Teaching Computer Programming to Diverse Students: A Comparative, Mixed-Methods, Classroom Research Study

Authors : Almudena Konrad, Tomás Galguera

Abstract : Lack of motivation and interest is a serious obstacle to students’ learning computing skills. A need exists for a knowledge base on effective pedagogy and curricula to teach computer programming. This paper presents results from research evaluating a six-year project designed to teach complex concepts in computer programming collaboratively, while supporting students to continue developing their computer thinking and related coding skills individually. Utilizing a quasi-experimental, mixed methods design, the pedagogical approaches and methods were assessed in two contrasting groups of students with different socioeconomic status, gender, and age composition. Analyses of quantitative data from Likert-scale surveys and an evaluation rubric, combined with qualitative data from reflective writing exercises and semi-structured interviews yielded convincing evidence of the project’s success at both teaching and inspiring students.