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Student-Centered Learning Objects to Support the Self-Regulated Learning of Computer Science

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ABSTRACT

The most current computing curriculum guidelines focus on designing learning materials to prepare students for lifelong learning. Under the lifelong learning paradigm, students are responsible for controlling and monitoring their learning processes. This undoubtedly includes the ability to choose suitable learning materials. Correspondingly, instructional paradigms are shifting from teacher-centered to more student-centered models that require students to be self-regulated learners. On the other hand, recent trends in learning materials' instructional design focus on moving toward the concept of Learning Object-based instructional technology. A learning object is a unit of instruction with a specific pedagogical objective that can be used and reused in different learning contexts. Designing learning objects to support students in their self-regulated learning is not an easy task due to the lack of underlying pedagogical frameworks. It is difficult to find learning objects related to students' specific preferences and requirements. In this study, a number of learning objects are designed to support the self-regulated learning of programming languages concepts based on the theory of learning styles. Students' interactions with these learning objects are managed using an online learning object repository. The repository helps students identify their preferred learning styles and find the relevant learning objects. The results of the evaluations of these learning objects revealed that students perceive them to be easy to use and effective in supporting their learning about different programming languages concepts.

KEYWORDS

Learning Objects; Learning Styles; Self-Regulated Learning; Computer Science Education

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