debate, papers exploring the implications for educational policy and practice in pre-school, primary and secondary education, for initial teacher education and for continuing professional development and learning, as well as empirical studies exploring the effects on teaching and learning at individual and at organizational level.

Submissions are welcome before 15 October 2020

The authors are kindly invited to follow the editorial format (available here for download) in drafting their proposals.

Thank you,

Mihaela Mitescu Manea, Lect. Univ. dr., Editor for this issue

References

Allina, B. (2018) The development of STEAM educational policy to promote student creativity and social empowerment, *Arts Education Policy Review*, 119:2, 77 – 87.

Conradty, C., Bogner, F.X. (2018) From STEM to STEAM: How to Monitor Creativity, *Creativity Research Journal*, 30:3, 233-240.

Kim, Y.E., Morton, B. G., Gregorio,J., Rosen, D., Edouard, K., Vallett R. (2019) "Enabling creative collaboration for all levels of learning", *Proceedings of the National Academy of Sciences*, Feb 2019, 116 (6) 1878 - 1885.

Moore, T. J., & Smith, K. A. (2014). Advancing the State of the Art of STEM Integration. *Journal Of STEM Education: Innovations & Research, 15*(1), 5.

OECD (2018), Education 2030: The Future of Education and Skills. Position paper, http://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf

OECD (2019), Education 2030: The Future of Education and Skills 2030. Conceptual learning framework. Concept note: Knowledge for 2030, https://www.oecd.org/education/2030-project/teaching-and-learning/learning/knowledge/Knowledge_for_2030_concept_note.pdf