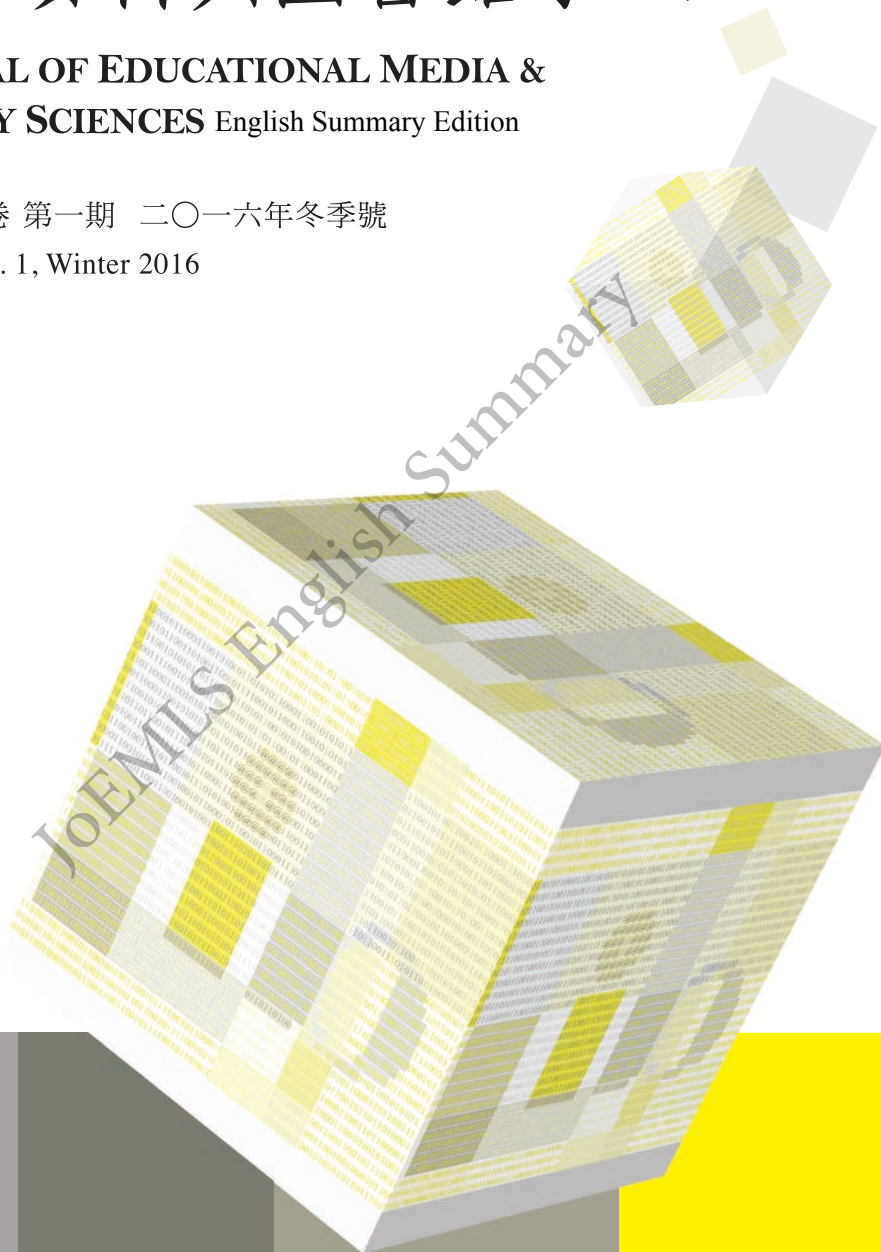


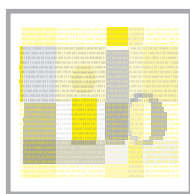
教育資料與圖書館學 英摘版

**JOURNAL OF EDUCATIONAL MEDIA &
LIBRARY SCIENCES** English Summary Edition

第五十三卷 第一期 二〇一六年冬季號

Vol. 53, No. 1, Winter 2016





教育資料與圖書館學，始於1970年3月創刊之教育資料科學月刊，其間於1980年9月更名為教育資料科學，改以季刊發行。自1982年9月起易今名，而仍為季刊，每年冬(1月)、春(4月)、夏(7月)與秋季(10月)各出刊一期，合為一卷。現由淡江大學出版中心出版，淡江大學資訊與圖書館學系和覺生紀念圖書館合作策劃編輯。本刊為國際學術期刊，2008年獲國科會學術期刊評比為第一級，並廣為海內外知名資料庫所收錄(如下英文所列)。

The JOURNAL OF EDUCATIONAL MEDIA & LIBRARY SCIENCES (JoEMLS), published by the Tamkang University Press and co-published with the Department of Information & Library Science (DILS) and Chueh Sheng Memorial Library, was formerly the **Bulletin of Educational Media Science** (March 1970 – June 1980) and the **Journal of Educational Media Science** (September 1980 – June 1982). The JoEMLS has been a quarterly as well as a new title since September 1982, appearing in Winter, Spring, Summer and Fall issues.

The JoEMLS is indexed or abstracted in

Cabell's Directory of Publishing Opportunities
Chinese Electronic Periodicals Service (CEPS)
Directory of Open Access Journal (DOAJ)
H.W. Wilson Database
Index to Chinese Periodicals
Library, Information Science & Technology Abstract (LISTA)
Library & Information Sciences Abstracts (LISA)
Library Literature & Information Science (LLIS)
Public Affairs Information Services (PAIS)
Scopus
Taiwan Social Sciences Citation Index (TSSCI)
Ulrich's Periodicals Directory

教育資料與圖書館學 封面意義：躍升於紙本印象上的數位與網路化圖書資訊圖騰。

The cover design of JoEMLS signifies:

L (Librarianship); **I** (Information Technology); **B** (Bibliophile and the Book trade)

教育資料與圖書館學

JOURNAL OF EDUCATIONAL MEDIA & LIBRARY SCIENCES

主編 (Chief Editor)

邱炯友 (Jeong-Yeou Chiu)

政治大學圖書資訊與檔案學研究所教授

Professor, Graduate Institute of Library, Information and

Archival Studies, National Chengchi University, Taiwan

淡江大學資訊與圖書館學系兼任教授

Adjunct Professor, Department of Information and Library

Science, Tamkang University, Taiwan

執行編輯 (Executive Editor)

林雯瑤 (Wen-Yau Cathy Lin)

淡江大學資訊與圖書館學系副教授

Associate Professor, Department of Information and

Library Science, Tamkang University, Taiwan

名譽主編 (Editor Emeritus)

黃世雄 教授 (Professor Shih-Hsion Huang)

歷任主編 (Former Editors)

李華偉 教授 (Professor Hwa-Wei Lee)

李長堅 教授 (Professor Chang C. Lee)

編輯 (Managing Editor)

高祺熹 (Sz-Shi Kao)

編輯助理 (Editorial Assistants)

張瑜倫 (Yu-Lun Chang)

張瑜庭 (Yu-Ting Chang)

尤玳琦 (Tai-Chi Yu)

呂昱慧 (Yu-Hui Lu)

協同主編 (Associate Editor)

張瓊穗 (Chiung-Sui Chang)

淡江大學教育科技學系教授

Professor, Department of Educational Technology,

Tamkang University, Taiwan

英文協同主編 (English Associate Editor)

賴玲玲 (Ling-Ling Lai)

淡江大學資訊與圖書館學系副教授

Associate Professor, Department of Information and

Library Science, Tamkang University, Taiwan

地區協同主編 (Regional Associate Editors)

大陸地區 (Mainland China)

張志強 (Zhiqiang Zhang)

南京大學出版科學研究所教授

Professor, Institute of Publishing Science at Nanjing

University, China

歐洲地區 (UK and Europe)

Dr. Judith Broady-Preston

Director of Learning and Teaching,

Department of Information Studies,

University of Wales, Aberystwyth, UK

美洲地區 (USA)

Dr. Jin Zhang

Professor, School of Information Studies,

University of Wisconsin-Milwaukee, USA

編務諮詢委員會 (Editorial Board)

王美玉 (Mei-Yu Wang)

淡江大學資訊與圖書館學系主任

Chair, Department of Information and Library Science,

Tamkang University, Taiwan

宋雪芳 (Sheue-Fang Song)

淡江大學覺生紀念圖書館館長

Director, Chueh Sheng Memorial Library,

Tamkang University, Taiwan

陳雪華 (Hsueh-Hua Chen)

臺灣大學圖書資訊學系教授

Professor, Department of Library and Information Science,

National Taiwan University, Taiwan

梁朝雲 (Chaoyun Chaucer Liang)

臺灣大學生物產業傳播暨發展學系教授

Professor, Department of Bio-Industry Communication and

Development, National Taiwan University, Taiwan

曾元顯 (Yuen-Hsien Tseng)

臺灣師範大學資訊中心研究員

Research Fellow/Adjunct Professor, Information Technology

Center, National Taiwan Normal University, Taiwan

黃鴻珠 (Hong-Chu Huang)

淡江大學資訊與圖書館學系教授

Professor, Department of Information and

Library Science, Tamkang University, Taiwan

蔡明月 (Ming-Yueh Tsay)

政治大學圖書資訊與檔案學研究所教授

Professor, Graduate Institute of Library, Information and

Archival Studies, National Chengchi University, Taiwan

薛理桂 (Li-Kuei Hsueh)

政治大學圖書資訊與檔案學研究所教授

Professor, Graduate Institute of Library, Information and

Archival Studies, National Chengchi University, Taiwan

方卿 (Qing Fang)

武漢大學信息管理学院教授

Professor, School of Information Management,

Wuhan University, China

沈固朝 (Guchao Shen)

南京大學信息管理学院教授

Professor, School of Information Management,

Nanjing University, China

吳建中 (Jianzhong Wu)

上海圖書館館長

Director, Shanghai Library, China

Pia Borlund

Professor, Royal School of Library and Information

Science, Denmark

Sam Hastings

Professor, School of Library & Information Science, Uni-

versity of South Carolina, USA

Edie Rasmussen

Professor, School of Library, Archival and Information

Studies, University of British Columbia, Canada

Josephine Sche

Professor, Information and Library Science Department,

Southern Connecticut State University, USA

Peter Sidorko

Librarian, The University of Hong Kong Libraries,

The University of Hong Kong, Hong Kong

Hong Xu

University Librarian, Duke Kunshan University, China

JoEMLS 編輯政策

本刊係採開放存取 (Open Access) 與商業資料庫付費途徑，雙軌發行之國際學術期刊，兼具電子版與紙本之平行出版模式。本刊除秉持學術規範與同儕評閱精神外，亦積極邁向 InfoLibrary 寓意之學域整合與資訊數位化理念，以反映當代圖書資訊學研究趨勢、圖書館典藏內容與應用服務為本；且以探討國內外相關學術領域之理論與實務發展，包括圖書館學、資訊科學與科技、書業與出版研究等，並旁及符合圖書資訊應用發展之教學科技與資訊傳播論述。

Open Access 典藏政策

JoEMLS 向來以「綠色期刊出版者」(Green Publisher / Journal) 自居，同意且鼓勵作者將自己投稿至 *JoEMLS* 之稿件，不論同儕評閱修訂稿與否，都能自行善加利用處理，但希望有若干限制：

- (1) 勿將已刊登之修訂稿 (post-print) 再自行轉為營利目的之使用；
- (2) 典藏版以期刊排印之 PDF 檔為首選；
- (3) 任何稿件之典藏版本皆須註明其與 *JoEMLS* 之關係或出版後之卷期出處。

JoEMLS Editorial Policy

The *JoEMLS* is an Open Access (OA) Dual, double-blind reviewed and international scholarly journal dedicated to making accessible the results of research across a wide range of Information & Library-related disciplines. The *JoEMLS* invites manuscripts for a professional information & library audience that report empirical, historical, and philosophical research with implications for librarianship or that explore theoretical and practical aspects of the field. Peer-reviewed articles are devoted to studies regarding the field of library science, information science and IT, the book trade and publishing. Subjects on instructional technology and information communication, pertaining to librarianship are also appreciated. The *JoEMLS* encourages interdisciplinary authorship because, although library science is a distinct discipline, it is in the mainstream of information science leading to the future of **InfoLibrary**.

Open Access Archiving

The *JoEMLS*, as a role of “OA green publisher/journal”, provides free access online to all articles and utilizes a form of licensing, similar to Creative Commons Attribution license, that puts minimal restrictions on the use of *JoEMLS*'s articles. The minimal restrictions here in the *JoEMLS* are:

- (1) authors can archive both preprint and postprint version, the latter must be on a non-commercial base;
- (2) publisher's PDF version is the most recommend if self-archiving for postprint is applicable; and
- (3) published source must be acknowledged with citation.

JOURNAL OF EDUCATIONAL MEDIA & LIBRARY SCIENCES

Volume 53 Number 1 Winter 2016

Contents

EDITORIAL

In and Beyond This Issue

Jeong-Yeou Chiu 1

RESEARCH ARTICLE

Functional Requirements of E-book Catalogs: From Perspectives of Library Users

Meng-Chun Hsieh, & Chao-Chen Chen 20

A Study of the Relationship among Leader-member Exchange, Creative Self-efficacy and Innovative Behavior of the University Librarians

Yu-Ping Peng 49

The Construction of Metadata for Open Government Data in Taiwan

Li-Ling Ou, & Tung-Mou Yang 96

Applying Public History to Co-build the Digital Humanities Collaboration System of Tamsui's Memory

Sinn-Cheng Lin, & Mei-Sheng Chen 127



EDITORIAL

In and Beyond This Issue

For this Issue 1, Volume 53 of *Journal of Educational Media and Library Sciences (JoEMLS)*, twelve manuscripts were reviewed during the publishing process. Four manuscripts were accepted and eight were rejected, with a rejection rate of 66.7%. Another seven manuscripts are still at the review process. Research papers published in this issue include “Applying Public History to Co-build the Digital Humanities Collaboration System of Tamsui’s Memory” by Sinn-Cheng Lin and Mei-Sheng Chen, “Functional Requirements of E-book Catalogs: From Perspectives of Library Users” by Meng-Chun Hsieh and Chao-Chen Chen, “A Study of the Relationship among Leader-member Exchange, Creative Self-efficacy and Innovative Behavior of the University Librarians” by Yu-Ping Peng, and “The Construction of Metadata for Open Government Data in Taiwan” by Li-Ling Ou and Tung-Mou Yang.

This new year of 2016 will be another important milestone for the development of academic journals in Taiwan. Let’s take a look at the history. In 2008 we for the first time had an official ranking system for journals in the field of library and information sciences, and journals had been categorized into three levels according to qualities—first degree, second and third, respectively. Later we had another adjustment to label these four levels as A, B, C and D. However, from this year of 2016, there will be a major change regarding the journal ranking system in Taiwan charged by Ministry of Science and Technology (MOST). It is called “New Policy of Journal Ratings in Humanities and Social Sciences”, which announces a two-year (2016-2017) re-ranking of journals in Humanities and Social Sciences, and incorporation of the collection policies of THCI Core and TSSCI, for avoiding redundant and repeated applications for being collected into these databases. The major changes in this new policy include:

1. There are three levels of journal ranks. Journals rated as A and B levels are so called “core journals”, and will be collected into THCI and TSSCI.
2. Core Journals in Humanities are abbreviated as TCICore-THCI; Core Journals in Social Sciences are called TCICore-TSSCI.
3. The original list of journals collected into THCI Core and TSSCI will be effective till a new list is generated in 2016 and 2017.
4. Journals in each discipline will be rated every two years, at the application from each journal. Library and information science is categorized into the Education discipline.

5. Journals of humanities and social sciences published in Taiwan, Hong Kong, Macau and Singapore are eligible for applying for being collected into the database.

6. The frequency of journal publication should be at least once a year. At least three original academic papers should be published in each issue during the past three years. An average of three original academic papers for each issue of a year is also acceptable.

From the points summarized above, we can see it clear that when the MOST announced that “Core journals in social sciences are abbreviated as TSSCI”, this institution in charge of Taiwan academic development did misunderstand the natures and meanings of citation index and core journals. Although academic journal ranking is a necessary approach for defining “core journals”, the purpose for defining such core journals are still ambiguous. Is it for library collection development, journal publication, or for authors to submit manuscripts? Different goals involve different approaches and objectives of journal ranking. It is good to simplify redundant application procedures for being collected into the database, but if names of two tools with different natures are misunderstood and mixed up, and if it is open for free application from each academic journal, leaving each journal to decide if it would like to be rated and collected into the database, then such policy at discretion and indulgence will be a fly in the ointment.

To most scholars in humanities and social sciences, the new policy of journal ratings in humanities and social sciences would be a good news, because more journals of the first and second levels could become honorably accredited TSSCI or THCI Core. However there is a problem to be addressed. How will universities and research institutes spend money on rewarding authors in these journals, or how they justify rewarding only those journals that are rated as the first level, that is, Level A? According to the New Policy of Journal Ranking In Humanities And Social Sciences, the maximum percentage of journals in each discipline (library and information science is in the education discipline) that could be collected into the database is 40, therefore all journals (including journals of library and information science) will face a major reshuffling in the list of journals indexed into the database. This could be a great opportunity for those journals that have not been collected into the Citation Index, but for the field of library and information science with a relatively low number of scholars and researchers, it is still not clear whether the following season is a thriving spring or a trembling winter?

Jeong-Yeou Chiu
JoEMLS Chief Editor



Functional Requirements of E-book Catalogs: From Perspectives of Library Users

Meng-Chun Hsieh ^{a*} Chao-Chen Chen ^b

Abstract

The amount of ebook publications has been grown rapidly, so does the ebook collection in university libraries. Users have different inquiry demands for ebooks and printed books. Therefore, internet bookstores and ebook stores have fully utilized the features of ebooks to offer a variety of information and value-added features such as full-text preview, cross-selling, etc. In order to understand readers' ebook searching behavior and their demands for bibliographic information, and provide references for university library ebook catalog design, the study selects the ebook catalogs of two academic libraries and two commercial companies, designs 6 kinds of searching tasks, and asks the users of academic libraries to search the catalogs. A researcher observes the searching behavior and interviews the users about their searching behavior. Finally, the study draws a conclusion and provides recommendations in four facets: "current status of search and acquisition of ebooks", "demand for advanced bibliographic information", "view of community sharing and marketing mode", and "demand and recommendation for the function of the library ebook catalogs".

Keywords: Ebook catalog, Behavior of using ebook, Catalog design, Searching behavior

SUMMARY

With the rapid growth of information technologies and prevalence of internet, different types of electronic resources have become the mainstream communication media, including e-books. The Project Gutenberg, launched in 1971, has begun collecting a large amount of e-books. With later the prevalence of digital publishing and tablet computers, the growth of e-books' productions and sales have been advanced rapidly. In 2011, the total sales of e-books in the United States surpassed print sales for the first time, and in the first quarter of 2012 the e-book sales outnumbered hard-cover books (Boog, 2012). This same phenomenon can be observed in university libraries' collections. According to the 2015 statistics issued by Ministry of Education, among the total number of

^a Graduate Student, Graduate Institute of Library & Information Studies, National Taiwan Normal University, Taipei, Taiwan

^b Professor of Graduate Institute of Library & Information Studies, Dean of Academic Affairs, National Taiwan Normal University, Taipei, Taiwan

* Principal author for all correspondence. E-mail: sincerity322@gmail.com

117,902,675 printed books and e-books in Taiwan university libraries in 2014, e-books have occupied 48.7%, indicating that e-books have become the major collections of university libraries.

According to the survey findings of Taiwan Academic E-Book Consortium (TAEBC) in 2010, users use library electronic resource systems as their major tool for searching e-books, with Online Public Access Catalog (OPAC) as the second source. The biggest challenge of users' using these tools is having difficulty finding books they need; other challenges include unfamiliarity with the system interfaces and lack of electronic full-text (Chen, 2011).

Dinkelman and Stacy-Bates (2007) analyzed the statistics of member libraries of Association of Research Libraries (ARL) and found that 56% of libraries provided exclusive e-book catalogs. Their study also suggested that libraries should build one-stop e-book catalogs. Although university libraries have been building up integrated/federated search systems or discovery systems in recent years, these systems are still based on traditional functions of library catalogs, and have a distance from commercial e-book catalogs. E-books have different features from printed books. When users search in e-book catalogs, the only clue to evaluate whether the searched ones are appropriate or required is from catalog information or text, therefore internet bookstores and e-book stores provide various catalog information and value-added functions, such as abstracts, full-text preview and relevant recommendations, while e-book catalogs of university libraries still provide only basic Machine-Readable Cataloging (MARC) information.

Catalogs are the major bridge between users and library collections. In an era that e-books have become the major library collection format, libraries have to address important issues, including whether libraries should have exclusive e-book catalogs, what features should these e-book catalogs have, and whether functions of platforms used by internet bookstore or e-book store could apply to university library catalogs?

Research Goals and Methods

1. Research questions

Catalogs of internet bookstores have a more comprehensive set of information than university library catalogs, containing book covers, abstracts, content outlines, full-text preview and image browsing. Catalogs of internet bookstores also have a more diverse set of functions than university library catalogs, such as virtual bookshelves, social sharing, cross-selling, and append services. Some issues involve applying commercial e-book catalogs to university library catalogs, including: whether those content and functions could be

preferred or found useful by university library users? Whether university library users suggest incorporating these functions into university libraries' catalogs and interfaces? Based on those considerations mentioned above, the research questions of this study are listed below.

- (1) How do library users search and acquire e-books in university libraries?
- (2) What are the preferences of library users regarding advanced bibliographical information, such as abstracts and full-text preview?
- (3) What is the current status of library users using the social sharing and marketing functions provided by e-book catalogs?
- (4) What are library users' views of university libraries building exclusive e-book catalogs, and what are their demands for functions of these catalogs?

2. Research method

Six search tasks are designed to investigate the research questions mentioned above. Four catalogs are selected to be searched, including two commercial e-book catalogs and two university library catalogs, from both domestic (Taiwan) and overseas institutions. Graduate students are recruited to participate in search tasks, and are interviewed for their views toward catalog content and functions.

3. Subjects in the study

- (1) library users as participants

Based on the reading habit surveys by Chen (2011) and Lin (2010), it is found that graduate students tend to use e-books more. The pilot study of this research also reveals that undergraduate students have a lower frequency of using library resources, and even a lesser frequency of using English e-book catalogs. Therefore in this study, graduate students are set as the major group of study subjects. Graduate students of National Taiwan Normal University (NTNU) who frequently use internet e-book platforms and the physical NTNU library (both are chosen as the studied library collection catalogs in this study) are recruited to participate. Participants engage in assigned search tasks and are then interviewed. With the increasing number of participants, a general consensus has gradually formed, indicating a status of information saturation, and then the recruitment of participants is stopped, with a total of 15 graduate-student participants.

- (2) Studied collection catalogs and e-book platforms

The internationally largest online bookstore Amazon.com is chosen as the studied overseas commercial e-book platform, and HyRead eBooks developed by Hyweb Technology in Taiwan is selected as the domestic commercial e-book platform. DPLA StackLife launched by Harvard Library (2013) is chosen as the studied overseas library e-book catalog, because its new catalog designed from concepts of visualized interfaces is appropriate for investigating the research questions of this study. The studied domestic library catalog is the one used in

National Taiwan Normal University Library that takes charge of Taiwan Academic E-Book Consortium (TAEBC).

4. Search tasks and interview questions

For the design of e-book catalogs of university libraries, we need to understand users' behaviors of searching e-books and their needs when using catalogs. In this study, users of academic libraries are asked to complete six kinds of search tasks on e-book catalogs developed by two academic libraries and two commercial companies. These users are observed for their searching behaviors and interviewed by the researchers of this study. Based on observations and interviews, we the researchers offer conclusions and suggestions on four aspects, including "current status of search and acquisition of e-books", "demands for advanced bibliographic information", "view of social sharing and marketing modes", and "demands and recommendations for functions of library e-book catalogs".

Research Findings

The results of this study reveal findings below.

1. The current status of library users' search and acquisition of e-books

(1) Participants report that library catalogs are their major source of receiving information about e-books; however, most users use Google search engine when they actually search online.

(2) Participants report that it is challenging to find e-books in library catalogs, which have different interfaces from the ones offered by commercial e-book vendors, and they have difficulties adjusting between the two.

(3) Participants report that they are not satisfied with the search results because the assigned e-books are not shown in the search systems, and they do not have much trust in the search systems.

2. Preferences for advanced bibliographical information

(1) Participants report that the most preferred bibliographical information is abstracts, but in fact they use more frequently the full-text preview function.

(2) Participants consider the basic requirement is for libraries to provide abstracts, and better with full-text preview.

3. Usage of social sharing and marketing modes

(1) Participants would refer to the functions of star ratings, social sharing and relevant recommendation, but they normally do not participate in rating/reviewing or social sharing.

(2) Participants consider the relevant recommendations (that is, Customers Who Bought This Also Bought) is the most helpful in assisting users in browsing relevant books, so they also suggest university libraries to provide

the recommendation function indicating “Patrons Who Checked Out This Also Checked Out” for helping library users choose books.

4.Demands for functions in library e-book catalogs

(1) Most participants approve for the idea that university libraries should have exclusive e-book catalogs and search systems, for helping patrons search e-books at a rapid speed.

(2) Participants prefer the search results presented in outlined format, and they also prefer the function of categorizing search results.

(3) Book cover is the most decisive factor the influences users’ willingness to go on browsing, so the cover design, page layout, color schemes and title presentation should be well-considered to catch users’ eyes.

Suggestions

Based on the results of this study, suggestions are made below.

1.University libraries should have exclusive e-book catalog systems and platforms

Exclusive e-book catalogs could help library users search e-books rapidly, and one-stop platform could save some trouble for library users from wandering along a complicated search path.

2.Search results of e-book catalogs should be categorized and presented in outlines or bullet points, with images of book covers shown

Search results should be shown in outline format and with images of book covers, for enhancing users’ willingness to go on clicking and browsing. The categorization function could help users rapidly filter search results. It is suggested that categories for filtering should include languages (both simple Chinese and traditional Chinese), publication year, subjects/themes, and publishing institutions.

3.University should use marketing modes, such as Relevant Recommendation or Book Ranking, to promote uses of e-book collections

Most library users have been familiar with the relevant recommendation (ex. Customers Who Bought This Also Bought) provided by commercial e-book stores, so university libraries’ e-book catalogs could also include this function to help users know about relevant books. In addition, book rankings in different subject categories could also help users have a quick understanding of classic book collections in each category, and acquire desired e-books at one click.

4.Suggestions for future studies

Participants in this study are graduate students in five colleges of an university, including Liberal Arts, Technology and Engineering, International and Social Sciences, Education, and Science. However, the limited number of

participants from each college could not reveal differences among colleges. It is suggested that other research methods could be used for future studies, and the number of participants from each college should be increased to investigate whether students from different academic fields have different needs or demands for e-book catalogs.

ROMANIZED & TRANSLATED REFERENCE FOR ORIGINAL TEXT

- 何頓 (2012)。我們是否滿足學生的研究需求？2012 臺灣高校電子書使用習慣調查。檢索自 https://concert.stpi.narl.org.tw/uploads/schedule_file/speaker_file/file/142/D2-4_ProQuest.pdf【He, Dun (2012). Women shifou manzu xuesheng de yanjiu xuqiu? 2012 Taiwan gaoxiao dianzishu shiyong xiguan diaocha. Retrieved from https://concert.stpi.narl.org.tw/uploads/schedule_file/speaker_file/file/142/D2-4_ProQuest.pdf (in Chinese)】
- 林奇伯 (2010 年 10 月)。台灣數位閱讀大調查，閱讀革命來臨！23.2% 優先選擇電子書。遠見雜誌，292。檢索自 http://www.gvm.com.tw/Boardcontent_16715.html【Lin, Chi-Po (2010, October). Taiwan shuwei yuedu da diaocha, yuedu geming lailin! 23.2% youxian xuanze dianzishu. *Global Views Monthly*, 292. Retrieved from http://www.gvm.com.tw/Boardcontent_16715.html (in Chinese)】
- 教育部統計處 (2015)。大專校院圖書館統計。檢索自 <http://data.gov.tw/node/6288>【Department of Statistics, Ministry of Education. (2015). Dazhuan xiaoyuan tushuguan tongji. Retrieved from <http://data.gov.tw/node/6288> (in Chinese)】
- 陳昭珍 (2014)。由供應鏈提供的電子書書目紀錄品質與維護問題之探討。教育資料與圖書館學，51(3)，391-410。doi:10.6120/JoEMLS.2014.513/0616.RS.AM【Chen, Chao-Chen (2014). Investigating the quality and maintenance issues of bibliographic records provided by the e-book supply chain: Using the operation of the Taiwan academic e-book & database consortium as an example. *Journal of Educational Media & Library Sciences*, 51(3), 391-410. doi:10.6120/JoEMLS.2014.513/0616.RS.AM (in Chinese)】
- 陳昭珍、謝文真、詹麗萍、陳雪華 (2011)。台灣地區大學圖書館電子書使用現況調查。數字圖書館論壇，84，29-40。doi:10.3772/j.issn.1673-2286.201.05.004【Chen, Chao-Chen, Hsieh, Wen-Jen, Chen, Li-Ping, & Chen, Hsueh-Hua (2011). A survey of e-book usage among university library patrons in Taiwan. *Digital Library Forum*, 84, 29-40. doi:10.3772/j.issn.1673-2286.201.05.004 (in Chinese)】
- Boog, J. (2012). eBook revenues top hardcover [Web log post]. Retrieved from <http://www.adweek.com/galleycat/ebooks-top-hardcover-revenues-in-q1/54094>
- Dinkelman, A., & Stacy-Bates, K. (2007). Accessing e-books through academic library web Sites. *College & Research Libraries*, 68(1), 45-58. doi:10.5860/crl.68.1.45
- Dickson, A., & Holley, R. P. (2010). Social networking in academic libraries: The possibilities and the concerns. *New Library World*, 111(11/12), 468-479. doi:10.1108/03074801011094840
- Finley, W. E. (2013). Using personal selling techniques in embedded librarianship. *Journal of Business & Finance Librarianship*, 18(4), 279-292. doi:10.1080/08963568.2013.825111
- IFLA Study Group. (1998). *Functional requirements for bibliographic records: Final report*

- (UBCIM publications; New series, Vol. 19). München, German: K. G. Saur.
- Harker, K., & Sassen, C. (2015). Enhancing access to E-books. *Evidence Based Library and Information Practice*, 10(1), 5-19.
- Harvard Library. (2013). StackLife: A unique way to browse, read digital public library of America books. Retrieved from <http://library.harvard.edu/stacklife-unique-way-browse-read-digital-public-library-america-books>
- Lynema, E., Lown, C., & Woodbury, D. (2012). Virtual browse: Designing user-oriented services for discovery of related resources. *Library Trends*, 61(1), 218-233. doi:10.1353/lib.2012.0033
- McKay, D., Hinze, A., Heese, R., Vanderschantz, N., Timpany, C., & Cunningham, S. J. (2012). An exploration of ebook selection behavior in academic library collections. In P. Zaphiris, G. Buchanan, E. Rasmussen, & F. Loizides (Eds.), *Theory and practice of digital libraries: Second International Conference, TPDL 2012, Paphos, Cyprus, September 23-27, 2012. Proceedings* (pp. 13-24). Berlin, German: Springer. doi:10.1007/978-3-642-33290-6_2
- Ramdeen, S., & Hemminger, B. M. (2012). A tale of two interfaces: How facets affect the library catalog search. *Journal of the American Society for Information Science and Technology*, 63(4), 702-715. doi:10.1002/asi.21689
- Yu, X., & Sun, S. (2010). Research on personalized recommendation system based on web mining. In *2010 International Conference on E-Business and E-Government (ICEE)* (pp. 346-349). Guangzhou, China: IEEE. doi:10.1109/ICEE.2010.95



A Study of the Relationship among Leader-member Exchange, Creative Self-efficacy and Innovative Behavior of the University Librarians

Yu-Ping Peng

Abstract

Turbulent changes of the environment have provided huge challenges for advancement of university librarians. University library leaders require librarians to exhibit higher innovation behaviors to keep up with rapidly changing environments. Drawing from two theoretical perspectives in the innovation literature, the efficiency-oriented perspective and the social-political perspective, the study is to examine how a university librarian's innovative behavior is affected by leader-member exchange (LMX) and creative self-efficacy. The research prepares to conduct a questionnaire survey of university librarians. Based on structural equation modeling of data, this study is to examine the relationships between the above antecedents and moderator of innovative behavior. The finding of this study identified and tested the effects of antecedents and moderator. Results indicated that LMX and creative self-efficacy are positively related to innovative behavior. Findings also indicated that creative self-efficacy was a significant moderator of the relationship between LMX and innovative behavior. Finally, the study provides management recommendations for the librarianship profession.

Keywords: Leader-member exchange, Creative self-efficacy, Innovative behavior, Innovation, University librarian

SUMMARY

Introduction

Innovation is the key factor contributing to the performance and survival of an organization (Yuan and Woodman, 2010). In recent years, studies on the innovation of oversea university libraries have increased (e.g., Brundy, 2015; Jantz, 2012a, 2012b; Sanches, 2015), but the number is still relatively low compared to other issues in library studies and relevant academic fields (Jantz, 2012b). Innovation could be discussed at two levels—individual innovative behavior on and organizational innovation (Mumford, 2000; Woodman, Sawyer

and Griffin, 1993), but few studies have focused on individual innovative behavior on of university librarians. To fill this research gap, in this study. The research focus extends from previous organizational level of innovation to individual level of innovative behavior of university librarians, for enhancing the comprehensiveness of innovation studies on university libraries.

In recent years, studies on antecedents of encouraging individual innovative behaviors have obtained lots of researchers' attention (Perry-Smith & Shalley, 2003; Yu, Yu, & Yu, 2013). Innovative behaviors are influenced by individuals' cognitive capabilities, characteristics, knowledge and intrinsic motivation (Amabile, 1988; Barron and Harrington, 1981), as well as contextual factors (Noefer, Stegmaier, Molter, & Sonntag, 2009; Woodman et al., 1993). Most previous innovation studies have based their theoretical grounds on social-political factors and efficiency-oriented factors (Yuan and Woodmand, 2010). In terms of social-political factors, leaders have a great influence on members' performance and innovative capabilities (Wang, Fang, Qureshi, & Janssen, 2015), so is true in the information and library settings (Jantz, 2015; Leong & Anderson, 2012; Sanches, 2015). However, the leadership issue has rarely been investigated in the field of library and information studies, and it is urgent to have more studies to fill this research gap in innovation and leadership issues in libraries, for expanding the range of studies on library leadership and management. In terms of efficiency-oriented factors, creative self-efficacy is an extremely important antecedent variance that influences individual innovative behaviors (Tierney and Farmer, 2002, 2004, 2011). Previous studies indicate that self-efficacy is the key factor of influencing librarians' work creativity (Tella and Ayeni, 2006). Based on the findings mentioned above, the research goals of this study are listed below.

1. To investigate the relations between leader-member exchange (LMX) and innovative behaviors of university librarians.
2. To investigate creative self-efficacy and innovative behaviors of university librarians.
3. To investigate the moderating effect of creative self-efficacy on leader-member exchange and innovative behaviors of university librarians.

Literature Review and Hypothesis Building

1. Innovative behaviors

Kleysen and Street (2001) define innovative behaviors as producing, channeling and applying useful innovations into any level of individual actions in an organization, and categorize individual innovative behaviors into five dimensions, including five dimensions: opportunity exploration, generativity, formative investigation, championing, and application.

2. Leader-member exchange (LMX)

Graen and Cashman (1975) developed the Leader-Member Exchange theories, advocating that there are reciprocal interactive relationships between a leader and every subordinate, and the quality of each relationship varies with different characteristics of individuals. Jantz (2012a) mentioned that all members of an organization should feel being authorized to actively offer innovative ideas, and when members are initiating and pursuing innovative ideas, they need organizational and psychological supports from leaders. When leaders have been supportive, members are more like to excel their creativity and performance (Shalley and Gilson, 2004). Accordingly, Hypothesis 1 was formed: when there is a higher quality of leader-member exchange perceived by university librarians, they would perform higher level of innovative behaviors.

3. Creative self-efficacy

Tella and Ayeni (2006) indicate that self-efficacy is the factor influencing librarians' work creativity. Members with higher creative self-efficacy would activate their intrinsic motivation, cognitive resources and behavioral processes, for responding to the situational needs. They would spend more time on innovative cognitive processes of identifying problems and incorporating concepts, and put more efforts in seeking methods for realizing ideas. When members with higher creative self-efficacy encounter obstacles, they could execute specific tasks successfully and achieve goals of organizational innovation, performing higher level of innovative behaviors (Begetto, 2006; Gong, Huang and Farh, 2009; Hsu et al., 2011). Thus, Hypothesis 2 was formed: When there is a higher creative self-efficacy of university librarians, they would perform higher level of innovative behaviors.

4. The moderating effect of creative self-efficacy on the relationship of leader-member exchange and innovative behaviors

Most innovative behaviors are influenced by intrinsic motivation (Amabile, 1988). When there is a higher quality of leader-member exchange between a leader and the subordinates, the leader would expect the subordinates to execute non-routine tasks, and thus would give the subordinates more encouragement, support and care (Graen and Cashman, 1975; Oldham and Cummings, 1996); this could make the subordinates more willing to undertake such additional work tasks and try out innovative behaviors. Subordinates also need to feel capable of fulfilling their leader's expectations and requirements, and through the intrinsic motivation of creative self-efficacy they feel capable of being innovative and thus performing more innovative behaviors. Accordingly, Hypothesis 3 was formed: there is a moderating effect of creative self-efficacy on the relationship of perceived leader-member exchange and innovative behaviors among university librarians.

Research Methodology

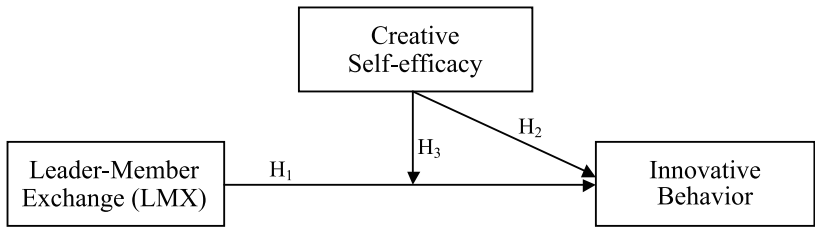


Figure 1 Conceptual Framework

Measurement variables of this study include leader-member exchange (LMX), creative self-efficacy, and demographic variables (such as shown in Figure 1). Methods of data analysis include descriptive statistics, reliability and validity analysis, and structural equation modeling (SEM).

Results and Analysis

Most of university librarians fall into this description—female aged between 31-40 or 41-50, married, educated with a college or bachelor degree. The first stage of data analysis is to verify the reliability, validity and goodness-of-fit of the measurement model. The second stage involves verifying hypotheses with structural equation modeling. The results show that there is a satisfying construct reliability and convergent validity of the measuring scale. From the tests of NCI(χ^2/df), NFI, CFI, it reveals an acceptable goodness-of-fit of constructs in the measurement model. The goodness-of-fit of the structural modeling is also within an acceptable range. H1, H2, and H3 of this study are all supported by the analysis results. Results are as shown in Figure 2, 3 and 4.

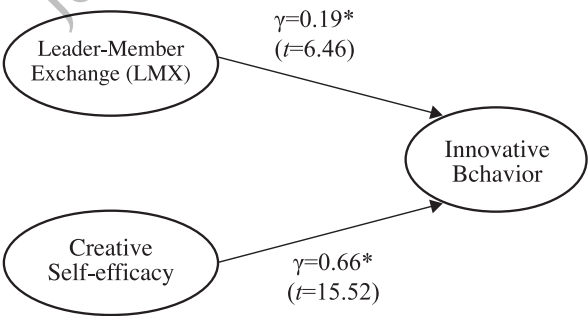


Figure 2 Structural Model—The Major Effect

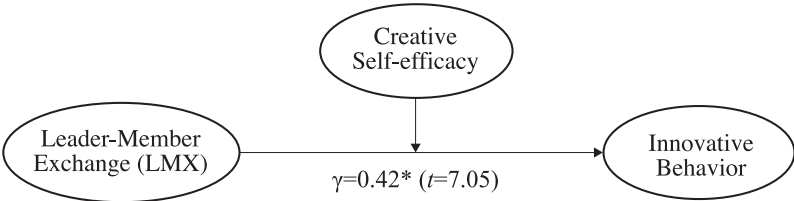


Figure 3 Structural Model—High Group Moderating Effect

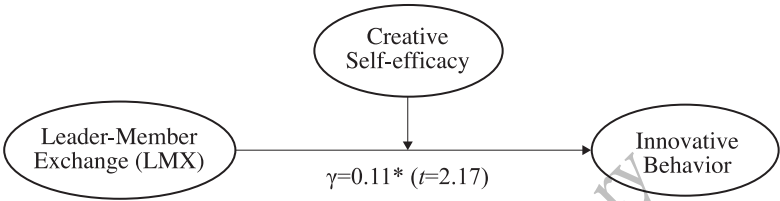


Figure 4 Structural Model— Low Group Moderating Effect

Conclusion and Suggestions

The results of H1 and H2 reveal that both leader-member exchange and creative self-efficacy have positive influences on innovative behaviors of university librarians. The result of H3 shows that creative self-efficacy has a significantly positive moderating effect on leader-member exchange and innovative behaviors, indicating that creative self-efficacy could strengthen the relationship between leader-member exchange and innovative behaviors, and this relationship varies with the levels of university librarians’ perceived creative self-efficacy.

It is suggested that the management level of university libraries should strengthen leader-member exchange, enhance librarians’ creative self-efficacy, and encourage librarians to perform innovative behaviors. It is also suggested that university librarians should seek self-efficacy training and participate in educational training sessions and seminars. It is suggested that departments of information and library science should attend to instructional strategies and practices for enhancing students’ creativity and innovation. Future studies are advised to investigate other antecedents and moderating variables that might influence librarians’ innovative behaviors, and to verify the application of this study’s research model in public libraries.

Acknowledgement

This study is partial research results of a National Science Council Grant Proposal (MOST 103-2410-H-030 -068 -). Support from NSC and participants of this study are appreciated.

ROMANIZED & TRANSLATED REFERENCE FOR ORIGINAL TEXT

- 何紹華、王培林(2008)。「服務科學」背景下圖書情報機構的服務創新。教育資料與圖書館學, 45(3), 357-370。【He, Shaohua, & Wang, Peilin (2008). applying "service science" to service innovation in library and information institutions. *Journal of Educational Media & Library Sciences*, 45(3), 357-370. (in Chinese)】
- 呂春嬌(2003)。大學圖書館館長領導風格之質性研究。師大學報：人文與社會科學類, 48(1), 39-54。doi:10.6210/JNTNULL.2003.48(1).03【Lu, Chung-Chiao (2003). The study of the director's leadership style in the university library. *Journal of Taiwan Normal University. Humanities & Social Science*, 48(1), 39-54. doi:10.6210/JNTNULL.2003.48(1).03 (in Chinese)】
- 呂春嬌、陳雪華、謝雨生(2009)。大學圖書館中階主管領導效能之研究。國家圖書館館刊, 98(1), 23-54。【Lu, Chung-Chiao, Chen, Hsueh-Hua, & Hsieh, Yeu-Sheng (2009). The leadership effectiveness of middle managers in the university libraries. *National Central Library Bulletin*, 98(1), 23-54. (in Chinese)】
- 呂春嬌、謝雨生、陳雪華(2009)。大學圖書館中階主管女性領導特質研究。圖書與資訊學刊, 1(4), 62-86。doi:10.6575/JoLIS.2009.71.04【Lu, Chung-Chiao, Hsieh, Yeu-Sheng, & Chen, Hsueh-Hua (2009). The feminine leadership characteristics of middle managers in the university libraries. *Bulletin of Library and Information Science*, 1(4), 62-86. doi:10.6575/JoLIS.2009.71.04 (in Chinese)】
- 呂春嬌、謝順宏(2009)。大學圖書館的創新管理與服務：以國立臺灣師範大學圖書館為例。臺灣圖書館管理季刊, 5(1), 39-50。doi:10.6575/JoLIS.2005.55.01【Lu, Chung-Chiao, & Sie, Shun-Hong (2009). Innovation managements and services for the library of university: Using national taiwan normal university experience. *Interdisciplinary Journal of Taiwan Library Administration*, 5(1), 39-50. doi:10.6575/JoLIS.2005.55.01 (in Chinese)】
- 胡歐蘭(2005)。圖書館團隊領導績效之探討。圖書與資訊學刊, 55, 1-8。【Chou, Nancy Oulan (2005). A study of the achievements in the library team leadership. *Journal of Librarianship and Information Studies*, 55, 1-8. (in Chinese)】
- 張嘉彬(2006)。大學圖書館組織創新之研究。大學圖書館, 10(1), 30-51。【Chang, Chia-Bin (2006). A study of organizational innovation in the university library. *University Library Quarterly*, 10(1), 30-51. (in Chinese)】
- 張慧銖(2009)。圖書館管理：領導與溝通。國立成功大學圖書館館刊, 18, 1-25。【Chang, Huei-Chu (2009). Tushuguan guanli: Lingdao yu goutong. *National Cheng Kung University Library Journal*, 18, 1-25. (in Chinese)】
- 陳書梅(2001)。圖書館組織之創新行為。圖書資訊學刊, 16, 145-159。doi:10.6182/jlis.2001.16.145【Sheih, Chen Su-May (2001). The adoption of innovations in library organizations. *Journal of Library and Information Studies*, 16, 145-159. doi:10.6182/jlis.2001.16.145 (in Chinese)】
- 陳書梅(2002)。大學圖書館館員對館長領導風格之認知研究。圖書資訊學刊, 17, 49-69。doi:10.6182/jlis.2002.17.049【Sheih, Chen Su-May (2002). The adoption of innovations in library organizations. *Journal of Library and Information Studies*, 17, 49-69. doi:10.6182/jlis.2002.17.049 (in Chinese)】

- 陳書梅 (2008)。臺灣地區大學圖書館中階主管領導風格之實證研究。圖書資訊學刊, 6(1/2), 29-56. doi:10.6182/jlis.2008.6(1.2).029【Sheih, Chen Su-May (2002). An empirical study of leadership style of middle managers in Taiwan's university libraries. *Journal of Library and Information Studies*, 6(1/2), 29-56. doi:10.6182/jlis.2008.6(1.2).029 (in Chinese)】
- 陳書梅 (2015)。大學圖書館組織創新行為調查研究。教育資料與圖書館學, 52(3), 231-267. doi:10.6120/JoEMLS.2015.523/0018.RS.AM【Sheih, Chen Su-May (2015). Organizational innovation behavior in taiwan's university libraries: a quantitative study. *Journal of Educational Media & Library Sciences*, 52(3), 231-267. doi:10.6120/JoEMLS.2015.523/0018.RS.AM (in Chinese)】
- 陳雪華 (2012)。e-Research：學術圖書館創新服務。台北市：國立臺灣大學圖書館【Chen, Hsueh-Hua (2012). *e-Research: Xueshu tushuguan chuangxin fuwu*. Taipei, Taiwan: National Taiwan University Library. (in Chinese)】
- 彭于萍 (2013)。大學圖書館館員領導者與成員交換關係、LMX 及組織公民行為之關係模式探析。教育資料與圖書館學, 50(4), 491-525. doi:10.6120/JoEMLS.2013.504/0557.RS.AM【Peng, Yu-Ping (2013). A study of the relationship among leader-member exchange, job autonomy and organizational citizenship behavior of the university librarians in Taiwan. *Journal of Educational Media & Library Sciences*, 50(4), 491-525. doi:10.6120/JoEMLS.2013.504/0557.RS.AM (in Chinese)】
- 彭台光、高月慈、林鉦琴 (2006)。管理研究中的共同方法變異：問題本質、影響、測試和補救。管理學報, 23(1), 77-98. doi:10.6504/JOM.2006.23.01.05【Peng, T. K., Kao, Y. T., & Lin, Cheng-Chen (2006). Common method variance in management research: Its nature, effects, detection, and remedies. *Journal of Management*, 23(1), 77-98. doi:10.6504/JOM.2006.23.01.05 (in Chinese)】
- 蔡萬助 (2008)。圖書館組織創新管理流程之研究。圖書與資訊學刊, 66, 53-73. doi:10.6575/JoLIS.2008.66.04【Tsai, Wan-Chu. (2008). Research on innovative management process of library organization. *Journal of Librarianship and Information Studies*, 66, 53-73. (in Chinese)】
- Agarwal, S., Erramilli, M. K., & Dev, C. S. (2003). Market orientation and performance in service firm: Role of innovation. *Journal of Services Marketing*, 17(1), 68-82. doi:10.1108/08876040310461282
- Allner, I. (2008). Managerial leadership in academic libraries: Roadblocks to success. *Library Administration & Management*, 22(2), 69-78.
- Amabile, T. M. (1988). A model of creativity and innovation in organization. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 10, pp. 123-167). Greenwich, CT: JAI Press.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423. doi:10.1037/0033-2909.103.3.411
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation model. *Journal of the Academy of Marketing Science*, 16(1), 74-94. doi:10.1007/BF02723327
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.

- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122-147. doi:10.1037/0003-066X.37.2.122
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44(9), 1175-1184. doi:10.1037/0003-066X.44.9.1175
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50(2), 248-287. doi:10.1016/0749-5978(91)90022-L
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman.
- Bare, M., Oldham, G. R., Jacobsohn, G. C., & Hollingshead, A. B. (2008). The personality composition of teams and creativity: The moderating role of team creative confidence. *Journal of Creative Behavior*, 42(4), 255-282.
- Barron, F., & Harrington, D. M. (1981). Creativity, intelligence, and personality. *Annual Review of Psychology*, 32, 439-476. doi:10.1146/annurev.ps.32.020181.002255
- Basu, R., & Green, S. G. (1997). Leader-member exchange and transformational leadership: An empirical examination of innovative behaviors in leader-member dyads. *Journal of Applied Social Psychology*, 27(6), 477-499. doi:10.1146/annurev.ps.32.020181.002255
- Beghetto, R. A. (2006). Creative self-efficacy: Correlates in middle and secondary students. *Creativity Research Journal*, 18(4), 447-457. doi:10.1207/s15326934crj1804_4
- Bell, S. J., & Menguc, B. (2002). The employee-organization relationship, organizational citizenship behaviors, and superior service quality. *Journal of Retailing*, 78(2), 131-146. doi:10.1016/S0022-4359(02)00069-6
- Bollen, K. A., & Long, J. S. (1993). *Testing structural equation models*. Newbury Park, CA: Sage.
- Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods and Research*, 21(2), 230-258. doi:10.1177/0049124192021002005
- Brundy, C. (2015). Academic libraries and innovation: A literature review. *Journal of Library Innovation*, 6(1), 22-39.
- Bryson, J. (1990). *Effective library and information centre management*. Aldershot, England: Gower.
- Burpitt, W. J., & Bigoness, W. J. (1997). Leadership and innovation among teams. *Small Group Research*, 28(3), 414-423. doi:10.1177/1046496497283005
- Castiglione, J. (2008). Facilitating employee creativity in the library environment: An important managerial concern for library administrators. *Library Management*, 29(3), 159-172. doi:10.1108/01435120810855296
- Chandler, G. N., Keller, C., & Lyon, D. W. (2000). Unraveling the determinants and consequences of an innovation-supportive organizational culture. *Entrepreneurship Theory and Practice*, 25(1), 59-76.
- Chang, H.-T., Hsu, H.-M., Liou, J.-W., & Tsai, C.-T. (2013). Psychological contracts and innovative behavior: A moderated path analysis of work engagement and job resources. *Journal of Applied Social Psychology*, 43(10), 2120-2135. doi:10.1111/jasp.12165
- Dougherty, D., & Heller, T. (1994). The illegitimacy of successful product innovation in established firms. *Organization Science*, 5(2), 200-218. doi:10.1287/orsc.5.2.200
- Drazin, R., Glynn, M. A., & Kazanjian, R. K. (1999). Multilevel theorizing about creativity in organizations: A sensemaking perspective. *Academy of Management Review*, 24, 286-307. doi:10.5465/AMR.1999.1893937

- Fisk, G. M., & Friesen, J. P. (2012). Perceptions of leader emotion regulation and LMX as predictors of followers' job satisfaction and organizational citizenship behaviors. *The Leadership Quarterly*, 23(1), 1-12. doi:10.1016/j.leaqua.2011.11.001
- Foote, C. (2013). Innobrarians: Librarians as innovators. *Internet@Schools*, 20(1), 26-27.
- Ford, C. (1996). A theory of individual creative action in multiple social domains. *Academy of Management Review*, 21(4), 1112-1142. doi:10.5465/AMR.1996.9704071865
- Germano, M. A. (2011). Library leadership that creates and sustains innovation. *Library Leadership & Management*, 25(3), 1-14.
- Gerstner, C. R., & Day, D. V. (1997). Meta-analytic review of leader-member exchange theory: Correlates and construct issues. *Journal of Applied Psychology*, 82(6), 827-844. doi:10.1037/0021-9010.82.6.827
- Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, 17(2), 183-211. doi:10.5465/AMR.1992.4279530
- Gong, Y., Huang, J.-C., & Farh, J.-L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal*, 52(4), 765-778. doi:10.5465/AMJ.2009.43670890
- Graen, G. B., & Cashman, J. (1975). Role-making model of leadership in formal organizations: A development approach. In J. G. Hunt & L. L. Larson (Eds.), *Leadership frontiers* (pp. 143-165). Kent, OH: Kent State University Press.
- Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level, multi-domain perspective. *Leadership Quarterly*, 6(2), 219-247. doi:10.1016/1048-9843(95)90036-5
- Graen, G., Novak, M. A., & Sommerkamp, P. (1982). The effects of leader-member exchange and job design on production and satisfaction: Testing adual attachment model. *Organizational Behavior and Human performance*, 30(1), 109-131. doi:10.1016/0030-5073(82)90236-7
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis* (7th ed.). London, UK: Prentice Hall.
- Han, J. K., Kim, N., & Srivastava, R. K. (1998). Market orientation and organizational performance: Is innovation a missing link? *Journal of Marketing*, 62(4), 30-52. doi:10.2307/1252285
- Hernon, P., & Schwartz, C. (2008). Leadership: Developing a research agenda for academic libraries. *Library & Information Science Research*, 30(4), 243-249. doi:10.1016/j.lisr.2008.08.001
- Hsu, M. L. A., Hou, S.-T., & Fan, H.-L. (2011). Creative self-efficacy and innovative behavior in a service setting: Optimism as a moderator. *The Journal of Creative Behavior*, 45(4), 258-272. doi:10.1002/j.2162-6057.2011.tb01430.x
- Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A*

- Multidisciplinary Journal*, 6(1), 1-55. doi:10.1080/10705519909540118
- Hughes, C. (1989). Librarians as innovators. *Journal of Library Administration*, 10(2/3), 117-129. doi:10.1300/J111v10n02_12
- Jaccard, J., & Wan, C. K. (1996). *LISREL approaches to interaction effects in multiple regression*. Thousand Oaks, CA: Sage.
- Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, 73(3), 287-302. doi:10.1348/096317900167038
- Janssen, O., van de Vliert, E., & West, M. (2004). The bright and dark sides of individual and group innovation: A special issue introduction. *Journal of Organizational Behavior*, 25(2), 129-145. doi:10.1002/job.242
- Jantz, R. C. (2012a). A framework for studying organizational innovation in research libraries. *College & Research Libraries*, 73(6), 525-541. doi:10.5860/crl-302
- Jantz, R. C. (2012b). Innovation in academic libraries: An analysis of university librarians' perspectives. *Library & Information Science Research*, 34(1), 3-12. doi:10.1016/j.lisr.2011.07.008
- Jantz, R. C. (2015). The determinants of organizational innovation: An interpretation and implications for research libraries. *College & Research Libraries*, 76(4), 512-536. doi:10.5860/crl.76.4.512
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Chicago, IL: Scientific Software.
- Judge, T. A., Piccolo, R. F., & Ilies, R. (2004). The forgotten ones? The validity of consideration and initiating structure in leadership research. *Journal of Applied Psychology*, 89(1), 36-51. doi:10.1037/0021-9010.89.1.36
- Jurowski, C., & Gursoy, D. (2004). Distance effects on residents' attitudes toward tourism. *Annals of Tourism Research*, 31(2), 296-312. doi:10.1016/j.annals.2003.12.005
- Kanter, R. M. (1996). When a thousand flowers bloom: Structural, collective, and social conditions for innovation in organizations. In P. S. Myers (Ed.), *Research in organizational behavior* (pp. 93-131). Boston, MA: Butterworth-Heinemann. doi:10.1016/B978-0-7506-9749-1.50010-7
- King, N., & Anderson, N. (1990). Innovation in working groups. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work* (pp. 81-100). Chichester, England: Wiley.
- Kleysen, R. F., & Street, C. T. (2001). Toward a multi-dimensional measure of individual innovative behavior. *Journal of Intellectual Capital*, 2(3), 284-296. doi:10.1108/EUM0000000005660
- Leong, J., & Anderson, C. (2012). Fostering innovation through cultural change. *Library Management*, 33(8/9), 490-497. doi:10.1108/01435121211279858
- Li, C.-H., & Wu, J.-J. (2011). The structural relationships between optimism and innovative behavior: Understanding potential antecedents and mediating effects. *Creativity Research Journal*, 23(2), 119-128. doi:10.1080/10400419.2011.571184
- Lovelock, C. C. (1983). Classifying service to gain strategic marketing insights. *Journal of Marketing*, 47(3), 9-20. doi:10.2307/1251193

- Markham, S. E., Yammarino, F. J., Murry, W. D., & Palanski, M. E. (2010). Leader-member exchange, shared values, and performance: Agreement and levels of analysis do matter. *The Leadership Quarterly*, 21(3), 469-480. doi:10.1016/j.leaqua.2010.03.010
- Marsh, H. W., & Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: First and higher order factor models and their invariance across groups. *Psychological Bulletin*, 97(3), 562-582. doi:10.1037//0033-2909.97.3.562
- Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin*, 103(3), 391-410. doi:10.1037/0033-2909.103.3.391
- McGrath, K. G. (2015). School libraries & innovation. *Knowledge Quest*, 43(3), 54-61.
- Mirvis, P. H., & Hackett, E. J. (1983). Work and work force characteristics in the nonprofit sector. *Monthly Labor Review*, 106(4), 3-12.
- Mumford, M. D. (2000). Managing creative people: Strategies and tactics for innovation. *Human Resource Management Review*, 10(3), 313-351. doi:10.1016/S1053-4822(99)00043-1
- Noefer, K., Stegmaier, R., Molter, B., & Sonntag, K. (2009). A great many things to do and not a minute to spare: Can feedback from supervisors moderate the relationship between skill variety, time pressure, and employees' innovative behavior? *Creativity Research Journal*, 21(4), 384-393. doi:10.1080/10400410903297964
- Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, 39(3), 607-634. doi:10.2307/256657
- Perry-Smith, J. E., & Shalley, C. E. (2003). The social side of creativity: A static and dynamic social network perspective. *Academy of Management Review*, 28(1), 89-106. doi:10.5465/AMR.2003.8925236
- Pieterse, A. N., van Knippenberg, D., Schippers, M., & Stam, D. (2010). Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. *Journal of Organizational Behavior*, 31(4), 609-623. doi:10.1002/job.650
- Riggs, D. E. (1999). Library leadership: Observations and questions. *College & Research Libraries*, 60(1), 6-8. doi:10.5860/crl.60.1.6
- Riggs, D. E. (2001). The crisis and opportunities in library leadership. *Journal of Library Administration*, 32(3/4), 5-17. doi:10.1300/J111v32n03_02
- Rockstuhl, T., Dulebohn, J. H., Ang, S., & Shore, L. M. (2012). Leader-member exchange (LMX) and culture: A meta-analysis of correlates of LMX across 23 countries. *Journal of Applied Psychology*, 97(6), 1097-1130. doi:10.1037/a0029978
- Rowley, J. (2011). Should your library have an innovation strategy? *Library Management*, 32(4/5), 251-265. doi:10.1108/01435121111132266
- Rubera, G., & Kirca, A. H. (2012). Firm innovativeness and its performance outcomes: A meta-analytic review and theoretical integration. *Journal of Marketing*, 76(3), 130-147. doi:10.1509/jm.10.0494
- Runco, M. A., & Sakamoto, S. O. (1999). Experimental studies of creativities. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 273-296). New York, NY: Cambridge University Press.
- Sanches, T. (2015). From tradition to innovation: Exploring administration practices in four

- portuguese university libraries. *Journal of Library Administration*, 55(5), 376-393. doi:10.1080/01930826.2015.1047273
- Sanders, K., Moorkamp, M., Torka, N., Groeneveld, S., & Groeneveld, C. (2010). How to support innovative behaviour? The role of LMX and satisfaction with HR practices. *Technology and Investment*, 1(1), 59-68. doi:10.4236/ti.2010.11007
- Schermully, C. C., Meyer, B., & Dämmer, L. (2013). Leader-member exchange and innovative behavior: The mediating role of psychological empowerment. *Journal of Personnel Psychology*, 12(3), 132-142. doi:10.1027/1866-5888/a000093
- Schriesheim, C. A., Castro, S. L., & Coglisier, C. C. (1999). Leader-member exchange (LMX) research: A comprehensive review of theory, measurement, and data-analytic practices. *The Leadership Quarterly*, 10(1), 63-113. doi:10.1016/S1048-9843(99)80009-5
- Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *The Academy of Management Journal*, 37(3), 580-607.
- Seal, R. A. (2011). Trends, issues, and innovation in academic library service: Introduction. *Journal of Library Administration*, 51(3), 255-258. doi:10.1080/01930826.2011.556953
- Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster and hinder creativity. *Leadership Quarterly*, 15(1), 33-53. doi:10.1016/j.leaqua.2003.12.004
- Tella, A., & Ayeeni, C. O. (2006). The impact of self-efficacy and prior computer experience on the creativity of new librarians in selected universities libraries in Southwest Nigeria. *Library Philosophy and Practice*, 8(2), 1-12.
- Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45(6), 1137-1148. doi:10.2307/3069429
- Tierney, P., & Farmer, S. M. (2004). The Pygmalion process and employee creativity. *Journal of Management*, 30(3), 413-432. doi:10.1016/j.jm.2002.12.001
- Tierney, P., & Farmer, S. M. (2011). Creative self-efficacy development and creative performance over time. *Journal of Applied Psychology*, 96(2), 277-293. doi:10.1037/a0020952
- Wang, X.-H. F., Fang, Y., Qureshi, I., & Janssen, O. (2015). Understanding employee innovative behavior: Integrating the social network and leader-member exchange perspectives. *Journal of Organizational Behavior*, 36(3), 403-430. doi:10.1002/job.1994
- Weiner, S. G. (2003). Leadership of academic libraries: A literature review. *Education Libraries*, 26(2), 5-18.
- West, M. A., & Anderson, N. R. (1996). Innovation in top management teams. *Journal of Applied Psychology*, 81(6), 680-693. doi:10.1037/0021-9010.81.6.680
- West, M. A. (2002). Sparkling fountains or stagnant ponds: An integrative model of innovation implementation in work groups. *Applied Psychology*, 51(3), 355-424. doi:10.1111/1464-0597.00951
- West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209-231). New York, NY: The Guilford Press.

- Willard, P. (1991). Innovation: Insights from the literature. *Journal of Librarianship and Information Science*, 23(4), 183-189. doi:10.1177/096100069102300403
- Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1993). Toward a theory of organizational creativity. *Academy of Management Review*, 18(2), 293-321. doi:10.5465/AMR.1993.3997517
- Yu, C., Yu, T.-F., & Yu, C.-C. (2013). Knowledge sharing, organizational climate, and innovative behavior: A cross-level analysis of effects. *Social Behavior and Personality*, 41(1), 143-156. doi:10.2224/sbp.2013.41.1.143
- Yuan, F., & Woodman, R. D. (2010). Innovative behavior in the workplace: The role of performance and image outcome expectations. *Academy of Management Journal*, 53(2), 323-342. doi:10.5465/AMJ.2010.49388995
- Zhou, J., & George, J. M. (2001). When job dissatisfaction leads to creativity: Encouraging the expression of voice. *The Academy of Management Journal*, 44(4), 682-696. doi:10.2307/3069410

JoEMLS English Summary

JoEMLS English Summary



The Construction of Metadata for Open Government Data in Taiwan

Li-Ling Ou^a Tung-Mou Yang^{b*}

Abstract

Taiwan government launched its official open data portal (data.gov.tw) in April 2013. However, one of the challenges of open government data is to help users understand and retrieve datasets. Particularly, this challenge results from the lack of appropriate metadata schema. Currently, there is very limited research focusing on metadata of open government data. Therefore, the purpose of this research is the construction of metadata schema for open government data in Taiwan, and several frameworks of metadata construction and related influential factors are also taken into consideration in this development process. There are four contributions in this research. First, metadata schemas of different countries, including the U.S., the British, and Canada, are analyzed and compared. Second, various steps and influential factors of metadata construction are discussed to form an integrated perspective guiding the research. Third, a specific metadata schema for open government data is proposed for Taiwan government. Lastly, practical implications are also discussed to provide insights to practitioners.

Keywords: Metadata, Open data, Open data platform, Public affairs, Open government

SUMMARY

Open government data has been an important trend in government administrations around the world. Particularly, with the trend of promoting open government data happening in the United States, the United Kingdom and Europe, the Taiwan government also launched its open data platform (data.gov.tw) in 2013 for the public to access released datasets of government agencies. From the perspective of open data users, one of the major practical concerns of using this open data platform is how to search and retrieve datasets efficiently. Accordingly, well-designed metadata framework of open data is important on open data platforms since users can rely on the metadata to obtain datasets in a faster and more accurate manner. However, there is still limited literature

^a Graduate Student, Department of Library and Information Science, National Taiwan University, Taipei, Taiwan

^b Assistant Professor, Department of Library and Information Science, National Taiwan University, Taipei, Taiwan

* To whom all correspondence should be addressed. E-mail: tmyang@ntu.edu.tw

addressing the development of metadata framework of open data, not to mention literature on using metadata to manage open government data. Therefore in this study, different frameworks of open data metadata of other countries and frameworks of e-Government metadata schemes are incorporated to build a set of metadata exclusively for open government data in Taiwan. The procedure and considerations of building this set of metadata could provide a valuable reference for government agencies of Taiwan when they engage in opening datasets to the public, and could act as the reference of the building of other types of metadata in the government context, as well as the promotion and retrieval of open data.

Based on the aforementioned concepts, in this study the researchers first review the literature on metadata's features and types, and categorize into seven major metadata types, including description, administration, usability, evaluation, preservation, structure and linkage. The categorization of these types is based on metadata's features, including descriptive resources, exploratory resources, management resources, resource exchange, preservation resources, and authority confirmation. The final result is a proposal of a ten-step procedure of creating metadata. The procedure can also be applied to the construction of open data metadata. Next, the study briefly reviews and discusses the current development of open data in other countries, including the United States, the United Kingdom, and Canada. The recent open data development in Taiwan is also reviewed and discussed. Specifically, the related frameworks of creating metadata in the aforementioned countries are studied and applied to develop an initial framework for creating open data metadata in Taiwan. Through the planning of building a metadata framework, it is expected to help users more easily search and obtain datasets for value-added and innovative usages.

The research design of this study is based on the first four steps of the ten-step procedure of metadata construction mentioned in the literature, including defining project goals, analyzing resource contexts and users, selecting or developing the metadata framework, and setting requirements for metadata. The last six steps of creating metadata involve actual system development and practices, which are not included in this study, but could be a reference for future system development. The overall research design of this study includes three parts—developing an initial framework, collecting interview data, and analyzing interview data.

1. Developing an initial framework

There are two stages of comparisons in this step. At the first stage, metadata frameworks used in other countries were compared, including Common Core Metadata Schema of the United States, Government of Canada Open Data Metadata Element Set, and the ones developed earlier by local governments in the

United States and Canada, such as Open Data Handbook Metadata of New York State, USA, Open Data Metadata Application Profile of Alberta Province, Canada, as well as E-Government Metadata Standard (E-GMS) of the United Kingdom. The five metadata frameworks were first compared and analyzed to generate an initial research framework. At the second stage of comparison, the metadata standard used for electronic government data in Taiwan and the metadata scheme of data curation were also adopted and compared for developing the initial framework further.

2. Collecting interview data

Semi-structured interviews were conducted on data providers of popular datasets on the open data platform of Taiwan (<http://data.gov.tw>). The selected interviewees are also responsible for creating metadata of publicized datasets of respective government agencies. Specifically, interviews were conducted with eleven government officials who are in charge of open data publication in government agencies. There were total ten datasets applied to evaluate the initial framework, and there were eleven trial-creations of metadata by the eleven government officials.

3. Analyzing interview data

The thoughts and opinions of the interviewees were analyzed and then incorporated into the fields of the initial framework and modified accordingly. Specifically, the qualitative data analysis software Atlas.ti was adopted in this study for data induction, with the result of 517 quotations, 196 codes, and 19 groups. After repeated inductions, the initial framework of metadata was finally modified to have 31 suggested fields. The 31 fields are Identifier, Title, Bureau Code, Provider, Date Created, Date Published, Date Modified for Metadata, Date Modified for Dataset, Frequency, Dataset Fields, Description, Note, Authorities Name, Authorities Telephone, Authorities E-mail, Contact Name, Contact Telephone, Contact E-mail, Language, Encoding, Resource Type, Format, Amount, Access URL, Mandate, License, Category, Tag, Relation, Temporal, and Spatial.

The results and contributions of this study include:

1. Incorporate different metadata types and compare with the status of open data in other countries, to generate a set of metadata standard that is relevant to the development of open data metadata.

2. Incorporate metadata types and building procedures discussed in the literature, as well as suggestions for practices, to develop a new integrated framework of open data metadata.

3. Identify 31 suggested fields for the metadata framework of open government data in Taiwan. In addition, the suggested fields can act as a

reference for government agencies when creating other metadata schemes in the governmental context.

4. Enter government institutions to investigate the current status of open data development in Taiwan, and address issues on details of field design, field categorization, and cultures of government systems, thus offer a valuable reference for building open data metadata. In addition, the discussion and implication of the study also offer insights to practitioners regarding how to generate richer metadata information of datasets on the open data platform.

ROMANIZED & TRANSLATED REFERENCE FOR ORIGINAL TEXT

- 中央研究院數位典藏與數位學習國家型科技計畫後設資料工作組 (2010)。後設資料生命週期作業模式 (Metadata Lifecycle Model, MLM)。檢索自 <http://metadata.teldap.tw/design/design-frame.html>【Taiwan e-Learning & Digital Archives Program, Metadata Architecture and Application Team. (2010). Metadata Lifecycle Model, MLM. Retrieved from <http://metadata.teldap.tw/design/design-frame.html> (in Chinese)】
- 行政院研究發展考核委員會 (2007)。行政機關電子資料流通詮釋資料基準。檢索自 <http://www.gsp.gov.tw/pdf/09.pdf>【Research, Development and Evaluation Commission, Executive Yuan. (2007). Xingzheng jiguan dianzi ziliao liutong quanshi ziliao jizhun. Retrieved from <http://www.gsp.gov.tw/pdf/09.pdf> (in Chinese)】
- 宋餘俠、李國田 (2012)。政府部門資料加值推動策略與挑戰。研考雙月刊，36(4)，10-21。【Sung, Yu-Hsia, & Lee, Kuo-Tien (2012). Zhengfu bumen ziliao jiazhi tuidong celue yu tiaozhan. *Government Resource Planning*, 36(4), 10-21. (in Chinese)】
- 林玉 (2012)。資料度用詮釋資料之建置方法 (未出版之碩士論文)。國立臺灣大學圖書資訊學研究所，台北市。【Lin, Yu (2012). *Approaches to constructing metadata in data curation* (Unpublished master's thesis). Graduate Institute of Library and Information Science, National Taiwan University, Taipei, Taiwan. (in Chinese)】
- 林素甘 (2006)。蘭嶼原住民媒體資料庫之Metadata與建檔系統。圖書與資訊學刊，58，34-49。【Lin, Su-Kan (2006). Metadata development and system design for the media database of Orchid Island. *Bulletin of Library and Information Science*, 58, 34-49. doi:10.6575/JoLIS.2006.58.03 (in Chinese)】
- 陳亞寧、陳淑君 (2001)。Metadata在數位博物館之發展與分析。圖書館學與資訊科學，27(2)，52-66。【Chen, Ya-Ning, & Chen, Shu-Jiun (2001). Metadata for museum information: development and analysis. *Journal of Library and Information Science*, 27(2), 52-66. (in Chinese)】
- 陳昭珍、項潔、陳雪華 (2001)。國家文化資料庫系統架構、詮釋資料規範及數位檔案格式研究計畫 (行政院文化建設委員會委託報告)。台北市：國立臺灣師範大學圖書資訊學研究所。【Chen, Chao-Chen, Hsiang, Jieh, & Chen, Hsueh-Hua (2001). *Guojia wenhua ziliaoku xitong jiagou, quanshi ziliao guifan ji shuwei dangan geshi yanjiu jihua* (Council for Cultural Affairs weituobaogao). Taipei, Taiwan: Graduate Institute of Library and Information Studies, National Taiwan Normal University. (in Chinese)】
- 陳雪華、邱子恆 (2005)。以需求導向規劃政府機構知識管理系統之個案研究。在新世紀

- 資訊組織與典藏技術研討會工作小組(編), 新世紀資訊組織與典藏技術研討會論文集(頁127-139)。台北市: 編者。【Chen, Hsueh-Hua, & Chiu, Tzu-Heng (2005). Yi xuxiu daoxiang guihua zhengfu jigou zhishi guanli xitong zhi gean yanjiu. In Conference of Information Organization & Archive Technology in The New Century gongzuo xiaozu (Ed.), *Conference of Information Organization & Archive Technology in The New Century lunwenji* (pp. 127-139). Taipei, Taiwan: Editor. (in Chinese)】
- 項靖、楊東謀、羅晉(2013)。政府開放資料加值營運模式之研究(電子治理研究中心委託研究報告RDEC-MIS-102-002)。檢索自http://www.teg.org.tw/web_zh/research/view.do?id=1362457511825&language=zh【Shiang, Jing, Yang, Tung-Mou, & Lo, Jin (2013). *Zhengfu kaifang ziliao jiazhi yingyun moshi zhi yanjiu* (Taiwan E-Governance Research Center weituao yanjiu baogao RDEC-MIS-102-002). Retrieved from http://www.teg.org.tw/web_zh/research/view.do?id=1362457511825&language=zh (in Chinese)】
- 黃維仕、謝清祿(2006)。台灣傳統農耕機具數位典藏詮釋資料規劃與建立。圖書與資訊學刊, 56, 34-57。【Huang, Wei-Shih, & Hsieh, Ching-Lu (2006). Design and construction of metadata for digital archive of ancient agricultural implements in Taiwan. *Bulletin of Library and Information Science*, 56, 34-57. doi:10.6575/JoLIS.2006.56.03 (in Chinese)】
- 經濟部工業局(2014)。擁抱開放、改變生活: Open data創新報導價值預見未來風潮。檢索自http://opendata.tca.org.tw/event_detail.php?id=22【Industrial Development Bureau, Ministry of Economic Affairs. (2014). *Yongbao kaifang, gaibian shenghuo: Open data chuangxin baodao jiazhi yujian weilai fengchao*. Retrieved from http://opendata.tca.org.tw/event_detail.php?id=22 (in Chinese)】
- 蕭景燈(2012)。資料開放發展現況與展望。研考雙月刊, 36(4), 22-38。【Hsiao, Ching-Teng (2012). *Ziliao kaifang fazhan xiankuang yu zhanwang*. *Government Resource Planning*, 36(4), 22-38. (in Chinese)】
- 謝良奇(2011)。英國政府宣佈開放資料計畫。自由軟體鑄造場電子報, 111。檢索自<http://www.openfoundry.org/tw/foss-news/8544-uk-government-announces-open-data-initiative>【Hsieh, Liang-Chi (2011). United Kingdom zhengfu xuanbu kaifang ziliao jihua. *OpenFoundry*, 111. Retrieved from <http://www.openfoundry.org/tw/foss-news/8544-uk-government-announces-open-data-initiative> (in Chinese)】
- 點子生活(2014)。Open data 讓資料增值 改變世界的無形力量[部落格文章]。檢索自<http://www.saydigi.com/2014/06/open-data.html>【SayDigi. (2014). Open data rang ziliao zengzhi gaibian shijie de wuxing lilian [Web log post]. Retrieved from <http://www.saydigi.com/2014/06/open-data.html> (in Chinese)】
- 蘇文彬(2013)。國內成立Open data聯盟推動開放資料應用發展。iThome。檢索自<http://www.ithome.com.tw/node/82633>【Su, Wen-Bin (2013). Guonei chengli Open data lianmeng tuidong kaifang ziliao yingyong fazhan. *iThome*. Retrieved from <http://www.ithome.com.tw/node/82633> (in Chinese)】
- Australia National Data Service. (2011). Metadata guide working level. Retrieved from <http://ands.org.au/guides/metadata-working.html>
- Cabinet Office. (2006). E-government metadata standard version 3.1. Retrieved from <http://www.nationalarchives.gov.uk/documents/information-management/egms-metadata-standard.pdf>

- Cabinet Office. (2011). Open data measures in the autumn statement 2011. Retrieved from <https://www.gov.uk/government/publications/open-data-measures-in-the-autumn-statement-2011>
- Caplan, P. (2003). *Metadata fundamentals for all librarians*. Chicago, IL: American Library Association.
- Chen, Y.-N., Chen, S.-J., & Lin, S. C. (2003). A metadata lifecycle model for digital libraries: Methodology and application for an evidence-based approach to library research. In *World Library and Information Congress: 69th IFLA General Conference and Council* (pp. 1-15). Retrieved from <http://metadata.teldap.tw/bibliography/proceeding/cp030805.pdf>
- Chuttur, M. Y. (2011). Defining and creating metadata for digital resources. *Library Student Journal*, 4.
- Day, M. (2001). Metadata in a nutshell. *Information Europe*, 6(2), 11.
- Digital Curation Centre. (2015). What is digital curation? Retrieved from <http://www.dcc.ac.uk/digital-curation/what-digital-curation>
- Gilliland-Swetland, A. (2004). Metadata-where are we going. In G. E. Gorman & D. G. Dorner (Eds.), *International yearbook of library and information management 2003-2004, Metadata applications and management* (pp. 17-33). Lanham, MD: Scarecrow Press.
- Gilliland-Swetland, A. (2008). Setting the stage. In M. Baca (Ed.), *Introduction to metadata*. (2nd ed., pp. 1-19). Los Angeles, CA: Getty Research Institute.
- Government of Alberta. (2014). Open data metadata application profile. Retrieved from <http://data.alberta.ca/documents/1379>
- Government of Canada. (2013). Government of Canada open data metadata element set. Retrieved from <http://data.gc.ca/data/en/dataset/e418841e-d9dc-4caf-9a19-09b3269a3e1e>
- Government of Canada. (2014, February 21). G8 open data charter: Canada's action plan. Retrieved from <http://data.gc.ca/eng/g8-open-data-charter-canadas-action-plan>
- Greenberg, J. (2001). A quantitative categorical analysis of metadata elements in image-applicable metadata schemas. *Journal of the American Society for Information Science and Technology*, 52(11), 917-924. doi:10.1002/asi.1170
- Haynes, D. (2004). *Metadata for information management and retrieval*. London, UK: Facet.
- International Federation of Library Associations and Institutions. (2005). Digital libraries: Metadata resource. Retrieved from <http://www.ifla.org/node/9337>
- Lagoze, C., Lynch, C. A., & Daniel, R., Jr. (1996). *The warwick framework: A container architecture for aggregating sets of metadata*. Retrieved from <http://ecommons.library.cornell.edu/bitstream/1813/7248/1/96-1593.pdf>
- Mayo, E., & Steinberg, T. (2007). The power of information: An independent review. Retrieved from <http://www.opsi.gov.uk/advice/poi/power-of-information-review.pdf>
- Miller, S. J. (2011). *Metadata for digital collections: A how-to-do-it manual*. London, UK: Facet.
- Minister of State for the Cabinet Office. (2012). *Open data white paper: Unleashing the potential*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78946/CM8353_acc.pdf
- National Information Standards Organization. (2004). *Understanding metadata*. Bethesda, MD: NISO Press.

- Obama, B. (2009). Transparency and open government. Retrieved from http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment
- Office of Information Technology Services. (2013). Open New York: New York state open data handbook. Retrieved from <http://nys-its.github.io/open-data-handbook/OpenDataHandbook.pdf>
- Open Data Handbook. (2014). What is open data? Retrieved from <http://opendatahandbook.org/en/what-is-open-data/#what-is-open>
- Open Data Institute. (2015) What is open data? Retrieved from <https://theodi.org/what-is-open-data>
- Open Knowledge. (2015). What is open? Retrieved from <https://okfn.org/opendata/>
- Project Open Data. (2014). Common core metadata schema. Retrieved from <http://project-open-data.github.io/schema/>
- Public Sector Transparency Board. (2012). Public data principles. Retrieved from <http://data.gov.uk/library/public-data-principles>
- Taylor, A. G., & Joudrey, D. N. (2009). *The organization of information* (3rd ed.). Westport, CT: Libraries.
- The White House. (2009). Open government directive. Retrieved from http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf
- The White House. (2013). Open data policy-managing information as an asset. Retrieved September from <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>
- Zeng, M. L., & Qin, J. (2008). *Metadata*. New York, NY: Neal-Schuman.
- Zuiderwijk, A., Jeffery, K., & Janssen, M. (2012). The potential of metadata for linked open data and its value for users and publishers. *JeDEM - eJournal of eDemocracy and Open Government*, 4(2), 222-244.



Applying Public History to Co-build the Digital Humanities Collaboration System of Tamsui's Memory

Sinn-Cheng Lin^{a*} Mei-Sheng Chen^b

Abstract

Tamsui is the most important part of Taiwan's history, four more than a century, rich and diverse cultural assets, historical style, very worth to be organized and systematic research, preservation, promotion and application. This study in the spirit of public historiography, by working together with professional historians, public historians, and the internet community, using digital technology, audio and video media, aerial photography technology, combined with Web 2.0 in the Wiki platform, to construct a for everyone involved in Tamsui science writing Digital humanities collaboration system, to play the public co-write energy fresh local history and build a fresh memory, Construction work so fresh knowledge more effectively. This system can help historians, cultural workers, and the community's cultural tour, more efficiently explore Tamsui's local knowledge, cultural origins, social change, landscape, ecological environment and important historical deeds; but also can provide the desired outcomes researchers academic research as a reference.

Keywords: Digital Humanities, Public History, Tamsui Study, Wiki collaboration

SUMMARY

Tamsui, formerly called Hobe, is a town with a history of four hundred years. Located in the northwest part of Taipei Basin, wandering around Datun Mountains and Tamsui River, Tamsui is with features of both a mountain town and a river port, and has kept lots of precious culture heritages, worth researching, conserving, promoting and utilizing in an organizational and systematic way. This study is based on concepts of Public History and features of digital archives and Web 2.0, involving collaboration among professional historians, public historians and participants in social media, to build a digital archive of Tamsui local

^a Professor, Department of Information and Library Science, Tamkang University, Taipei, Taiwan

^b Research Assistant, Department of Information and Library Science, Tamkang University, Taipei, Taiwan

* Principal author for all correspondence. E-mail: sclin@mail.tku.edu.tw

histories, for everybody to contribute writing about Tamsui histories and rebuild memories about Tamsui. The results could be used to construct knowledge of Tamsui local histories, and help historians, cultural and history workers, culture relic collectors, as well as anyone who is interested, to explore Tamsui local knowledge, cultural origins, social changes and important historical events in a more efficient way. The results could also be a valuable reference for scholars in related academic fields.

Research Questions and Methodology

The research questions of this study include: (1) how to build a digital humanities collaborative system based on concepts of Public History? (2) how does this digital humanities collaborative system produce or collect digital content responding to the calls of Public History? and (3) what are the usages and possible challenges or issues related to this digital humanities collaborative system?

The Action Research method balancing between theories and practices is adopted as the theoretical framework for this study, with assistances of methods including system construction, field study, focus group, and log analysis. The goal is to construct a digital collaborative platform for assisting humanities studies, to develop a collaborative model for producing and collecting digital content, and to investigate and evaluate the usages and usability of digital collaborative platforms.

This study is based on the Wiki collaborative system to develop participative construction. Through the circulative process of action research—planning, acting, observing, reflecting (PAOR)—problems encountered in system building and working are solved. Based on our research questions and methodology mentioned before, action plans are developed and implemented step by step.

1. Actually constructing a digital humanities collaborative system of Tamsui

A digital collaborative platform is adopted as the tool for collaborative writing about public history. At the first stage of building the system prototype, scholars who participate in this collaboration are elicited about their basic needs through focus group surveys, and then the researchers engage in system analysis and design, develop system prototype, and implement system construction. Based on concepts of Public History, the end product, Tamsui Wiki website, is open for the public to participate in contributing and editing the content.

2. Recruiting a collaborative team and holding professional seminars

The core team consists of teachers and students in the field of library and information science, and the researchers lead a collaborative team consisting of several graduate and undergraduate students. A collaborative expert panel is set up consisting of scholars at Tamkang University in the fields of Tamsui

humanities, history and culture, and community development. An advisory board consists of Tamsui local cultural and history workers, for assisting in conducting this study. Through the focus group method, four professional seminars were held between June of 2014 and May of 2015, with 13, 15, 8, and 7 participants respectively, and a total of 43 participants. These participants offer their opinions and suggestions on recording different aspects of Tamsui, building the content of a digital archive, presenting special materials, and interpreting different languages.

3. Collecting digital content through a collaborative model that involves professionals from multiple and diverse fields

Humanities scholars, historians, and cultural and history workers who participate in this study have engaged in studying Tamsui local chronicles for a certain amount of time and collected lots of first-hand historical materials, which are one of information sources that could be collected into the archive of this study. Meanwhile, to overcome the threshold of system operation, two information collaborative models are developed for achieving the goal of collecting digital content from multiple and diverse sources. One is the Direct Collaboration model, in which the content providers upload the digital content unto our digital platform, and the other is Indirect Collaboration model, in which the digital content is uploaded to the platform by agents. These two models are used interchangeably in this study in a flexible way.

4. Conduct Tamsui culture and history workshops, historical site visits and aero photo shooting at landscapes

Through the efforts of the collaborative expert panel and the Advisory Board, the Historical and Cultural Exploration and Investigation seminar is held, with four major features, including Tamsui histories, Tamsui historical sites and cultural artifacts, Tamsui historical figures, and Tamsui daily routines. Research methods used in this seminar include historical and cultural studies, visits of historical sites, and aero-snapshots of landscapes.

5. Promoting the collaborative writing event of “Everybody Comes to Digitally Write About Tamsui Histories”

Our research team held a “Writing Workshop for Tamsui Wiki” in May 2015, in which we taught participants to write about Tamsui histories through the Wiki collaborative system, involving skills and techniques include account creation, wiki page editing, and uploading and hyper-linking images unto pages. The goal is for the Tamsui Wiki to have both external and local inputs.

6. Conducting the evaluation and usability study of the digital collaborative writing system

Based on Google Analytics, as well as the log analysis and statistics of our system, it is found that from the first stage of website building in September 2013

to the writing of this article in September 2015, during a total of 25 months, the overall number of page views has reached 304,152, with a total of 87,196 users and 113,296 visits. Based on the free software MediaWiki, the top three most viewed pages are Main page (with a total of 59,482 visits), Tamsui Chronicles (8,560 visits), and Fort San Domingo (6,248). The most visited pages involve historical sites, architecture, and streets of cultural and historical meanings. This fact is consistent with what is observed by participants in professional seminars. Pages about information on mountain and rural areas or natural landscapes are relatively less visited. Users who highly engaged in editing pages are mostly members of the collaborative team trained for this study. External users rarely engage in editing pages, either with a registered account name or in anonymous status. This might be resulted from the fact that page editing involves learning basic computer grammars, which places a higher threshold for editing, or just because users are not clear about what content could be edited. These little drawbacks involving using the Tamsui Wiki could be improved in the future.

Conclusion

Participative construction is emphasized in the field of public history, thus in this study we develop a digital humanities collaborative system based on concepts of public history, and make this system open to the public for them to contribute and edit the content. Direct, indirect and mixed collaboration models are adopted in this study for the production and collection of digital content, also based on concepts of public history. Related activities are held for enhancing participation of the public, for them to become providers of content. Based on the data from Google Analytics and the website's log analysis, statistics on users' participation (such as visiting, viewing, searching) and keywords and hot topics that users attend are used to investigate the usages of a digital humanities collaborative system based on concepts of public history.

This is a long-term study project. In the future, the researcher team will advance to the next round of action research process (planning, acting, observing and reflecting), and further investigate issues on system construction, content collaboration and usage evaluation, for this system to be more satisfying regarding user needs.

ROMANIZED & TRANSLATED NOTES FOR ORIGINAL TEXT

1. Vincent Shen, *Confucianism, Taoism and Constructive Realism* (Wien: WUV-Universitätsverlag, 1994), accessed October 21, 2015, http://www.crvp.org/book/Series03/III-9/chapter_viii.htm; 黃光國, 「現代性的不連續性假說與建構實在論: 論本土心理學的哲學基礎」, 香港社會科學學報, 18期(2000年冬季): 12-29; 黃光國, 「心理學本土化運動的過去、現在與未來」, 人文與社會科學簡訊 5卷, 3期(2004年6月):

37-38。【Vincent Shen, *Confucianism, Taoism and Constructive Realism* (Wien: WUV-Universitätsverlag, 1994), accessed October 21, 2015, http://www.crvp.org/book/Series03/III-9/ chapter_viii.htm; Kwang-Kuo Hwang, "The Discontinuity Hypothesis of Modernity and Constructive Realism: The Philosophical Basis of Indigenous Psychology," *Hong Kong Journal of Social Sciences*, no. 18 (Winter 2000): 12-29. (in Chinese); Kwang-Kuo Hwang, "Xinlixue bentuhua yundong de guoqu xianzai yu weilai," *Humanities and Social Sciences Newsletter Quarterly* 5, no. 3 (June 2004): 37-38. (in Chinese)】

2. 周樑楷，「大眾史學的定義和意義」，在《人人都是史家：大眾史學論集 第一冊》，周樑楷主編（台中市：采玉，2004），26，檢索於2015年10月22日，<http://myweb.fcu.edu.tw/~t91093/2/paper1/public history.pdf>。【Liang-Kai Chou, "Dazhong Shixue de Dingyi han Yiyi," in *Renren Dushi Shijia: Dazhong Shixue Lunji Diyice*, ed. Liang-Kai Chou (Taichung: Caiyu, 2010), 26, accessed October 22, 2015, <http://myweb.fcu.edu.tw/~t91093/2/paper1/public history.pdf>. (in Chinese)】

3. 同上註。【Ibid. (in Chinese)】

4. 同上註，32。【Ibid., 32. (in Chinese)】

5. 林呈蓉，「『淡水學』研究的回顧與展望」，（論文發表於2010年第七屆台北學暨第九屆北投學學術研討會—臺灣學內涵的建構，台北市，2010年11月14日），4-6，檢索於2015年10月25日，<http://www.btcc.org.tw/web/94tc/2010401.pdf>。【Cheng-Jung Lin, "Tamsui Study' Yanjiu de Huigu yu Zhanwang," (paper presented at 2010 Nian Diqijie Taipei Study ji Dijiuji Beitou Study Xueshu Yantaohui, Taipei, November 14, 2010), 4-6, accessed October 25, 2015, <http://www.btcc.org.tw/web/94tc/2010401.pdf>. (in Chinese)】

6. 周宗賢，淡水 輝煌的歲月。（台北市：臺灣商務，2007），III-VI。【Tsung-Hsien Chou, *Tamsui: Huihuang de Suiyue* (Taipei: The Commercial Press, 2007), III-VI. (in Chinese)】

7. 滬尾文史工作室，「滬尾街」，淡水，無日期，檢索於2015年10月22日，<http://tamsui.yam.org.tw/hubest/hubest0.htm>。【Huwei Culture and History Workshop, "Huwei Street," Tamsui, n.d., accessed October 22, 2015, <http://tamsui.yam.org.tw/hubest/hubest0.htm>. (in Chinese)】

8. 財團法人淡水文化基金會，「文化淡水社區報」，淡水文化基金會，無日期，檢索於2015年10月22日，<http://www.tamsui.org.tw/culture/>。【Tamsui Culture Foundation, "Culture Tamsui Shequ Bao," Tamsui Culture Foundation, n.d., accessed October 22, 2015, <http://www.tamsui.org.tw/culture/>. (in Chinese)】

9. 林信成，開放式數位典藏系統之研究（台北市：文華，2010），4-6。【Sinn-Cheng Lin, *Kaifangshi Shuwei Diancang Xitong zhi Yanjiu* (Taipei: FlySheet Information Services, 2010), 4-6. (in Chinese)】

10. The Library of Congress, "American Memory," n.d., accessed October 20, 2015, <http://memory.loc.gov/ammem/index.html>; Canadian Heritage Information Network, "About Us," n.d., accessed October 20, 2015, <http://www.rcip-chin.gc.ca/apropos-about/index-eng.jsp>; Renato Iannella, "Australian Digital Library Initiative," *D-Lib Magazine*, December 1996, accessed October 20, 2015, <http://www.dlib.org/dlib/december96/12iannella.html>; The Library of Congress, "World Digital Library," World Digital Library, n.d., accessed October 20, 2015, <http://www.wdl.org/>.

11. 中央研究院，數位典藏與數位學習國家型科技計畫，無日期，檢索於2008年10月18日，<http://www.teldap.tw/>。【Academia Sinica, Taiwan e-Learning and Digital Archives Program, n.d., accessed October 18, 2008, <http://www.teldap.tw/>. (in Chinese)】
12. 項潔編，從保存到創造：開啟數位人文研究（台北市：國立臺灣大學出版中心，2011），11-14。【Jieh Hsiang, ed., *From Preservation to Knowledge Creation: The Way to Digital Humanities* (Taipei: National Taiwan University Press, 2011), 11-14. (in Chinese)】
13. Tim O'Reilly, "What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software," O'Reilly Media, September 30, 2005, accessed October 25, 2015, <http://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html>.
14. Markus Angermeier, "The Huge Cloud Lens Bubble Map Web2.0," KOSMAR, November 11, 2005, accessed October 25, 2015, <http://kosmar.de/archives/2005/11/11/the-huge-cloud-lens-bubble-map-web20/>.
15. Bo Leuf and Ward Cunningham, *The Wiki Way: Quick Collaboration on the Web* (Boston: Addison-Wesley, 2001), 12.
16. "WikiWikiWeb," Cunningham & Cunningham, December 23, 2014, accessed October 25, 2015, <http://c2.com/cgi/wiki/>; "Portland Pattern Repository," Cunningham & Cunningham, November 26, 2014, accessed October 25, 2015, <http://c2.com/cgi/wiki?PortlandPatternRepository>.
17. Wikipedia, s.v. "Wikipedia," accessed October 25, 2015, <http://en.wikipedia.org/wiki/Wikipedia>; Meredith Farkas, "Library Success: A Best Practices Wiki," Library Success, last modified October 26, 2015, accessed October 25, 2015, <http://www.libsuccess.org/>; Archivopedia, accessed October 25, 2015, <http://archivopedia.com/>; 「醫學快紀」, Wikia, 無日期，檢索於2015年10月25日，<http://medicine.zh-tw.org/>; Mozilla Taiwan, "Mozilla Taiwan Community," MozTW Wiki, last modified December 25, 2013, accessed October 25, 2015, <http://wiki.moztw.org/>; 「背包攻略」, 背包攻略，最後更新於2015年6月10日，檢索於2015年10月25日，<http://www.backpackers.com.tw/guide/>; 「台灣棒球維基館」, 台灣棒球維基館，最後更新於2015年9月15日，檢索於2015年10月25日，<http://twbsball.dils.tku.edu.tw/>。【Wikipedia, s.v. "Wikipedia," accessed October 25, 2015, <http://en.wikipedia.org/wiki/Wikipedia>; Meredith Farkas, "Library Success: A Best Practices Wiki," Library Success, last modified October 26, 2015, accessed October 25, 2015, <http://www.libsuccess.org/>; Archivopedia, accessed October 25, 2015, <http://archivopedia.com/>; "Yixue Kuaiji," Wikia, n.d., accessed October 25, 2015, <http://medicine.zh-tw.org/>. (in Chinese); Mozilla Taiwan, "Mozilla Taiwan Community," MozTW Wiki, last modified December 25, 2013, accessed October 25, 2015, <http://wiki.moztw.org/>; "Beibao Gonglue," Beibao Gonglue, last modified June 10, 2015, accessed October 25, 2015, <http://www.backpackers.com.tw/guide/>. (in Chinese); "Taiwan Wiki Baseball," Taiwan Wiki Baseball, last modified September 15, 2015, accessed October 25, 2015, <http://twbsball.dils.tku.edu.tw/>. (in Chinese)】
18. 張春興，張氏心理學辭典（台北市：東華書局，1991），12。【Chun-Hsing Chang, *Zhangshi Xinlixue Cidian* (Taipei: Tung Hua, 1991), 12. (in Chinese)】
19. Robin McTaggart, ed., *Participatory Action Research: International Contexts And Consequences* (Albany: State University of New York Press, 1997), 27.
20. Center for Technology in Government University at Albany/SUNY, "A Survey of Sys-

tem Development Process Models,” 1998, accessed October 25, 2015, <http://www.ctg>; Justus D. Naumann and A. Milton Jenkins, “Prototyping: The New Paradigm for Systems Development,” *MIS Quarterly* 6, no. 3 (September 1982): 29; 季延平、郭鴻志, 「系統分析與設計 -Prototyping: 雛型方法」, 國立中興大學, 無日期, 檢索於2009年6月12日, <http://web.nchu.edu.tw/~jlu/classes/ooad/proto.html>。【Center for Technology in Government University at Albany/SUNY, “A Survey of System Development Process Models,” 1998, accessed October 25, 2015, <http://www.ctg>; Justus D. Naumann and A. Milton Jenkins, “Prototyping: The New Paradigm for Systems Development,” *MIS Quarterly* 6, no. 3 (September 1982): 29; Yen-Ping Chi and Hung-Chih Kuo “Xitong Fenxi yu Sheji --Prototyping: Chuxing Fangfa,” National Chung Hsing University, n.d., accessed June 12, 2009, <http://web.nchu.edu.tw/~jlu/classes/ooad/proto.html>. (in Chinese)】

21. Hamid R. Jamali, David Nichlas, and Paul Huntington, “The Use And Users of Scholarly E-Journals: A Review of Log Analysis Studies,” *Aslib Proceedings: New Information Perspectives* 57, no. 6 (2005): 557-558.

22. “Top Ten Wiki Engines,” Cunningham & Cunningham, September 9, 2014, accessed October 25, 2015, <http://c2.com/cgi/wiki?TopTenWikiEngines>; 林信成、陳瑩潔、游忠諺, 「Wiki協作系統應用於數位典藏之內容加值與知識匯集」, 教育資料與圖書館學 43卷, 3期(2006年3月): 296。【“Top Ten Wiki Engines,” Cunningham & Cunningham, September 9, 2014, accessed October 25, 2015, <http://c2.com/cgi/wiki?TopTenWikiEngines>; Sinn-Cheng Lin, Ying-Chieh Chen, and Chung-Yen Yu, “Application of Wiki Collaboration System for Value Adding and Knowledge Aggregation in a Digital Archive Project,” *Journal of Educational Media & Library Sciences* 43, no. 3 (March 2006): 296. (in Chinese)】

23. 「淡水維基館」, 淡水維基館, 無日期, 檢索於2014年1月6日, <http://tamsui.dils.tku.edu.tw/index.php/%E7%89%B9%E6%AE%8A:%E6%89%80%E6%9C%89%E4%BF%A1%E6%81%AF>。【“Tamsui Wiki,” Tamsui Wiki, n.d., accessed January 6, 2014, <http://tamsui.dils.tku.edu.tw/index.php/%E7%89%B9%E6%AE%8A:%E6%89%80%E6%9C%89%E4%BF%A1%E6%81%AF>. (in Chinese)】

24. “Category:Map extensions,” MediaWiki, n.d., accessed February 7, 2014, http://www.mediawiki.org/wiki/Category:Map_extensions.

25. “Category: YouTube Extensions,” MediaWiki, n.d., accessed Feb 7, 2014, http://www.mediawiki.org/wiki/Category:YouTube_extensions.

26. 「熱門頁面」, 淡水維基館, 無日期, 檢索於2015年10月26日, <http://tamsui.dils.tku.edu.tw/wiki/index.php/特殊:熱點頁面>。【“Remen Yemian,” Tamsui Wiki, n.d., accessed October 26, 2015, <http://tamsui.dils.tku.edu.tw/wiki/index.php/%E7%89%B9%E6%AE%8A:%E7%86%B1%E9%BB%9E%E9%A0%81%E9%9D%A2>. (in Chinese)】

27. 「使用者列表(依編輯量排序)」, 淡水維基館, 無日期, 檢索於2015年10月26日, <http://tamsui.dils.tku.edu.tw/wiki/index.php/特殊:Listusersbyedits>。【“Shiyongzhe Liebiao (Yi Bianjiliang Paixu),” Tamsui Wiki, n.d., accessed October 26, 2015, <http://tamsui.dils.tku.edu.tw/wiki/index.php/%E7%89%B9%E6%AE%8A:Listusersbyedits>. (in Chinese)】

JoEMLS English Summary

JoEMLS 註釋 (Notes) 暨參考文獻 (References)

羅馬化英譯說明

2015年1月31日修訂

1. 本刊針對部分國外西文專業資料庫之引文索引建檔與中文辨讀之需求，凡屬中文稿件之英文摘錄末，特別增列中文羅馬化拼音之「註釋」(或「參考文獻」)一式。
2. 作者(含團體作者)、機構名稱(出版者)、地名(出版地)：依事實與習慣為英譯，如無法查證時，中國大陸地區作者以漢語拼音處理，台灣以威妥瑪拼音(Wade-Giles system)處理。
e.g. 南京大學學報 *Journal of Nanjing University*
e.g. 中國科學引文數據庫 *Chinese Science Citation Database*
e.g. 玉山國家公園解說志工工作滿足之研究 *Yushan National Park jieshuo zhigong gongzuo manzu zhi yanjiu*
e.g. 教育資料與圖書館學 *Journal of Educational Media and Library Sciences*
4. 混用狀況：地名、機構、人名與其他事實描述，交錯共同構成篇名之一部分時，為避免冗長拼音難以辨讀，可將該名詞中之「地名、機構、人名」依事實與習慣英譯，其餘字詞則由本刊補以漢語拼音處理。
e.g. 「中國科學院與湯姆森科技資訊集團聯手推出中國科學引文索引」
“Chinese Academy of Sciences yu Thomson Scientific Lianshou Tuichu Chinese Science Citation Database”
5. 本刊文章註釋(Notes)或參考文獻(References)羅馬化英譯規則，仍遵循Chicago(Turabian)或APA之精神及原則，進行必要且相對應之編排處理。**此羅馬化作業屬權宜措施，不可取代原有正式之引文規範。**
6. 羅馬化範例：
範例1－註釋(Notes)
林信成、陳瑩潔、游忠諺，「Wiki協作系統應用於數位典藏之內容加值與知識匯集」，教育資料與圖書館學 43卷，3期(2006)：285-307。【Sinn-Cheng Lin, Ying-Chieh Chen, and Chung-Yen Yu, “Application of Wiki Collaboration System for Value Adding and Knowledge Aggregation in a Digital Archive Project,” *Journal of Educational Media & Library Sciences* 43, no. 3 (2006): 285-307. (in Chinese)】
範例2－參考文獻(References)
林雯瑤、邱炯友(2012)。教育資料與圖書館學四十年之書目計量分析。教育資料與圖書館學，49(3)，297-314。【Lin, Wen-Yau Cathy, & Chiu, Jeong-Yeou (2012) A bibliometric study of the *Journal of Educational Media & Library Sciences*, 1970-2010. *Journal of Educational Media & Library Sciences*, 49(3), 297-314. (in Chinese)】

About Romanized & Translated Notes/References for Original Text

The main purpose of Romanized and Translated Notes (or References) at the end of English Summary is to assist Western database indexers in identifying and indexing Chinese citations. This Romanization system for transliterating Chinese cannot be a substitute for those original notes or references listed with the Chinese manuscript. The effect of Chinese Romanization for citation remains to be seen.

JoEMLS English Summary



規範中文化與引文羅馬化 — 邁向國際化必經之路

本書除提供規範之中英文建議之外，更提供中文與英文範例，幫助讀者快速上手應用。本書堪稱目前華文領域最為完整詳實之 APA 與 Chicago 格式中文化格式規範專書，更是第一本周延探討中文引文羅馬化的專書，絕對值得期刊主編、資料庫製作者與讀者隨時參閱。

**期刊編輯與投稿者非讀不可的一本書，
請勿錯過本次優惠：平裝本 168 元！**

訂購資訊：淡江大學出版中心

電話：(02)8631-8661

傳真：(02)8631-8660

E-mail: tkupress@www2.tku.edu.tw

JoEMLS English Summary

JoEMLS English Summary

教育資料與圖書館學 徵稿須知

- 一、本刊秉持學術規範與同儕評閱精神，舉凡圖書館學、資訊科學與科技、書業與出版研究等，以及符合圖書資訊學應用發展之教學科技與資訊傳播論述。均所歡迎，惟恕不刊登非本人著作之全譯稿。
- 二、賜稿須為作者本人之首次發表，且未曾部份或全部刊登（或現未投稿）於國內外其他刊物，亦未於網路上公開傳播。此外，保證無侵害他人著作權或損及學術倫理之情事。
- 三、作者同意其投稿之文章經本刊收錄後，即授權本刊、淡江大學覺生紀念圖書館、淡江大學資訊與圖書館學系，為學術與教學等非營利使用，進行重製、公開傳輸或其他為發行目的之利用。
- 四、作者同意其投稿之文章經本刊收錄後，無償授權本刊以 Open Access 以及非專屬授權之方式，再授權予國家圖書館用於「遠距圖書服務系統」或再授權予其他資料庫業者收錄於各該資料庫中，並得為重製、公開傳輸、授權用戶下載、列印等行為。為符合資料庫之需求，並得進行格式之變更。
- 五、本刊發表文章之著作權屬作者本人，除上述約定外，第三者轉載須取得作者同意，並須註明原載本刊卷期、頁數。
- 六、賜稿中英文不拘。本刊收錄研究論文（Research Article）字數以二萬字內為宜，但短文論述（Brief Communication）須不少於4,000字，賜稿應以呈現IMRAD（前言、研究方法設計、結果發現、結論建議）格式為佳。回顧評論（Review Article）、觀察報告（Observation Report）、書評（Book Review）字數約為8,000字以上。給主編的信則以評論與回應本刊所登文稿或揭示新進重要著作與發現為旨趣，以1,500字為度。
- 七、圖書資訊學域因具科際整合之實，為尊重人文社會學研究之差異性，故採芝加哥Note格式（Chicago-Turabian Style）或美國心理學會 Author-date 格式（APA format），敬請擇一遵守，賜稿註釋或參考資料格式務請明確詳實，相關引文格式來函備索或參見本刊網頁。
- 八、賜稿請利用本刊「線上投稿暨評閱服務系統（ScholarOne Manuscripts）」俾利作業處理與完整建檔。特殊情況，得以電腦列印紙本稿件兩份，請務必另附全文 Word 電子檔郵寄。內容應包括中英文題名、中英文摘要（三百字為原則）、中英文關鍵詞（各6個以內）、圖與表合計不超過12個為原則，並請附作者中英文之姓名、職銜、服務機關與所屬部門、電子郵件。
- 九、賜稿為多人共同著作時，請以排序第一作者為「最主要作者」；並得指定同一人或另一人為稿件聯繫與學術交流之「通訊作者」。
- 十、本刊實施稿件雙盲同儕評閱制度，作者於本刊要求稿件修訂期限內，務必完成修訂稿回擲，逾期者將被視為退稿；逾期修訂稿可視同新遞稿件，由本刊重啟初始評閱流程。
- 十一、中文賜稿獲本刊通知接受將予刊登之時，必須再行繳交 English Summary（英文摘錄）一份含適當引註，始予刊登。其方案如下：
 - (1) 中文作者自行摘錄翻譯篇幅 1,200 字至 1,500 字之 English Summary（圖表與參考資料不計），再由本刊進行英文潤修，此為收費服務（English page charge），每篇酌收費用 NT\$1,200 元（一般作者）/ 800 元（學生為第一作者）；或是
 - (2) 中文作者提供 1,500 字之中文摘錄，而委由本刊代為翻譯，採收費服務方式，每篇酌收費用 NT\$2,500 元（一般作者）/ 1,500 元（學生為第一作者）。
- 十二、本刊將主動為您提供 English Summary 末之中文引用文獻的羅馬拼音暨翻譯服務，以利部分西文專業資料庫之引文索引建檔與中文辨讀之需求。
- 十三、作者必須信實對應本文，精簡呈現其所刊載之 English Summary，並負起相關文責，俾利外語讀者之參考與引用。
- 十四、本刊接受書評專文，亦歡迎書評書籍之推薦。
- 十五、賜稿刊登恕無稿酬。惟謹贈該期本刊五份予通訊作者，其餘作者獲贈複本數酌減。作者亦可透過本刊網頁或 DOAJ 之 Open Access 機制取得 PDF 版全文。

賜稿請利用 ScholarOne Manuscripts (<https://mc.manuscriptcentral.com/joemls>)

或寄：教育資料與圖書館學 主編收

地址：淡江大學資訊與圖書館學系（台灣新北市淡水區英專路 151 號）

聯絡電話：(02)26215656 轉 2382 傳真：(02)2620-9931

JoEMLS 總編輯室 joemls@www2.tku.edu.tw

台灣與其他地區 joyo@mail.tku.edu.tw（邱炯友 主編）

Notes for Contributors

1. The *JoEMLS* is a fully peer-reviewed and Open Access quarterly sponsored and published by the Tamkang University Press, Taipei, Taiwan.
2. It is a condition of publication that all or part of manuscript submitted to the *JoEMLS* has not been published and will not be simultaneously submitted or published elsewhere.
3. The Editors welcome submissions of manuscripts mainly on topics related to library science, information science and technology, the book trade and publishing. The other library related fields such as instructional technology and information communication are also accepted.
4. Contributions are accepted on the strict understanding that the author is responsible for the accuracy of all contents of the published materials. Publication does not necessarily imply that these are the opinions of the Editorial Board or Editors, nor does the Board or Editors accept any liability for the accuracy of such comment, report and other technical and factual information.
5. The authors of any submissions to this *JoEMLS* hereby agree that if any submission being accepted by the Journal, then the *JoEMLS*, Tamkang University Library, and Department of Information & Library Science (DILS) shall be authorized to duplicate, publicly transmit by the Internet, and publish by any other means for the purpose of non-profit use such as study and education etc.
6. The authors of any submissions to the *JoEMLS* hereby agree that if any submission being accepted by the Journal, then the *JoEMLS* shall be authorized to grant a non-exclusive license to National Central Library for collecting such a submission into the Remote Electronic Access/Delivery System (READncl System), or grant other database providers sublicense to collect such a submission into their databases, and to duplicate, publicly transmit by the Internet, downloaded, and printed by authorized users of those providers. In addition, the format of submissions may be changed in order to meet the requirements of each database.
7. Manuscript requirements:
 - (1) Submissions should go through the online system, however articles submitted as email attachments in one of the following preferred formats, Word or Rich Text Format, are acceptable.
 - (2) Three types of contributions are considered for publication: full & regular research article in IMRAD format should be between 6,000 and 12,000 words in length, brief communication of approximately 4,000 words or less, and observation report which tends to be a review article of more than 5,000 words.
 - (3) Letters to the Editor should not exceed 1,500 words in length and may be: comments or criticisms of articles recently published in the *JoEMLS*; and preliminary announcements of original work of importance warranting immediate publications.
 - (4) Both Chinese (if available) and English titles should be provided.
 - (5) All manuscripts should be accompanied by an abstract of 300 words approximately. Up to six keywords should be provided, and should not exceed 12 tables and figures.
 - (6) A brief autobiographical note should be supplied including full name, post & title, affiliation, e-mail address, and full international contact details.
 - (7) Referencing style (notes or references): Authors should follow one of the forms, the Chicago style (Turabian Manual) or the APA format.
8. For Book Review column, the *JoEMLS* is looking for book recommendations as well as individuals willing to review them, you may contact the editor.
9. It is the author's responsibility to obtain written permission to quote or reproduce material that has appeared in another publication. This includes both copyright and ownership rights, e.g. photographs, illustrations, and data.
10. First Author should be the equivalent of the Principal Author. The Principal Author must clearly specify who are the Corresponding Author and co-authors in proper sequence.
11. Revision should be returned to the editor within 4 months for further peer review process. Revision behind the period could be rejected or treated as a new manuscript by the Journal.
12. Corresponding Author will receive 5 free copies of the *JoEMLS*. Free copies given to the other co-authors are less than the amount. Additional copies can be purchased at a nominal cost from the Department of Information and Library Science, Tamkang University, Taipei, Taiwan. However, authors can find online full-text of PDF format via Open Access mechanism on the websites of *JoEMLS* and *DOAJ*.
13. Submissions of manuscripts in either Chinese or English and editorial correspondence please use the Online Submission & Peer Review Service (ScholarOne- JoEMLS) at <http://joemls.dils.tku.edu.tw/>, <https://mc.manuscriptcentral.com/joemls>, or mail to the editor:
Professor Jeong-Yeou Chiu, Department of Information and Library Science, Tamkang University, Taipei, Taiwan. Email: joyo@mail.tku.edu.tw

About English Summary

A brief English Summary is a supplement to Chinese article. Authors who contribute to the *JoEMLS* in Chinese language would need to supply English Summaries themselves. Such English Summary will carry a disclaimer: "This English Summary is provided by the author(s) or translated by the *JoEMLS* editors, and the author(s) have certified or verified that the translation faithfully represents the Chinese version of their own in the journal. It is for convenience of the English users and can be used for reference and citation."

訂閱資訊 (Subscription)

Address changes, subscriptions and purchase of back issues, exchanges should be addressed to: Journal of Educational Media & Library Sciences, Department of Information and Library Science, Tamkang University.
Address: 151, Ying-chuan Rd., Tamsui, Taipei 25137, Taiwan
Tel.: +886 2 2621 5656 ext.2382
Fax: +886 2 2620 9931
E-mail: joemls@www2.tku.edu.tw
A crossed cheque should be made payable to "TAMKANG UNIVERSITY".

一年新臺幣1,200元 (台灣地區)

Annual subscription (payable in advance) US\$80.00 (outside Taiwan)
國外航空郵費另加(Additional charge for airmail outside Taiwan)

US\$15.00 (per year) for America, Europe, Australia & Africa

US\$8.00 (per year) for Japan, Korea, Thailand & the Philippines

US\$6.00 (per year) for Hong Kong & Macao

訂閱本刊，請以匯款郵局(局號2441285・帳號0388761・戶名：教育資料與圖書館學)或劃線支票，戶名抬頭請填寫《教育資料與圖書館學》匯寄訂費，謝謝。

本刊網頁：<http://joemls.tku.edu.tw>



Tamkang University Press
Taiwan

JoEMLS English Summary

本刊獲
科技部人文社會科學研究中心
補助編輯費用



ISSN 1013-090X



9 771013 090005