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A More Efficient Design and Implementation of CAL Programs in Natural Science Using Object-Oriented Technology

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Abstract: With the amount and complexity of science topics and applications increasing, the need for appropriate and effective science education is constantly growing. Computer-based education is very promising to help both teachers and learners in their difficult task, which involves complex psychological processes. This complexity is reflected in high demands on the design and implementation methods used to create computer-assisted learning (CAL) programs. Due to their concepts, flexibility, maintainability and extended library resources, object-oriented technology (OOT) is very suitable to producing this type of pedagogical tool. The introduced approach is demonstrated by a basketball simulation program for instruction in Newtonian mechanics covering topics like mass, acceleration, force, and the equation of motion. The overall goal of this work is to expose teachers to OOT and raise their interest to help them to participate more actively in the design and implementation of future CAL tools.

Key Words: computer-assisted learning, object-oriented design and implementation, Newtonian mechanics, basketball simulation program.

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