

Contextualising Computational Thinking: A Case Study in Remote Rural Sarawak Borneo

Nur Hasheena Anuar, Fitri Suraya Mohamad and Jacey-Lynn Minoi

Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

<https://orcid.org/0000-0002-3677-8514>

<https://orcid.org/0000-0003-4460-8061>

<https://orcid.org/0000-0002-9464-2631>

Abstract. The paper describes an exploratory case study on novice indigenous children's learning characteristics as they learn Computational thinking (CT) competencies, such as abstraction, decomposition, and algorithmic thinking. It employs a quasi-experimental research design with pre-test and post-test instruments. Twenty-two children of an underprivileged Penan community living in a remote village in Sarawak Borneo participated. Through the study, they learned Computational thinking skills using localised instructional strategies, with Scratch™ as their tool to programme. The study used observational field notes, comprehension checks, and participants' learning products as primary data sources. Findings showed that indigenous children's learning characteristics were primarily 'learning-by-making', collaborative, highly motivated, playful, curious, and imaginative while they attempted to learn Computational thinking. The intervention (treatment) group performed marginally better than the control group in the pre-test and were substantially better in the post-test performance. Findings illustrate a direction in which novice indigenous children could learn and be informed about Computational thinking practices and skills through a mix of game-based learning, collaborative learning, problem-based learning, and project-based learning. Findings also revealed how participants appeared to have gained self-confidence, illustrated creativity on task and were self-critical throughout their participation in the study.

Keywords: Computational thinking; Remote classroom; Indigenous children; Penan community; Case study

1. Introduction

Developing computational thinking skills from a young age has become crucial in today's setting as it is seen to fulfil the demand of social and global economic growth (Wing, 2010; Grover, 2018; Haseski, Ilic & Tugtekin, 2018). At the macro level, ensuring an increase of uptake among young students to pursue STEM education, and later careers, has become a critical agenda in Malaysia's Education