

Research on teachers' assessment practices (chair: Krisztián Józsa)

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PRE-SERVICE SCIENCE TEACHERS' INTEREST IN TEACHING COMPUTATIONAL THINKING: A PRELIMINARY INVESTIGATION IN INDONESIAN CONTEXT

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Computational thinking (CT) has been defined as an essential skill for the 21st century (ISTE, 2018). CT was first introduced by Wing (2006) as the ability to solve problems using algorithmic approaches, which include breaking down tasks, recognizing patterns, abstracting details, and creating step-by-step instructions (algorithms). CT is currently used not only in the field of computer science but also in various disciplines (Shute et al., 2017). It is the problem-solving skill of the digital world (Asmara, 2020) that should be integrated into the curriculum (Aristizábal Zapata et al., 2024; Zhang & Wong, 2023). This demand requires teacher education programmes to effectively integrate CT into their curricula to prepare pre-service teachers to teach CT in the classroom (Yadav et al., 2014). This study aimed to investigate (1) how Indonesian pre-service science teachers are interested in teaching CT in their classrooms, and (2) how the type of science major, gender, and programming experience influence the level of interest in teaching CT. The sample consisted of 104 pre-service science teachers who graduated from CT courses at five universities in Indonesia (73 female and 31 male) with 4 science majors: Natural Science, Chemistry, Biology, and Physics. 49 participants had programming experience. A four-item questionnaire was, consisting of three adapted and previously validated four-point Likert scale items assessing interest (Yadav et al., 2014) and an open-ended question (How do you imagine integrating CT into your teaching in the future?) adapted from Zha et al. (2020). Beyond Cronbach's alpha, descriptive statistics, Mann-Whitney U test, and Kruskal-Wallis test, qualitative analysis were used to answer the research questions. The reliability of the questionnaire was good ($\alpha = 0.76$). The mean score of interest in teaching CT was 3.13 (SD = 0.84). The Mann-Whitney U-test showed no significant difference in the interest between male and female ($p = 0.83$), as well as between pre-service science teachers with programming experience and those without ($p = 0.91$). The mean scores for interest in teaching CT for each science subject were 3.01 (SD = 0.91) for science, 3.31 (SD = 0.79) for chemistry, 3.33 (SD = 0.66) for biology, and 2.80 (SD = 0.76) for physics. The Kruskal-Wallis test showed a significant difference in interest scores between the subjects ($p < 0.01$). The qualitative analysis revealed 4 categories of CT integration plans in classroom teaching: problem-based learning, science project assignments, laboratory experiments, and CT test exercises. This study contributes to providing empirical evidence on the initial impact of teaching CT in teacher education programmes in Indonesia while promoting CT integration into teacher education in a global context.

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