SCHOLARSHIP OF TECHNOLOGY ENHANCED LEARNING

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Teaching and learning with innovative technologies and practices at primary school level.

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Abstract

The introduction of computer science to primary schooling age is relatively new, as traditionally it was primarily set aside for secondary and tertiary level learning (Heintz et al., 2016). Experts agree that even young children can understand fundamental concepts of computational thinking (CT), and that it is important to develop skills related to CT from a young age (Boccini et. al, 2016, p.48).

Increasingly computer science is becoming a compulsory area of curriculum for many countries across the world, as reported by Bocconi et al. and there has been a recent increase in the integration of CT and computer science in mandatory education, as evidenced by the recent changes in educational curricula (p9., 2016). In New Zealand, the Technology curriculum was recently refreshed with the main revisions being the addition of CT and designing and developing digital outcomes as technological areas (Ministry of Education, 2017a). The intention of digital technologies curriculum content is to "significantly contribute to students developing the knowledge and skill they need as digital citizens and as users of digital technologies across the curriculum" (Ministry of Education, 2017b, p.3).

There is also an expectation that all teachers are responsible for building capacity in digital fluency and literacy. It is the teacher's responsibility to effectively use these tools, and to in turn educate students on how to take advantage of these tools for their learning (Wright, 2010, p.46). The main rationale for introducing CT in many countries is to promote the development of 21st century skills necessary for full engagement in the digital realm (Bocconi et al., 2016, p.8).

ByteEd, a New Zealand based educational resource company, have recently developed a new approach to the teaching of computer science at a primary school level that incorporates 21st century skill development. The Play Code Learn series of STEM (Science, Technology, Engineering and Mathematics) kits utilise an unplugged-to-digital methodology and explore future-focused technologies of Augmented Reality (AR) and programming.

Based on the research of Bell and Vahrenhold (2018), who state unplugged activities for students engage them with lasting ideas in computer science. Integrating physical digital tasks along with unplugged tasks proves to be more beneficial for learning. The kits enable students to learn and understand digital concepts before transitioning to putting skills and knowledge into action in a digital environment.

This presentation delves into the impact of the first Play Code Learn kit, Dinosaur Steps, on teaching and learning in two New Zealand classrooms. The use of an unplugged approach has proven to be advantageous to learners and highlights a significant shift in knowledge retention and the understanding of concepts, skills and literacy after using the Dinosaur Steps kit and related teaching resources during Term 4 2022.

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