

“Most students study in the evenings, when the walk-in tutoring center or the professor isn't available. Quantum's on-line tutoring program gives students a vital tool that enables them to have quality study time outside of the classroom.”

— **Linda Chase, CPA, CFE**  
Associate Professor  
Baldwin-Wallace College

### Student Feedback

“It was easy to understand and simple to work through.”

“I was able to use it to answer all of my questions.”

“I would definitely use it again.”

“I liked how it helped me answer my own questions.”

“If there was something I was unsure about I would just use the program and my question was answered.”

“The experience overall with the program was good and I think that our class enjoyed having the tool.”

“Simply put, it was extremely helpful. Thank you!”

## Research Results: Accounting Cycle

### Artificial Intelligence Tutoring Software Improves Student Test Scores by at Least a Full Letter Grade

Baldwin-Wallace College, Berea, Ohio

#### Research Objectives

- Evaluate the effectiveness of the Quantum Transaction Analysis Tutor on student test performance.
- Collect and analyze student feedback on the quality and helpfulness of individual software responses for the Transaction Analysis and Adjusting Entries Tutors.

#### Methodology

The one-week study included 58 managerial accounting students (two sections) from Baldwin-Wallace College:

- Tutor Group (30 students) used the Quantum Tutor for **one 50-minute in-class session**.
- Textbook Group (28 students) used the textbook for in-class study.
- Tutor and Textbook Groups took a pre-test on journal entries and T-accounts to establish benchmark, worked on an in-class assignment for study/practice and completed a post-test to measure any improvements in performance.
- To collect student feedback, the software was equipped with “Rate This Response” for every Tutor response and question answered. While using the Tutor, students had the option to rate responses and provide comments.

#### Key Findings

- **The Tutor Group's gain in accuracy was more than 3.5 times the gain of the Control Group** (see Table 1). Results were obtained after one 50-minute tutoring session.
- **86.6% of the Tutors' responses were rated as “Very Helpful” or “Helpful”** (see Table 2). This is equivalent to students rating an instructor on every explanation or answer given during a lecture.

#### Conclusions

The significant difference in the Tutor Group's performance (3.5 times more gain than the Textbook Group) along with specific student feedback on the quality of the software responses (86.6% of Tutor responses rated as helpful) demonstrate that the Quantum Tutors can substantially improve the students' ability to understand key accounting concepts and improve test performance.

**Table 1: Performance Results**

n = 58	Pre-Test	Post-Test	Gain
Textbook Group	63.0%	71.1%	8.1%
Tutor Group	42.7%	69.8%	27.1%
Difference	20.3%	1.3%	19.0%

Note: Results after one 50-minute tutoring session

**Table 2: Student Feedback - Helpfulness of Quantum Tutors Rated at 86.6%**

n = 106	Transaction Analysis		Adjusting Entries		Combined Rating	
	Responses	Percent	Responses	Percent	Total	Percent
1 = Very Helpful	330	35.6%	321	47.8%	651	40.8%
2 = Helpful	474	51.2%	258	38.5%	732	45.8%
3 = Not Helpful	81	8.8%	49	7.3%	130	8.1%
4 = Confusing	41	4.4%	43	6.4%	84	5.2%

View the complete research study at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1151791](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1151791)