Is computer availability at home causally related to reading achievement in grade 4? A longitudinal difference in differences approach to IEA data from 1991 to 2006

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## Sample

Data from two IEA trend studies of reading, the Reading Literacy Study 1991 (Elley 1994), which was repeated in 2001 in the 10YTS (Martin et al. 2003), and the IEA PIRLS studies from 2001 (Mullis et al. 2003) to 2006 (Mullis 2007). Thus, the first analysis covers changes in reading achievement and computer use at home between 1991 and 2001, and the second covers changes between 2001 and 2006.

## Implications For Parents About

## Other Parent Implication

Negative effects of home computer use on reading literacy

## Implications For Educators About

Other

## Implications For Stakeholders About

Researchers

# Abstract

Research on effects of home computer use on children’s development of cognitive abilities and skills has yielded conflicting results, with some studies showing positive effects, others no effects, and yet others negative effects. These studies have typically used non-experimental designs and one of the main reasons for the conflicting results is that studies differ with respect to how well they control for selection bias in comparisons of children with different amounts of computer use. The current study takes advantage of data from international comparative studies of educational achievement and uses the trend design of these studies to conduct longitudinal analyses at the country level. This allows for a difference in differences approach which effectively controls for within-country selection bias, time-invariant country-level omitted variables, and random errors of measurement in the independent and dependent variables. The empirical investigations are based on data from the IEA 10-Year Trend Study and the PIRLS 2001 and 2006 studies. For these studies, information about frequency of home computer use is available in the student questionnaire. The main analytical approach employed in the paper is regression estimation based on micro-data, with fixed country effects and cluster-robust standard-errors. This approach allows estimation of main effects of home computer use and interaction effects with student characteristics (gender and socio-economic status). For both data sets negative effects of home computer use on achievement are found. Results are discussed in substantive and methodological terms, focusing particularly on possible threats to valid causal inference, such as omitted variables that are not time invariant.

# Outcome

"...the current study replicates and extends our previous research demonstrating negative effects of home computer use on reading literacy." (Authors, in Discussion and Conclusions)