

Chapter 1

Maximising Technology Usage in Research Synthesis of Higher Education Professional Development Research

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ABSTRACT

Research synthesis, a systematic accumulation, analysis, and reflection on a full body of relevant empirical evidence related to a particular research question, is a time-consuming and arduous task requiring the inclusion of multiple research points of view in the analysis process. Leximancer™, lexical analysis, and concept mapping software has provided a method for reducing vast pools of research literature down to highly desirable research literature portions. It is not the authors' intention to provide an analysis of the documents retrieved for the research synthesis, but rather to articulate a method of content analysis that incorporates the use of technology to assist in the initial steps of a research synthesis. This chapter promotes the use of technology tools to enhance the critical review of evidence-based publications to make the identification of relevant articles more efficient and effective.

INTRODUCTION

The future relationship between technology and distance education must be based on a well-informed decision-making process, where information is primarily provided through quality research.

It is critical that policy-makers understand the evidence upon which they base their decisions, and how such decisions are affected by other factors. 'Criticisms levelled at the educational research community, most notably for its lack of scientific rigour, quality and relevance' (Torgerson, 2003, p. 29; Torgerson & Torgerson, 2007) have resulted in the development of strategies to synthesize research for evidence-based policy-making.

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In this paper, we examine the research debate that prompted this research synthesis investigation. We follow this by identifying issues related to conducting a quality literature review. We have sought to address the debate in the meta-analysis and meta-synthesis research community regarding content analysis, appraisal, and synthesis strategies by proposing technological solutions. Outlined is the methodology used in a research synthesis project with a validation provided to support our application of lexical analysis software for the initial selection of documents for analysis and for the concept-mapping task.

DEHUB RESEARCH MISSION

DEHub: Innovation in Distance Education is a project funded by Department of Education, Employment, and Workplace Relations (DEEWR) with the goal of leading research, development, and practice in distance education. As a newly formed research institute, one of its first tasks has been to survey the existing research literature to determine the key issues for the higher education sector in technology-enabled distance learning. It is an enormous task for a small group of researchers with limited resources to identify key issues and make recommendations for research projects seeking solutions for those key issues.

In developing priority research themes, the DEHub research staff undertook a literature scan. Two Delphi studies on the topic of research and evaluation needs in distance education were found. The first identified four themes: (1) co-operation and collaboration among institutions, (2) designing the educational experience for the distance learner, (3) teacher preparation, and (4) educational outcomes (Rockwell, Furgason, & Marx, 2000). The second study (Zawacki-Richter, 2009) categorized the results into three broad areas with fifteen research areas. DEHub refined and expanded these Delphi studies through a two-day

research planning process with distance education specialists including two international researchers. The fifteen research themes were prioritized, choosing seven for action in 2010. The remaining eight themes will develop and evolve as further research and analysis is undertaken.

SYNTHESISING LITERATURE

An initial research activity was to perform a content analysis, with the prime objective of determining the trends, key issues, and challenges being identified in the research literature. This type of content analysis requires an examination of large volumes of information, scaffolded by a theoretical framework for the identification of themes and concepts that emerge from that data (Zimitat, 2006). Quantitative research studies consider such a content analysis as a meta-analysis. Meta-analysis studies use a statistical technique combining effect sizes reported in each research study. The result of a meta-analysis provides an overall summary of the outcomes of a number of studies by calculating a weighted average of their effect sizes (Ary, Jacobs, Razavieh, & Sorensen, 2009). The social science research paradigm (encompassing education) is largely one of qualitative research, a paradigm that creates problems for conducting meta-analysis. Therefore a systematic review is appropriate for this content analysis task. 'The systematic review process differs from meta-analysis and research synthesis in that it describes the whole process of identifying all the relevant literature within a given area' (Torgerson, 2003, p. 29).

Further complicating this issue is the use of the terms literature review, research review, systematic review, research synthesis, and meta-analysis interchangeably without firm definition. Cooper (2009) highlights that these terms are all primarily labels for the process of systematic review. The primary focus of our study is to identify trends, issues and challenges for distance educators who

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