Improving the efficiency of dialogue in tutoring (2012). Meta-review

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Introduction

● Autotutor
  ○ Dialogue based learning System

● Efficiency of Learning
  ○ Time spent on task not only contributor to learning
  ○ Learning may asymptote after specific time - Law of Diminishing Returns
  ○ Efficiency - ability to reach established goals with a minimal expenditure of time, effort, or cognitive resources

● Previous studies only investigate effect of Dialogue on Learning - Few focus on relationship of time and learning

● Can dialogue based tutoring systems be made more efficient?
Experiments

- Two experiments, 136 and 180 undergraduate students as participants
- Pre- and post-autotutor session tests about experiment quality
- Variables tracked: Leaning time, test accuracy, efficiency (accuracy/time)
- 6 Autotutor questions each, different conditions tested:
  - No dialogue
  - No dialogue + summary
  - Full dialogue
  - Mixed dialogue, 2 variations: dialogue first, dialogue last

- Results:
  - Mixed dialogue was always best.
The Good

- Tidy and well-delivered explanation of the system - no need of prior knowledge
- Clearly formulated research problem; well-chosen and justified experiment, showing possible room for improvement
- Elegant report structure
- Description of experiments limitations and further work
The Bad

- Experimental outcomes in statistical form - difficult to understand for novice to the topic
- Repetition - notions are unnecessarily explained more than once instead of just referring to them

Our Verdict

- Weak Accept - The minor issues aside, an excellent read as an introduction to the topic