Does it Matter if I take My Writing Test on Computer? An Empirical Study of Mode Effects in NAEP

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Abstract

This study investigated the comparability of scores for paper and computer versions of a writing test administered to eighth grade students. Two essay prompts were given on paper to a nationally representative sample as part of the 2002 main NAEP writing assessment. The same two essay prompts were subsequently administered on computer to a second sample also selected to be nationally representative. Analyses looked at overall differences in performance between the delivery modes, interactions of delivery mode with group membership, differences in performance between those taking the computer test on different types of equipment (i.e., school machines vs. NAEP-supplied laptops), and whether computer familiarity was associated with online writing test performance. Results generally showed no significant mean score differences between paper and computer delivery. However, computer familiarity significantly predicted online writing test performance after controlling for paper writing skill. These results suggest that, for any given individual, a computer-based writing assessment may produce different results than a paper one, depending upon that individual's level of computer familiarity. Further, for purposes of estimating population performance, as long as substantial numbers of students write better on computer than on paper (or better on paper than on computer), conducting a writing assessment in either mode alone may underestimate the performance that would have resulted if students had been tested using the mode in which they wrote best.

Keywords

computer-based testing; online assessment; writing assessment; NAEP; computer; assessment; WOL

Full Text:

An Empirical Study of Mode Effects in NAEP. Nancy Horkay, Randy Elliot Bennett, Nancy Allen, Bruce A. Kaplan, Fred Yan. Abstract. Analyses looked at overall differences in performance between the delivery modes, interactions of delivery mode with group membership, differences in performance between those taking the computer test on different types of equipment (i.e., school machines vs. NAEP-supplied laptops), and whether computer familiarity was associated with online writing test performance. Results generally showed no significant mean score differences between paper and computer delivery. However, computer familiarity significantly predicted online writing test performance after controlling for paper writing skill. With children taking tests on computers some have scored lower than children who took the same test on paper, and sometimes it has been the other way around and that could increase the achievement gap. 3. "Does It Matter If I Take My Mathematics Test on Computer? A Second Empirical Study of Mode Effects in NAEP" Journal of Technology, Learning, and Assessment, 2008 "Results showed that the computer-based mathematics test was significantly harder statistically than the paper-based test," according to Randy Elliot Bennett, who is also the lead author of this paper, which looked at results from a 2001 National Center for Education Statistics investigation of new technology for administering the National Assessment of Educational Progress in math. Does it matter if I take my writing test on computer? An empirical study of mode effects in NAEP. The Journal of Technology, Learning and Assessment, 5(2). Retrieved December 29, 2014 from: http://scholarship.bc.edu/jtla/vol5/2/. Jamieson, J., Taylor, C., Kirsch, I. & Eignore, D. (1998). Does the computer make a difference? The reaction of candidates to a computer-based versus a traditional hand written form of the IELTS writing component: effects and impact, IELTS Research Reports Volume 6, British Council/IELTS Research Report, Volume 7, British Council/IELTS Australia, 311-347. Wolfe, E. W., & Manalo, J. R. (2005). An investigation of the impact of composition medium on the quality of TOEFL writing scores (TOEFL Research Report No. RR-72).