Development of Interactive Learning Website for Assisting Senior Elementary School Students to Learn Decimal Concepts

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Abstract: This study designed an interactive learning website for decimal concepts targeting senior elementary school students, utilizing the ADDIE instructional design model and web technologies. The interactive learning website includes simulation-based learning materials, online tests, and game-based materials. The simulation-based learning materials employ programming techniques to randomly generate diverse decimal problems, complemented by corresponding animations that provide step-by-step problem-solving explanations. These features help students intuitively understand decimal concepts and include step-by-step guidance and voice support to enhance learning effectiveness. The online test functions support handwritten and text-based recording of calculations, enabling students to review their problem-solving processes. The game-based learning materials integrate real-life scenarios, creating a challenging yet enjoyable self-directed learning environment to reduce resistance to mathematics. Through this system, it is hoped that students will master decimal concepts, apply them flexibly, and increase their interest in learning mathematics.

Keywords: decimal unit, simulation-based learning, ADDIE, game-based learning, animation