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DOI:10.6120/JoEMLS

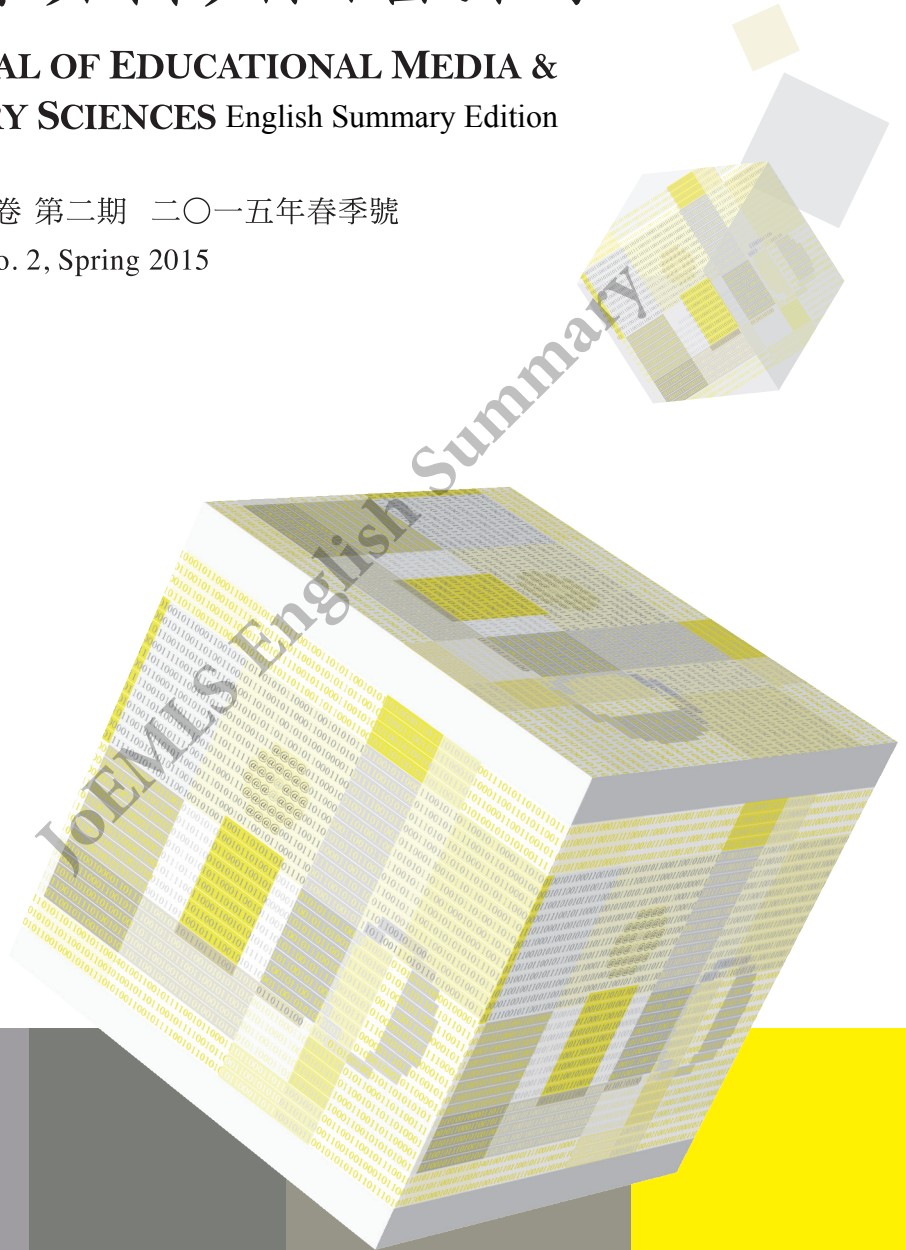
CODEN: CYTHD5 ISSN 1013-090X

教育資料與圖書館學 英摘版

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

第五十二卷 第二期 二〇一五年春季號

Vol. 52, No. 2, Spring 2015



教育資料與圖書館學

JOURNAL OF EDUCATIONAL MEDIA & LIBRARY SCIENCES

Vol. 52, No. 2, Spring 2015

淡江大學出版中心



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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**.

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- (3) published source must be acknowledged with citation.

JOURNAL OF EDUCATIONAL MEDIA & LIBRARY SCIENCES

Volume 52 Number 2 Spring 2015

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EDITORIAL

In and Beyond This Issue

For this Issue 2, Volume 52 of *Journal of Educational Media and Library Sciences (JoEMLS)*, twelve manuscripts are reviewed; in which four are accepted and eight are rejected, with a rejection rate of 66.7%. The four research papers published in this issue include “Constructing Bibliographic Relationships of Journal Collections through FRBR and DOI” by Huei-Chu Chang, “Quotation Errors in the Articles of Library and Information Science Journals in Taiwan” by Hsuan-Hung Kao and Wen-Yau Cathy Lin, “Investigating the Structural and Textual Characteristics of Internet Physicians Review” by Ming-Hsin Phoebe Chiu and Chia-Ling Chang, and “A Study of the Evaluation Dimensions and Criteria for OpenCourseWare Websites” by Yi-Ju Wang and Chien Chou.

From the research topics appeared in our journal in recent years, we can see that there is a common research field between Library Science and Instructional Technology field; this means that scholars in the Library studies field have been keeping an open mind and acumen for integrating cross-field subjects to include Information Technology, Media study, and Educational/e-Learning topics. However, if we look closely at the small group of scholars in Information and Library Studies (ILS) in Taiwan, we can not help but worry about the deficiency of variety, depth, broadness and continuity of research topics in the ILS, which causes a crisis for the development of this subject field. This is an issue worth concerning and contemplating. When can we achieve the goal of building an ideal scholarly publishing environment that integrates scholars from Taiwan, China, Hongkong, Macau and other Chinese societies in the world? In such an academic platform without nation borders, as those international scholarly journals we are familiar with, we can see an integration of a single subject field with cross-field knowledge from a variety of languages, nations, and cultures. It is only in such a mutually beneficial environment that a healthy scholarly communication ground is possible.

At this moment in Taiwan we are facing a policy reform of the journal ranking system in humanities and social sciences field, with the Ministry of Science and Technology being in charge of this matter. We are curious about the future development. Whether TSSCI and THCI Core databases will be kept, or a journal ranking system in humanities and social sciences will be launched? And what is the official “core journal” database of humanities and social sciences in Taiwan? For a short term, Taiwan-based databases might not be able to index

those journals published in the Mainland China. If so, then how do we integrate Chinese-language journals from Hongkong, Macau, Singapore and other Chinese societies? We are wondering if the government unit, such as National Central Library, can take the actual and long-run responsibility of building the Citation Index of scholarly journals in Taiwan. Should we actively encourage (or treat fairly) private sectors in Taiwan to participate in development and competition of the scholarly journal database industry? These reform results will greatly influence the next decade's development of scholarly journal publishing industry, and thus a decisive factor of predicting the destiny of Taiwan's scholarly publishing performance in the world.

Jeong-Yeou Chiu
JoEMLS Chief Editor

JoEMLS English Summary

JoEMLS English Summary



Constructing Bibliographic Relationships of Journal Collections through FRBR and DOI

Huei-Chu Chang

Abstract

The study adopts citation checking and content analysis method. First of all, the study organizes the bibliographic relationships among journals, and continue to induct journal sample with three complex relations: rename, split, merge. Using MARC21 as its description format, the study analyzes elements necessary for constructing bibliographic relationships among journals, and compare it to the current kernel elements needed for journal registering, DOI. With the above method, this research goes on to examine the pros and cons of the current way of constructing bibliographic relationships, that is, adopting the essential metadata of national journal registration; then, to further explore the feasibility of carrying out applying recognition code and constructing the bibliographic relationships of journals simultaneously. The goal is to draw on the concept of supply chain and advance the identification and construction of bibliographic family to information processing upstream; so as to increase its efficiency by alleviating the burden of managing library journals and enhancing the connection between individual journals.

Keywords: *Serials, Bibliographic relationship, Functional Requirements for Bibliographic Records, FRBR, Digital Object Identifier, DOI*

SUMMARY

Journals have played an important role in academic communications for their nature of predicting subject fields' future development, changes and major trends, as well as documenting paradigm shifts. With their nature of containing latest information, academic values and continuity, journals are for library users to know the latest development of subject fields, thus become the most important information resources in academic libraries. However, with possibilities of publication suspension, title changes, and organizational adjustments for journal splits or merges, it adds difficulties to the management and uses of journals. Therefore, it is worth investigating how to properly organize journals in different service platforms with a large number and a variety of carriers including hard copies, CDs and online formats, as well as how to identify the bibliographic relationships and adopt the best way of connection and presentation for library users to conveniently search, distinguish, select and retrieve needed journals.

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Research Method and Design

Documentary analysis and content analysis are adopted in this study, and are implemented at four stages:

1. Sampled journals are recorded in the MARC 21 fields of journal bibliographic relationships.
2. Map MARC 21 linking fields to Functional Requirements for Bibliographic Records (FRBR) Group 1 entities.
3. Investigate the possibility of building bibliographic relationships upon Digital Object Identifier (DOI) registration.
4. Analyze the metadata fields for building journal bibliographic relationships with DOI.

Results and Discussions

The results are discussed according to the four stages of research design:

1. Sampled journals are recorded in the MARC 21 fields of journal bibliographic relationships

Based on literature, five bibliographic relationships related to journals are identified (Table 1). Three Chinese and English journals with a complicated history are recorded. With MARC 21 as the record style, fields that should be recorded for building the five bibliographic relationships are identified. It should be enough to have a comprehensive presentation of the complicated bibliographic relationships of journals, and to build bibliographic families. However, if “volumes” or “articles” are keyed in as “work”, it needs additional records of indicators and subfields to reveal the bibliographic relationships.

Table 1 Five Bibliographic Relationships Related to Journals

	Journals bibliographic relationships covered	Journal Publishing status
1	Equivalent	<ul style="list-style-type: none"> • issues • Regional version • A special version of the object • Particular style or type of release • Reprint • Electronic version • Miniature replica
2	Derivative	<ul style="list-style-type: none"> • translation of; translation as • Other language versions
3	Whole-part or part- whole	<ul style="list-style-type: none"> • special issue • parent • in • constituent unit
4	Accompanying	<ul style="list-style-type: none"> • has supplement • supplement to

5 Sequential

Preceding entry

- continues
- continues in part
- formed by the union of ...and ...
- absorbed
- absorbed in part
- separated from

Succeeding entry

- continued by
 - continued in part by
 - absorbed by
 - absorbed in part by
 - split into...and...
 - merged with... to form...
-

2. MARC 21 linking fields are mapped to FRBR Group 1 entities

The final report of FRBR describes the logic relationships among the four entities in Group 1, as well as the interrelationship among certain works. Riva (2004) identified various major and subordinate relationships, and compared them with the MARC 21 linking fields. From Riva's analysis, the researcher of this study identifies various relationships related to journals and the matched MARC 21 linking fields. From this we can understand how FRBR Group 1 entities recorded with MARC 21 reveal the bibliographic relationships of journals.

3. The possibility of building bibliographic relationships upon Digital Object Identifier (DOI) registration.

The researcher compares Table 2 with the core elements that should be built upon DOI registration. From the result, we can see that, if we match the needed fields for building bibliographic relationships with DOI core elements, we can understand whether the recorded results of DOI core elements could cover the bibliographic relationships of journals. From this comparison, we can also identify the elements that cannot reveal the bibliographic relationships of journals. If DOI core elements are defined as necessary fields, and then included into necessary fields for DOI registration, it will help the metadata fields comprehensively describe the journals and their bibliographic relationships. However, after studying the DOI core elements, the researcher finds that for revealing the bibliographic relationships of journals upon DOI registration, it still needs additional elements beyond necessary fields for building bibliographic relationships of journals. After comparing the handbook guidelines on descriptions of core element fields (IDF, 2013) with MARC 21 record guidelines, we can identify relevant descriptive fields. Studying the comparing fields, we can see it's able to record with core elements. This means that when applying for DOI verification codes, it should be able to use the core elements to build the bibliographic relationships of journals.

Table 2 Sampled Journals are Recorded in the MARC 21 Fields of Journal Bibliographic Relationships

Journals bibliographic relationships covered	Journal publishing status	<i>Journal of Research in Educational Sciences</i>	<i>Harvard Business Review</i>	<i>Journal of Cellular Biochemistry</i>	MARC 21 field name
Equivalent	• issues	*	*	*	022 International Standard Serial Number
	• Regional version				245 Title Statement
	• A special version of the object				310 Current Publication Frequency
	• Particular style or type of release				321 Former Publication Frequency
	• Reprint				250 Edition Statement
	• Electronic version				505 Formatted Contents Note
	• Miniature replica				521 Target Audience Note
					515 Numbering Peculiarities Note
					516 Type of Computer File or Data Note
					530 Additional Physical Form available Note
					580 Linking Entry Complexity Note
					856 Electronic Location and Access
	Derivative	• Translations: translation of; translation as		*	
• Other language versions					767 Entry/ Translation Entry
Whole-part or part- whole	• special issue		*	*	770 Special Issue Entry
	• in	*	*	*	773/ Host Item Entry/ 774 Constituent Unit Entry
Accompanying	• constituent unit				
	• has supplement			*	525 Supplement Note
Sequential	• supplement to				770 has supplement
	• continues	*	*	*	772 supplement to
	• continues in part				780 Preceding entry (indicator: 0-5 <i>Type of relationship</i>)
	• absorb				0. continues
	• absorbed in part				1. continues in part
	• separated from				2. formed by the union of ...and ...
					3. absorbed
					4. absorbed in part
					5. separated from
	• continued by	*	*	*	785 Succeeding entry (indicator 0-5: <i>Type of relationship</i>)
• absorbed by				0. continued by	
• absorbed in part by				1. continued in part by	
• split into...and...				2. absorbed by	
• merged with... to form...				3. absorbed in part by	
				4. split into...and...	
				5. merged with... to form...	

4. The metadata fields for building journal bibliographic relationships with DOI.

Airiti Co. is the only DOI registration center in Taiwan. When the center issues journal DOI, there are three levels of record styles, including journals, volumes, and articles. From the comparing results, we can see that at the “journal” level, the metadatas can completely match the fields of bibliographic relationships of journals; at the “volume” level, the metadatas can match 80 percent of the fields; at the “article” level, more metadatas cannot match appropriate fields. The result of matching the needed metadatas for “article” level with MARC 21 fields, and we can see that the record standards used for journals in libraries can comprehensively reveal the metadatas needed for journals required by Airiti DOI Registration Center. The unmatched record fields can be considered by Airiti to be added to the required metadatas for future DOI application.

Conclusions and Suggestions

The results show that through MARC 21 entry fields, it can reveal the five bibliographic relationships related to journals, and if we want to involve FRBR Group 1 entities in building bibliographic families of journals, there are also matched MARC 21 fields for revealing and building journal families. The needed record fields mentioned above can match the core elements required by DOI registration center. This study shows that the record fields of MARC 21 and DOI core elements should be enough to help library users to search, identify, select and retrieve needed journals, but more metadatas should be added for a higher degree of effectiveness. Therefore, concrete suggestions are made to Airiti DOI registration center, vendors of library automation systems, and libraries.

Acknowledgements

This study is the research result of a 2013 ROC-NSC Research Project (NSC102-2410-H-005-062-). Budget subsidy from NSC is appreciated.

ROMANIZED & TRANSLATED REFERENCE FOR ORIGINAL TEXT

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Quotation Errors in the Articles of Library and Information Science Journals in Taiwan

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Abstract

This study has investigated the errors of quotation in articles of Library and Information Science journals in Taiwan. A total of 622 quotations cited in 111 Chinese journal articles, from four Library and Information Science journals, published 2011 to 2013, were obtained for citation analysis. The study analyzed quotation errors in journal articles, and accuracy of direct quotation and paraphrase. The results of the study reveal that: the average of the quotation error rate within journal articles was 13.67%. The types with the highest quotation error rate were the referenced article failed to substantiate, was unrelated to, or contradicted the author's assertions, and the secondary references did not credit the original author. The journal with the occurrence of correct paraphrasing ranged from 90.77% to 96.65%. This study suggests that authors should attach importance to accuracy of quotations in scholarly articles. Furthermore, interviews of journal editorial group could be conducted to investigate the ways to improve the accuracy of references and quotations in the perspective of journal editors.

Keywords: Quotation error, Library and information science, Taiwan, Journal article, Citation analysis

SUMMARY

Introduction

Citations are important in academic articles, for they can reveal relevant literatures the authors have searched and used, as well as provide data for readers to evaluate the articles, help build up authors' reputation, and offer bibliographies for readers to search on relevant topics. Correctly cited after-text references and in-text quotations give credit to the cited authors for their academic contribution, and also lower the possibility of misdelivering information, helping readers find needed resources and thus promoting scholarly communication. Otherwise, wrongly-placed citations not only add difficulties to readers' searches of information, but also frustrate and annoy readers for they have to waste more time on verifying the accuracy of information, thus impeding scholarly communication

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and lowering readers' trust in literature, authors or journals.

Most previous literature of library and information science studies in Taiwan have focused mainly on errors in after-text references, rarely attended to errors in in-text quotations. To investigate the rate of quotation errors in journal articles of library and information science (LIS) in Taiwan, citation analysis method is adopted in this study. Four first-tier journals of LIS in Taiwan are analyzed for the quotation errors during the years from 2011 to 2013. It is hoped that the research design and results of this study can help authors, journal editors and readers to understand and acknowledge the importance of accurate quotations in journals of LIS, as well as help raise the quality of journal articles and provide references for future studies.

Research Method

Four first-tier LIS journals in Taiwan acknowledged by Ministry of Science and Technology are investigated in this study, including *Journal of Educational Media & Library Sciences*, *Journal of Library and Information Science*, *Journal of Library and Information Science Research*, and *Journal of Library and Information Studies*. Research papers written in Chinese and published during the 2011 to 2013 are studied for their quotation errors, with a total of 111 original articles and 622 quotations.

Based on previous researches, in this study quotation errors are categorized into eight types, including "failure to substantiate", "inappropriate secondary citation", "oversimplification", "page number error", "publish year error", "author's name error", "article title error", and "listed in reference only". Quotations are analyzed by the researchers in person for their consistency with the contents of cited sources. Texts with controversies are cross-examined by the researchers, for raising the reliability. For not interfering editorial affairs of these studied journals and for protecting the privacy of citing authors and cited authors in those articles with quotation errors, the four journals are described as codes of A, B, C, and D in discussions of results and findings.

Results

Among the 622 quotations, 537 are with a strict accuracy (86.33%) while 85 are with errors (13.67%). As to the types of quotation errors, the most common ones are "oversimplification", "failure to substantiate" and "inappropriate secondary citation", each with a number of 26 quotations. Thirteen quotations are with "author's name error", eleven with "publish year error", seven with "listed in reference only" error, four with "page number error", and only one with "article title error".

The sampled 622 in-text quotations are cited for a total of 941 times. Since in-text quotation with “failure to substantiate” error would affect the evaluation checking of quotation accuracy, these quotations are excluded before a further analysis, with a total of 853 quotations left to be analyzed. The result of a further analysis shows that there are eight times of both accurate and inappropriate direct quotes (0.94%), two times of wording differences in accurate direct quotes (0.23%), 799 times of accurate adaptation (93.67%), and 36 times of inappropriate adaptation (4.22%). More than 90% of authors of the four investigated journals follow the citation guidelines when adapting the quoted articles. The rate of inappropriate direct quotes is between only 0.59% and 1.71%, while the rate of inappropriate adaption is between 0.48% and 8.46%.

Conclusions and Suggestions

The articles of the four investigated journals all have been reviewed by journal editors and peer-reviewers, but are still with citation errors. It means that authors should attend more to verify the accuracy of texts and references of their own works, for providing references for future readers who want to cite or use. For further developing abilities of research writing and citing, authors should actively participate in conducting citations and use reference management software to organize information of citations. Although reference management software might help lower the rate of format errors when citing references, it is more important for authors themselves to verify the accuracy of information in their citations.

As contributors of journal content, authors of journals articles should take the major responsibility for the accuracy of citations. Previous studies on lowering the rate of citation errors have examined journals’ submission author guides and made relevant suggestions; it suggests that editorial boards should also take part of the responsibility for citation accuracy. Therefore, it is suggested that future studies could interview editorial boards for understanding whether the editors verify the accuracy of content and formats of citations, and whether review guidelines for identifying citation errors are provided to editors and peer-reviewers and what the guidelines are. It is also worth investigating the possible causes of varying rates of citation errors in various journals. Through these investigations, we should be able to have a further understanding of in-text quotation errors in journals.

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JoEMLS English Summary

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Investigating the Structural and Textual Characteristics of Internet Physicians Review

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Abstract

The Internet increases information transparency in several ways, and one way is to allow patients and caregivers access to needed information. It improves the autonomy of medical decision-making, and further creates better physician-patient communication. Internet physician review, as a type of popular medical and health information, improves patients and caregivers' understanding of doctor selection and supports proactive health decision-making. This study collects Internet physician reviews from two Taiwan-based health information websites — Good Doctor and Health, and DocHos. The analysis framework comprises both structural and textual aspects, each with distinct analytical focuses. The structural analysis includes length of reviews and paragraph structure. The textual analysis includes nature of the reviews, when in the clinical encounter process is reviewed, intent of the reviews, themes of the review, and review strategies. This study hopes to understand the role and function of the Internet physician reviews in the process of health information communication, as well as the applications on physicians' practice of clinical medicine and patients and caregivers' medical decision-making process. It may provide insight into the development of patient-centered rather than institution-centered evaluation criteria for healthcare quality.

Keywords: *Internet physicians' review, Content analysis, Healthcare provider information, E-Word-of-Mouth (eWoM)*

SUMMARY

The Internet increases information transparency in several ways, and one way is to allow patients and caregivers access to needed information. It improves the autonomy of medical decision-making, and further creates better physician-patient communication. Internet physician review, as a type of popular medical and health information, improves patients' and caregivers' understanding of doctor selection and supports proactive medical decision-making. This study collects Internet physician reviews from two Taiwan-based health information websites:

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Good Doctor and Health and DocHos. The analysis framework comprised both structural and textual aspects, each with distinct analytical focuses. The structural analysis includes the length of the reviews and paragraph structure. The textual analysis includes the nature of the reviews, moment of the clinical encounter process, as well as the intents, the themes and the strategies of the reviews. Through this study, we hope to understand the role and function of the Internet physician reviews in the process of health information communication, as well as the applications on physicians' practice of clinical medicine and patients and caregivers' medical decision-making process. It may provide insight into the development of patient-centered rather than institution-centered evaluation criteria for healthcare quality.

The literature review for this study encompasses two themes: to identify the characteristics of Internet physician review and to survey the Internet physician review website services. Internet physician review can be considered as "electronic word of mouth" on healthcare quality. It is patient satisfaction data in the form of electronic word of mouth. Past research trends focus on four dimensions. First dimension analyzes the inherent characteristics of the content of Internet physician reviews. These studies conclude that Internet physician reviews are predominantly positive, with aim to recommend good doctors. Second dimension deals with Internet physician rating websites and their usability, information architecture, and functional features. Third dimension analyzes the quality of Internet physician reviews, and the studies find that quality of the reviews is associated with the trustworthiness and reliability of the information, and eventually affect a physician's reputation and a patient's right to full disclosure. Fourth dimension attempts to analyze the relationship between Internet physician reviews and healthcare quality, and past studies find the relationship to be both positive and negative. A survey of the Internet physician review website services encompasses services from Taiwan, Greater China, The United States, and European countries. The study finds that American and European Internet physician review websites are more comprehensive and offer more advanced features compared to some of their Asian counterparts, as Internet physician review is merely one of the functions offered by the websites.

This study collected Internet physician reviews from two Taiwan-based health information websites, Good Doctor and Health (<http://health.businessweekly.com.tw/GSearchDoc.aspx>) and DocHos (<http://www.dochos.com.tw>). Both sites are operated in Traditional Chinese. Good Doctor and Health was established and funded by Business Weekly Media Group, a well-known media company in Taiwan. DocHos was developed and owned by an internal medicine physician but the service was discontinued due to unforeseen circumstances.

For the purpose of data collection, the categories of the medical specialties from both Websites are merged and reorganized into 24 medical specialties. Fifty physician reviews for each of the 24 medical specialties were collected resulting a total of 1,200 reviews for data analysis. The specialties studied were neurology, dermatology, dentistry, obstetrics and gynecology, psychiatry, pediatrics, gastroenterology and hepatobiliary, ophthalmology, traditional Chinese medicine, pulmonology, urology, hematology and oncology, physical medicine and rehabilitation, general surgery, general medicine, orthopedics, family medicine, nephrology, cardiovascular medicine, otolaryngology, rectal digestive surgery, plastic and reconstructive surgery, endocrinology and metabolism, and rheumatoid allergy and immunology. This study adapted the analysis framework that was inspired Pollach (2006). The framework comprised both structural and textual aspects, each with distinct analytical focuses. The structural analysis includes the length of the reviews and the paragraph structure. The textual analysis includes the nature of the reviews, moment of the clinical encounter process, intent of the reviews, themes of the review, and review strategies.

Regarding the structural analysis, this study finds that the average length of all 1,200 reviews is 68.24 words but the review length varies among medical disciplines. Reviews from Neurology (135.6 words), Dermatology (89.6 words), and Dentistry (87.8 words) are the longest. Reviews from Rheumatoid Allergy and Immunology (51.0 words), Endocrinology and Metabolism (51.3 words), and Plastic and Reconstructive Surgery (51.7 words) are the shortest. The structure of the reviews is determined by observing the length in combination of the writing style. Generally speaking, the most commonly used writing styles are single sentence (60.6%) and short articles (33.4%). The least used styles are modern poetry (0.3%) and letter (0.3%).

Findings on the nature of the reviews correspond to most past studies. The majority of the reviews are positive (92.4%) with 3.5% of the reviews are mutual, and 4.1% are negative. Regarding moment of the medical encounter process, the research findings mimic the patients' experience and identify nine critical moments that are addressed in the reviews. This study is able to conceptualize the medical process into seven sequential moments and two general remarks: 1) Prior to the medical encounter (5.8%); 2) making an appointment (1.3%); 3) waiting for appointment (3.1%); 4) during examination and diagnosis (34.3%); 5) receiving prescription and medical advice (5.1%); 6) during treatment (27.5%); 7) after treatment (25.8%). This study uncovers ten types of intents that correspond to the reviews posted, and these intents include 1) showing praise (86.6%); 2) acknowledging previous comments (28.0%); 3) asking questions (20.0%); 4) describing health situations (16.7%), 5) describing treatment process (16.3%); 6)

making recommendation (12.8%); 7) showing gratitude (11.6%); 8) addressing criticism (4.8%); 9) refuting previous comments (1%); and 10) others (4%). Two general remarks are physician-patient interaction in general (17.1%) and unrelated to medical encounter process (23.8%). Themes of the review are categorized into physician-related, system-related, clinical-related, and patient-related. The themes mentioned in the physician reviews can be reasoned as the evaluation criteria that patients acknowledged and perceived as important. Physician-related aspects can be broken into a physician's medical ethics (22.5%), reputation (12.1%), medical competence (45%), appearance (2.6%) and personality (65%). System-related reviews deal with clinical environment (1.8%), medical equipment and devices (2.8%), office service staff (7.5) and service attitude (17.7%). Medical-related reviews tend to focus on the diagnostic process (21.4%), medical advice and prescription (5.9%), and treatment outcomes (22.8%). Patient-related aspect focuses on patients' personal opinion (14.8%) on the overall medical encounter experience. The review strategies illustrate how the reviewers express and state their opinion on the clinical encounter. This study identifies six review strategies, from most to least frequently used strategies are summarizing (53.3%), declarative (25.2%), chronological (11.6%), emotional (9.3%), comparative (3.1%), and probing (0.8%).

Three directions for further research are proposed based on the findings and the limitations inherent to this study. Assessment of the information quality of physician reviews is worth further investigation, especially on the attributes of trustworthiness, currency, correctness, appropriateness, readability, and accessibility. The direction of exploring user behavior of physician review readers may be conducted by conducting in-depth interview and the Delphi method with goals to identify users' perceptions and attitudes toward Internet physician reviews, users' motivation to consult the reviews, and the perceived importance of the evaluation criteria. Lastly, this study suggests examining the effect of Internet physician reviews on patients' physician selection behavior and decision-making. Online survey method is recommended for further research in this direction.

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A Study of the Evaluation Dimensions and Criteria for OpenCourseWare Websites

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Abstract

OpenCourseWare (OCW), a set of free-of-use learning materials established by universities, became quite a success over the years and aroused the users' willingness to learn online. However, the design of OCW websites, including the structure, organization of learning resources and interfaces is multi-variant and disordered. The system and arrangement are still lacking of an evaluation standard. The goal of this study is to establish and verify the dimensions and the criteria that are suitable for evaluation of OCW websites. To achieve the research goal, the researchers performed document analysis and the Delphi Method. Sixteen experts in a total took part in the Delphi panel. By giving three rounds of questionnaire to those experts in the self-developed e-Delphi system, the researcher gathered their opinions then analyzed them back and forth. The final edition of the Evaluation Dimensions and Criteria for OpenCourseWare Website includes seven dimensions with fifty-eight criteria. Finally, concrete suggestions for OCW website establishment and administration were provided. Implications and recommendations for future research were also addressed.

Keywords: OCW, OpenCourseWare Website, Website evaluation, Delphi Technique

Summary

With the rapid progress of technology, the population who have access to the Internet has increased dramatically; the number of users who take Internet as a learning utility has also been raised. The Internet indeed plays an important part in the widespread of educational resources. Among the various kinds of learning resources on the Internet, OpenCourseWare (OCW), a type of free educational resources, enables the learners to retrieve high quality college-level educational materials without cost. Because of the openness of OCW, free-of-charge, and the availability to any Internet user around the world, it now has become a popular way for universities to deliver their educational content worldwide. Students, teachers as well as self-learners could engage themselves with the online learning materials and start their learning activities anywhere, at any time.

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Following the wave of open learning that swept the world, the National Chiao Tung University in Taiwan first promoted the establishment of Taiwan Open Course Consortium in 2008. The most distinguishing characteristic of Taiwan OCW is that most of the courses provide video lectures. Moreover, the universities that are developing OCW in Taiwan would have various OCW development considerations including: 1) demonstration of the universities' distinctive characteristics, 2) potential audience size of a newly-published course, or 3) whether a waiver exam could be provided for enrolled students who take the universities' OCW basic core courses like Calculus or Physics (Lee & Chou, 2013).

Despite various OCW websites built by universities, the quality of these websites may not be consistent. The website structure may not be carefully-planned, the content may not be presented in an organized way or the user interfaces may not be consistent with one another. It generates difficulties for learners to transfer their learning experiences. Thus, the current study aims to establish and verify the dimensions and the criteria that are appropriate for the evaluation of OCW websites. The research goals are as follows:

1. to identify the dimensions for OCW website evaluation and to establish a set of evaluation criteria within each dimension;
2. to gather experts' detailed opinions and their views about these dimensions and criteria using the Delphi technique; and
3. to provide practical suggestions for OCW websites according to the research results, and propose implications for future research.

In order to achieve the research goal, the researchers first identified the evaluation dimensions and the criteria for each. The researchers carefully reviewed the relevant literature including the medical website evaluation of Tsai & Chai (2005) and Hsu (2004) and business websites and government websites (e.g., Kim, Morrison & Mills, 2004; Smith, 2001; Tan, Benbasat, & Cenfetelli, 2008; Tsai, 2011). Most importantly, the researchers selected and reviewed studies that focus on the development of evaluation criteria for language learning websites and Web2.0 educational websites (e.g., Liu, Liu, & Huang, 2011; Lo, 2004; Yu, Cheng, & Lee, 2011). In terms of the website quality, previous studies indicated that the dimensions of evaluation criteria for the quality of websites (e.g., interface design, user assistance, credibility, technical issues, update interval) seem to be universal regardless of types of websites (Dragulanescu, 2002; EETAP Resource Library, 1999; Hasan & Abuelrub, 2011; Signore, 2005). From the above-mentioned literature, it can be identified that 1) despite the development of evaluation criteria for various kinds of educational websites, there is a lack of evaluation standard designed especially for OCW websites; 2) regardless of the

evaluation dimension related to the supporting function provided, there are seldom considerations of evaluation criteria from online learners' perspectives. Next, to tailor to the draft of the to-be-developed OCW evaluation criteria, the researchers adapted the interview results of their previous study (Wang & Chou, 2013) to generate evaluation criteria specifically for OCW online learning which includes the criteria regarding the quality of video/audio, number of provided courses with video lectures, course materials licensed under Creative Commons (CC), etc. As a result, the preliminary seven OCW website evaluation dimensions and a total of forty-one criteria were generated.

Secondly, the researchers performed the Delphi method to ensure the suitability and representativeness of the research. A total of 16 experts took part in the study. The Delphi questionnaire used a 5-point Likert scale (scored 1-5 from "Not at all important" to "Very important") and consensus was defined as all items had their mean scores equal or greater than 3 and each item with a standard deviation less than 1. To collect the experts' responses effectively, the e-Delphi system, developed by the researchers, was used in this study to help the participating experts submit their questionnaires and to calculate the total entries and gather the comments. Based on the statistics and results, the researchers analyzed the comments and determine whether the experts have reached a consensus. The data collected from three rounds of questionnaires were processed using the e-Delphi system and the researchers gathered the materials then analyzed them back and forth. In the final round, the evaluation criteria scored more than 3 were kept, and those scored more than 4 were marked bold to show the importance of the criteria.

The final version of the evaluation dimensions and criteria for OCW websites includes seven dimensions with fifty-eight criteria. The dimensions identified and some of the example criteria were:

1. Contents and quantities of courses: sufficient introduction to the course, quality of audio, quality of video, etc.
2. Learning assistance: records of learning history, setup of discussion board, online student feedback/exercise, etc.
3. Credibility: display of the lecturer's qualifications and credentials, name of the institution, etc.
4. Currency: whether the content is updated periodically, means to contact the site administrator is provided, etc.
5. Quality of technique and connections: with cross-platform solutions, able to be searched via search engine, no broken link or dead link, etc.
6. Interface design of website: consistency and appropriateness of layout, notification of important posts or messages, etc.

7. Openness of website: whether all materials are under the license of Creative Commons, the website is free-of-use, no membership is needed when access to the learning materials, etc.

It is worth noticing, however, that the criteria within the “Learning assistance” dimension seemed to cover the functions of Mass Open Online Course (MOOC) websites because OCW usually does not provide means of interaction among the lecturers and students nor learning assistance of any kind. Since most of the OCW website users are independent and highly motivated learners, and could self-monitor their learning progress, the results of the current research seem to imply that the functions provided by current OCW websites may not be able to fulfill the needs and support for online learning activities. MIT OCW, to continue its spirit of open sharing, has tried to team up the learners and built OpenStudy groups to connect the website users (MIT OpenCourseWare, 2010). Domestic universities like National Chiao Tung University and National Tsing Hua University provide discussion forums on their OCW websites to provide technical support as well as to provide a channel for users to give their feedback about a certain course. The cases mentioned above may help explain why studying through MOOCs gradually becomes a learning trend that self-learners start to embrace.

Finally, the researchers suggest that follow up research may use the set of evaluation criteria developed by this research in a field trial to evaluate the existing OCW websites; the criteria may be modified and used for MOOC website evaluation in the future research.

ROMANIZED & TRANSLATED REFERENCE FOR ORIGINAL TEXT

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JoEMLS English Summary

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Ver3.0 (January 31, 2015)

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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)】

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ISSN 1013-090X



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