EDUCON2021 Special Session

Special Session DigiCompSTEAM - Building teachers' digital competencies, capabilities and skills in designing creative and playful technology enhanced learning activities for STEAM disciplines

DigiCompSTEAM

Overview

The current digital educational landscape in the Science, Technology, Engineering, Arts and Mathematics (STEAM) disciplines is experiencing a rapid shift due to the dramatic vicissitudes caused by the COVID-19 pandemic. Teaching and learning modes such as distance, online or blended are not new offerings in the digital age but rather they seem to gain a reinvigorated momentum in terms of how digital learning could be designed and orchestrated as means to offer a more playful, personalised and creative learning experience that amalgamates engineering and science with more design-based and artistic learning endeavors. There is indeed a plethora of digital learning tools that may help STEAM teachers to shift the focus of teaching from student teaching (e.g. focus on instruction) to student supportive (e.g. focus on knowledge construction) for enabling students to unleash their creative and resourceful learning potential. However, teachers may feel overwhelmed from the wide array of digital tools, the rigid structure of scientific inquiry and the ill-defined nature of the artistic epistemology. This could cause STEM teachers' lack of self-confidence in using digital technology and subsequently aversion towards the development of digital content and activities that would foster engagement, creativity and a playful attitude in learning. Indeed, there is evidence that teachers' confidence in using technology positively influences students' frequency of using technology for learning. This special session aims to present and elucidate on a series of emerging phenomena on how STEAM digital teaching and learning may be optimised to offer creative and engaging online learning experiences to students. To achieve this, we invite authors to submit research contributions on modeling STEM teachers digital competencies, gameful and game like digital applications for measuring digital skills, digital competencies frameworks and models for teachers to develop and self-assess digital skills related to designing STEAM activities that encourage creative, artistic and scientific digital learning manifestations.

Topics

- *playful and game-like digital learning tools orchestrated in a blended, online or distant mode*
- *serious games that train teachers on digital skills development for science and arts digital teaching and learning*
- *Gamified interventions that focus on teachers' digital pedagogical development*
- *Game-based learning interventions that combine arts with science*

- *AI-specific skills and competencies for teachers to integrate AI in their digital teaching practice*
- *AI-based systems that predict and recommend digital competencies for teachers to develop*
- *Digital competencies that enable teachers to create digital learning activities for rhythm, dance and music*
- *Open Educational Resources and open science content tools for retrieving, accessing and sharing technology enhanced learning material for STEAM*
- *Ethical design competencies and skills particularly in STEAM education*
- *Game design as a digital competence to sequence and orchestrate a digital learning course*
- *Design thinking as a competence for making tangible learning outcomes*
- *Computational thinking as a competence of creating and making*
- *Ethics, equity and social inclusion as competencies and capabilities in delivering digital learning*

Program Committee

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