

Goldberg, A., Russell, M. & Cook, A. (2003). The effect of computers on student writing: A meta-analysis of studies from 1992 to 2002, *The Journal of Technology, Learning, and Assessment*, 2, (1).

Quantitative or Qualitative:

- Quantitative- a meta-analysis including 26 studies from 1992-2002.

Purpose of Study:

- This research synthesis examines the effect of computers on student writing.
- Studies that compared between K- 12 students writing with computers versus paper-and-pencil.
- Research question of interest: Do computers have a positive effect on students' writing process and quality of writing they produce?
- Three outcome variable of interest that examined the impact of word processors on student writing: quantity of writing, quality of writing, and number of revisions.

Length of Study: Varied

Number of Participants (Sample Size): Varied

Method:

- Relevant studies were identified using ERIC, PsychLit, and dissertation database. Search terms used: computer, writing, word processing, pencil-and-paper, and handwritten (i.e. computerized and computer; word process and word processing, etc.).
- To determine the inclusion of studies in the meta-analysis, studies had to have result reported in a way that an effect size could be calculated. Studies had to have outcome measures for 'quality of student writing', and/or 'quantity of student writing', and/or 'revision of student writing'. Focused on student in Grades K-12
- Study features were coded and included seven categories of study descriptors including: publication type, research methodology, student characteristics, technology-related factors, writing environment factors, instructional support factors, and outcome measures.
- Effect size was extracted and calculated. An effect size represents the standardized difference between two groups on a given measure.

Results:

- The result for studies that examined quantity of writing had an overall positive with large effects for length of writing ($d = .50$, $n=14$). However, the effect size was larger for middle and high school students than for elementary.
- Studies for quality of writing, the findings were also positive ($d=.41$, $n=15$). Overall, across the 15 studies in the meta-analysis, students who used word processors produced higher quality passages than students who write using paper and pencil.
- With regards to studies that examined revisions made on paper compared to revisions on computer, the findings are not clear ($n=6$).
- There were qualitative studies excluded from the meta-analysis however they were further analyzed and different outcomes were assessed. Writing as a social process how social interactions among students were affected when students wrote with computers. In general these studies found that there was increased collaboration, peer-editing and peer-mediation

when students wrote using computers. The iterative process when using computer was not linear as when writing on paper. Students were more likely to brainstorm new ideas and the revision process was throughout, students critically examined and revised text as new ideas flowed. A few qualitative studies examined motivation and found that students were more motivated, engaged and sustained in writing activities when using the computer. They also wrote for longer periods of time, and produced more writing compared to paper-and-pencil.