



Interventions for Enhancing Indigenous Undergraduates' Programming Learning: A Systematic Review

Janaanie Rajendra Kumar* & Fitri Suraya Mohamad

Faculty of Cognitive Sciences and Human Development, Universiti Malaysia Sarawak, 94300
Kota Samarahan, Sarawak, Malaysia.

ABSTRACT

This study reviews the challenges faced by indigenous undergraduates in learning programming and identifies interventions to address them. A systematic review of 37 studies published between 2000 and 2022 found that Indigenous undergraduates face barriers to learning programming related to their indigeneity, motivation, mathematics anxiety, cognitive load, pedagogy, prior knowledge, critical thinking, and programming language anxiety. Interventions such as ethnoprogramming, culturally responsive pedagogy, ethnomathematics, and gamification have been proposed to overcome these challenges. Our review and analysis suggest that culturally responsive pedagogy and gamification show promise in improving indigenous undergraduates' programming learning outcomes. This study highlights the importance of designing effective interventions to support Indigenous undergraduates' learning and career opportunities in the global programming market. Future research could explore specialised interventions tailored to indigenous learners' unique needs and perspectives.

Keywords: learning programming, indigenous undergraduates, challenges, interventions, behaviour

ARTICLE INFO

Email address: janyshad101115@gmail.com (Janaanie Rajendra Kumar)

*Corresponding author

<https://doi.org/10.33736/jcshd.4902.2023>

e-ISSN: 2550-1623

Manuscript received: 12 August 2022; Accepted: 23 March 2023; Date of publication: 31 March 2023

Copyright: This is an open-access article distributed under the terms of the CC-BY-NC-SA (Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License), which permits unrestricted use, distribution, and reproduction in any medium, for non-commercial purposes, provided the original work of the author(s) is properly cited.