Evidence-based technology to enhance mathematics education from Iceland to Kenya

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Abstract

Enhancing the mathematics classroom using computerised drills for homework is shown to provide considerable benefits for student learning in diverse regions, from high-tech westerns classrooms to those with neither Internet nor stable electricity. This paper describes results from several experiments using the tutor-web educational system for teaching mathematics with student groups ranging from upper primary school through graduate school. When existing teaching methods are augmented using this technology, quantitative and qualitative results across all regions and age groups indicate improvements in learner performance. Although it has a wide range of functions, the tutor-web system is most importantly a drilling system, which would normally be classified as an Adaptive and Intelligent Web-based Educational System (AIWBES) providing quite personalised learning, tailoring a drill sequence for each student. In addition to personalised grading schemes aimed for enticing the student to continue, a different reward scheme is implemented by giving the students a cryptocurrency whenever they complete a topic with excellence. Initial results of the effects of these various reward schemes are also presented