Computers & Education 68 (2013) 366–379

Contents lists available at SciVerse ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

High-fidelity implementation of web-based intelligent tutoring system improves fourth and fifth graders content area reading comprehension

Kausalai (Kay) Wijekumar [a,*], Bonnie J.F. Meyer [b], Puiwa Lei [b]

[a] College of Information Sciences and Technology, The Pennsylvania State University Beaver, 212 Ross Administration Building, Monaca, PA 15061, USA
[b] Department of Educational and School Psychology and Special Education, The Pennsylvania State University, USA

ARTICLE INFO

Article history:
Received 20 February 2013
Received in revised form
22 April 2013
Accepted 23 May 2013

Keywords:
Reading comprehension instruction
Structure strategy
Fourth- and fifth-grade reading
Web-based tutoring
Fidelity of implementation

ABSTRACT

Technologies and their effectiveness are impacted by how well they are implemented. A large scale randomized controlled trial was conducted to study the efficacy of a web-based intelligent tutoring system to deliver the structure strategy to improve content area reading comprehension. We present our theory of change focusing on the theoretical framework: structure strategy, delivery approach of web-based intelligent tutoring systems, and contextual conditions for successful adoption of the tool with fidelity. Results from the optimal implementation schools show statistically significantly better performance by ITSS classrooms compared to their control counterparts with moderate to large effect sizes. Conditions for implementing technology-based interventions with fidelity in schools are discussed.