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Title: A Sample Curriculum from a Design Framework for Computational Thinking Development

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Introduction

Due to the growing integration of digital technologies across all sectors of society, there arises the increasing need of equipping the young generations with creative ability so as to solve everyday problems and continue the innovation in the digital world. One possible approach to nurture their problem-solving skills and creativity is to develop computational thinking (CT). Regarded as one of the essential cognitive skills in the digital era, CT is a thinking process involving formulating problems and solutions by drawing on the fundamental concepts of computer science. While there has long been the emphasis on the importance of CT development in university, it now comes to widespread attention that this requisite thinking skill needs to be introduced to K-12 education through programming. Senior primary levels, i.e. primary 4 to 6, are the appropriate starting point of acquiring CT due to their ability to understand logical reasoning. This call for the integration of CT into senior primary education requires a design framework for constructing a three-year programming curriculum. The design framework consists of the learning aims and the strategies. The learning outcomes of the curriculum are developed based on the three-dimensional CT framework by Brennan and Resnick (2012) while the strategies are to facilitate CT development in the curriculum and enhance learners' creativity. Interest-Driven Creators Theory, which suggests the possibility of nurturing learners to be lifelong creators when they engage in an interest-driven learning process with technological support (Wong, Chan, Chen, King, & Wong, 2015), serves as the guidance to design interesting learning activities in the curriculum for nurturing learners' creativity. This keynote speech will discuss how the sample programming curriculum constructed with a design framework can develop CT in senior primary students.