

教育科學研究期刊 第五十六卷第一期

2011 年，56 (1)，129-166

內容探勘技術在教育評鑑研究發展 趨勢分析之應用

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摘要

由於大型資料庫時代的來臨，各種教育評鑑研究的數位文件，累積的速度相當快，相關的統計、探勘分析方法，需求漸為殷切。本研究以專家問卷、資料庫搜尋等方式，來界定教育評鑑研究領域的核心期刊。另外，透過引文分析、文字探勘技術等方法，自動從核心期刊中偵測出校長領導、班級大小、評鑑、改革、教師認證、學習機會、留級、教育券等概念，為顯著的研究議題。從評鑑方法的主題中，本研究探勘出 Chen、Weiss 與 Rossi 等學者討論的方法，比 Cook、Compbell 等人的還新，此點從領域學者 Alkin (2004) 在主題樹中對上述專家的擺設位置，也觀察到相同的現象。最後，本研究透過主題趨勢的分析，發現教育評鑑裡的主要議題，其論文數量有愈來愈少的趨勢。然而，這些結果的意義，仍有待領域專家的深入解讀。本研究所提方法可應用在不同學科領域，不僅能增進內容分析的效率，還可定期追蹤主題的演變，甚至標示出重要學者的位置，提供後續相關研究的線索與素材。

關鍵字：主題偵測、科學計量學、核心期刊、評鑑理論樹、趨勢分析

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收稿日期：2010/01/17；修正日期：2010/06/21、2010/09/03；接受日期：2010/09/14。

Journal of Research in Education Sciences

2011, 56(1), 129-166

The Application of Content Mining Techniques to the Analysis of Educational Evaluation Research Trends

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Abstract

Due to the mass accumulation of digital documents in nowadays research environment, related statistical or content mining methods for analyzing, organizing, and accessing information from the document collections are in great need. This research aimed to: (1) identify the core journals in the field of educational evaluation research through cross-verification of questionnaire survey and database searching; (2) find out major research topics and their evolutions by analyzing the publications in the core journals based on scientometrics methods such as citation analysis and text mining techniques. Based on the findings, the major salient research topics include principal's leadership, class size, evaluation, reform, teacher certification, opportunity to learn, retention, and voucher. And as to the issue of the evaluation methods, the studies conducted by Chen, Weiss, and Rossi are identified as newer ones than those by Cook and Compbell, which coincides with the fact shown in the evaluation theory tree (a sort of topical tree) organized by Marvin Alkin, an experienced expert in the field. Besides, with this topic trend analysis, it is also found that the number of papers dealing with the major research topics seems to be decreasing. However, all these results need to be interpreted by domain experts to reveal their true meanings. The methodology presented in this research may be applied not only to improve the efficiency of content analysis, but also to facilitate regular tracing of topic evolution, to spot the positions of important researchers in the field, and therefore to provide relevant clues or materials for further studies.

Keywords: topic detection, scientometrics, core journals, evaluation theory tree, trend analysis