

Research Study: AI Tutors Proven Effective

Artificial Intelligence (AI) Tutoring Software Increases Test Scores and Maximizes Student Effectiveness

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Research Objective

- Evaluate the impact of an artificial intelligence (AI) tutoring system and an online homework management system on student learning and test performance.

Methodology

- The field study was conducted with 139 undergraduate students from one instructor's sophomore-level Financial Accounting course.
- A pre-test, homework assignment and post-test was administered to assess students' ability to analyze and prepare journal entries for transactions that affected balance sheet accounts.
- One group of students completed a homework assignment requiring the analysis and recording of transactions using the Quantum Tutor while a second group of students completed the same assignment using an online homework management system.
- In the second phase of the study, the two groups were switched where the first group used the homework system and the second group used the Quantum Tutor to complete a second homework assignment requiring analysis and recording of transactions.
- After completing each homework assignment, students were given a post-test with transactions that affect both balance sheet and income statement accounts.

Key Findings

- After one group of students completed a homework assignment for the topic of transaction analysis using the Quantum Tutor, **their average test scores improved 1.9 times more than that of a comparable group of students** who completed the same homework problems using an online homework management system.
- When the Quantum Tutor was removed from the first group of students and given to the other group, the pattern of performance differences was reversed, **with the tutored group gaining on average 2.6 times more than the online homework group.**

Conclusions

This study indicates that Quantum's tutoring software is an effective study tool for improving student test performance and accelerating learning when compared to students who only used an online homework system for study. The Quantum Tutor enabled students with initially weaker performance to catch up quickly to higher performing students. In addition, when the higher performing students used the Quantum Tutor, their test scores climbed even higher. Results also indicate that students' ability to account for transactions increased at a significantly faster rate when students used Quantum, suggesting their study time was more productive and targeted with the Quantum Tutor.

“Empirical findings indicate that Quantum's software yields highly significant learning effects, in both the statistical and practical sense. Students who use the Quantum Tutors demonstrate far greater gains than students who used the online homework system.”

— **Fred Phillips, Ph.D.**,
Professor and Baxter Scholar
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View the complete research study at <http://ssrn.com/abstract=1151804>