

Research Report for GeSCI Meta-Review of ICT in Education Phase One **-Partial document-**

17 April 2009

In response to:

Terms of Reference for GeSCI Request for Proposal

Meta-review of ICT in Education Research

Prepared by:

John LeBaron

Jay M. Robinson Distinguished Professor of Educational Technologies
Western Carolina University, University of North Carolina
Cullowhee, NC, USA

Elizabeth McDonough

Education Reference Librarian

Western Carolina University, University of North Carolina, Cullowhee, NC, USA

(TOR dated 17 February, 2009)

Copyright notice



This document is provided under a Creative Commons License of Attribution-NonCommercial-ShareAlike. For more information on this license, please visit the Creative Commons website at <http://creativecommons.org/licenses/by-nc-sa/3.0/>

The full version of this document, as well as Phase Two, are available from:

<http://www.gesci.org/publications.html>

Discussion of Search Procedures and Challenges Related to GeSCI Study

Overview

The purpose of this research is to provide a multi-disciplinary, multi-methodological lens for understanding the complexity and exponential growth of ICT around the world. The scope was limited to studies conducted between 2006 and 2008, and included articles from traditional peer-reviewed literature and “grey literature,” such as policy reports, conference papers, and reports from the popular media. Although the scope of the search was limited to five thematic streams outlined in GeSCI’s Terms of Reference, the comprehensive nature of those themes dictated a search methodology that was both focused and far-reaching.

Search Methodology

Given the prolific nature of the academic publishing environment in the digital age and the time constraints of this project, the scope of this review is limited. A search of the Educational Resources Information Center (ERIC), the world’s largest index of educational research revealed more than 14,000 research reports related to technology indexed over the two years targeted by this review. Despite its size, ERIC cannot be considered a fully comprehensive index of all educational research. Thus, a fully exhaustive review would have involved a larger number, though not necessarily a better quality, of studies. Fortunately, ERIC provides an excellent cross-section of studies that are meticulously organized and indexed. It offers access to the bibliographic records of nearly 900 journals, most of which are peer-reviewed, and more than 700 non-journal sources. Despite the fact that ERIC is a database maintained by the United States Government, the collection is international in scope, as indicated by the results of this research.

Given the significant challenges presented, the researchers sought a systematic review of the literature that would reveal the general trends in ICT research as it related to the articulated themes. In this case, ERIC was a particularly good tool because of its use of controlled vocabulary. Even with the rise in popularity and ease of use of keywords, a serious methodical review of the research, particularly in a vast area, such as ICT inquiry, is well served by structured indexing according to a controlled vocabulary. The identification and use of assigned subject descriptors (see Appendix A), allowed the researchers to conduct the search with

confidence that major trends in specific areas could be uncovered and reviewed. ERIC also allowed the researchers to narrow the publication type to research reports, which included descriptive, evaluative, general and empirical categories. With minor exceptions, the scope of this research was further limited to pre-K through secondary education. A few studies on higher education related to teacher education, however, were included.

In certain cases, particular issues were vetted with the supplemental use of Google Scholar, which uses Google's familiar search algorithms to facilitate intuitive, broad searches of scholarly sources. Each approach has strengths and weaknesses, but they complement each other appropriately. The evolving educational jargon commonly used to describe concepts, particularly concepts related to educational technology, generates appreciation on the part of the researcher for the opportunity to use multiple tools and approaches to study the issues at hand.

While ERIC and Google Scholar were used to pinpoint the bibliographic information for each study, the full-text content was acquired from a wide array of sources. The researchers were able to track open-access sources for 61 of the studies reviewed. The remaining 183 studies were accessible only by subscription or individual purchase. The researchers were able to obtain access to most these studies through library subscriptions to journals and databases, and some use of interlibrary loan. For the purposes of this project, 244 studies were identified and reviewed. The bibliographic information for each study was archived in the database map, including open access URLs when they were available.

While not exhaustive, the researchers are confident that this literature survey reveals the major topics of academic dialogue and methodological approaches underlying ICT research in the years specified in GeSci's Terms of Reference. Phase One of this meta-review project has indeed provided a pool of studies from which an overview of the meaning of the research has been derived, but it is evident that deeper investigation into any of the issues outlined by GeSci's themes might continue to provide even greater meaning from the existing literature, which in and of itself is experiencing exponential growth.

Anomalies

Investigation of the literature on GeSci's thematic framework produced findings that cross the five discussion categories. In some cases, therefore, citations may appear in more than one report section under different names. An investigation of specific documents suggested to the researchers that some studies better fit certain themes than those generated by the search terms used. Thus, each theme-by-theme narrative carries its own reference list that may not precisely match the references produced by the controlled vocabulary search. In the narrative, certain

references were not cited because their content was deemed to be of marginal quality or relevance. These decisions reflect the professional judgment of the researchers. On the contrary, a small number of references from outside the controlled vocabulary search were included because the researchers judged them to inform the overall narrative. The comprehensive Excel database provided in a separate file contains the complete pathways to the literature generated by the controlled vocabulary search.

Organization of this document

Following this section of the narrative, the report is organized by the five following themes specified in the GeSci Terms of Reference. (Each narrative section was written to stand on its own.)

1. Educational ICT leadership and management
2. ICT infrastructure, connectivity and accessibility
3. Integration of ICTs into teaching and learning
4. Teacher education and ICT
5. Educational Content and ICT

The narrative discussion of each theme is further sub-divided under the following headings:

- a. Overview
- b. Challenges and constraints impacting progress
- c. Evolving approaches in the field
- d. "Hot" topics
- e. Research gaps suggesting further investigation
- f. References

The main narrative of this report is followed by an appendix indicating the search terminology used for each of the themes investigated, and by an alphabetized list of references produced by the controlled vocabulary investigations.

John LeBaron

Jay M. Robinson Distinguished Professor of Educational Technologies

Western Carolina University, University of North Carolina, Cullowhee, NC, USA

Elizabeth McDonough

Education Reference Librarian

Western Carolina University, University of North Carolina, Cullowhee, NC, USA

April 12, 2009