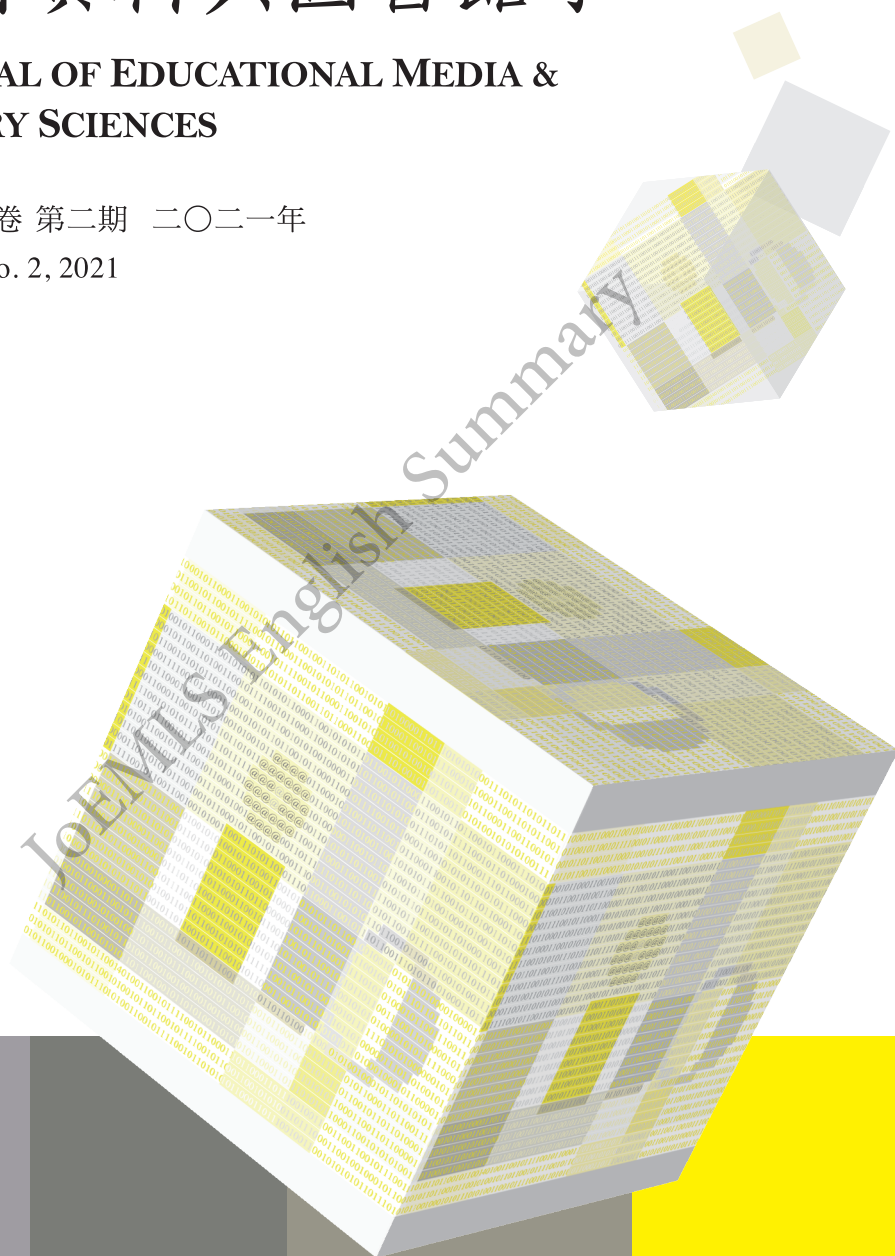


# 教育資料與圖書館學

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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，並改以季刊發行。自1982年9月起易今名。另自2016年11月起，改以一年出版三期（3月、7月、11月）。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，2015年獲科技部人文社會科學研究中心評定為教育學門專業類一級期刊。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). In 2015, The JoEMLS is acknowledged as the first class scholarly journal in Taiwan by Ministry of Science and Technology (MOST). Since November 2016, the JoEMLS has been changed from quarterly to a tri-annual journal, published in March, July, and November.

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The cover design of JoEMLS signifies:

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

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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。

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*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：

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- (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**.

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



# JOURNAL OF EDUCATIONAL MEDIA & LIBRARY SCIENCES

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## Contents

### EDITORIAL

- A Review and Reform of the *JoEMLS*  
Open Peer Review System**  
Jeong-Yeou Chiu 151

### RESEARCH ARTICLES

- A Study of Converting MARC 21 to  
BIBFRAME 2.0: A Case of Printed  
Text Material “Hong Lou Meng”**  
Ying-Jhen Fu & Hao-Ren Ke 157
- Design of Interoperability in Digital  
Humanities: A Case Study of  
the Interpretation and Restoration of  
the Han Dynasty Wooden Slips From  
Edsen-Gol**  
Shu-Jiun Chen 193
- An Exploratory Study on the Taiwanese  
Primary and Secondary School  
Teachers’ Understanding of *Personal  
Data Protection Act***  
Mei-Lien Hsueh & Chien Chou 237



## EDITORIAL

# A Review and Reform of the *JoEMLS* Open Peer Review System

*The Journal of Educational Media and Library Science (JoEMLS)* started implementing the Open Peer Review (OPR) system from Issue 2, Volume 56 of 2019, and has since been committed to promoting the OPR system while upholding a spirit of innovation and revolution. As of the writing of this article (Issue 2, Volume 58 of 2021), a total of seven volumes with 28 articles have been published. The *JoEMLS* took the initiative and inquired the authors and referees of 25 articles regarding their willingness to disclose the review comments, according to the attributes of the manuscript categories and special factors (e.g., the quality of author responses or referee review comments, and the authors' or referees' willingness). In total, the authors of 21 articles responded positively. In addition, among the 54 review comments for the 25 articles, the referees of 24 review comments consented to fully disclose review comments with their names published; those of another 21 expressed their willingness to reveal review comments on an anonymous basis; and the remaining indicated unwillingness or made no reply to the inquiry. Based on the results, the *JoEMLS* produced 18 general reports and 17 individual reports to disclose the information on the web to the public.

The *JoEMLS* further introduced a new measure for published manuscripts of which both parties (authors and referees) refuse to disclose the review comments, or which the editor-in-chief of the *JoEMLS* decides not to submit OPR reports. Specifically, relevant reports will still be presented alongside such articles on the website of the *JoEMLS*, but they will be specified and annotated with "Not open for review comments" or "Not open for reply of review comments." Through this measure, the *JoEMLS* hopes to be able to clarify any issue and avoid any doubt regarding the absence of OPR reports. For pertinent cases, please refer to the OPR report attached to an article in Issue 1, Volume 57 (<http://joemls.dils.tku.edu.tw/fulltext/57102oprfile1.pdf>).

To date, the implementation of the OPR system by the *JoEMLS* has generally been confined to disclosing the names of the referees and the content of the reviews, with a Digital Object Identifier (DOI) number granted. As for follow-up applications, it is up to the voluntary and pro-active action of the relevant parties (authors and referees) for the *JoEMLS* OPR reports to be combined with the Open Researcher and Contributor ID (ORCID) so as to become a personal academic

credential and achievement. This is a topic of major concern for the *JoEMLS*. The combination of the OPR system with the DOI system and its further connection to ORCID records are perceived as one of the inevitable future trends for the “Open Science” and “Digital Scholarship” applications. The *JoEMLS* will keep close track of this development and take more proactive action to inform the parties involved, seeking to empower more scholars with this advantage, and command greater attention to the significance of our OPR service. In the meantime, the *JoEMLS* hopes to enable relevant parties to cherishingly express more profound, good-willed, and interactive content while providing review comments and making replies to one another, thereby creating a harmonious, rational, and selfless environment for scholarly communications. This is the real value of OPR, the staunch belief of us, and the goal the *JoEMLS* has been tirelessly striving toward.

Moreover, as no Taiwan domestic database provider has as yet formally launched an OPR-related information system, journal publishers that rely heavily on journal submission and review systems and publishing platforms are faced with tough challenges. It is also a shame that Taiwan’s or even the world’s core journal evaluation systems still lack the provision of evaluation indicators for the OPR system. These factors have impeded the implementation of the OPR system in Taiwan’s academic communities. Many scholarly journal editing professionals remain unable to recognize the cardinal importance of OPR, let alone scholars in general. In terms of practical operations, the OPR system involves not only the design of the journal submission and review process, but also issues associated with academic “integrity” and “openness,” which include the presentation and use of relevant public data and documents. However, the current journal submission and review systems, publishing platforms, and third parties such as research abstract databases cannot systematically record all the data and documents generated in the OPR system. As such, users are unable to effectively search, retrieve, and use such data and documents. In addition, since no relevant guidelines for the implementation of the OPR system has been formulated by international authoritative institutions for journal evaluation, it is difficult for scholarly publishers that implement the OPR system to systematically declare the identity of their referees and the policy for document and data disclosure through editing policies. As a leading journal operator, the *JoEMLS* relies on the support and encouragement of our academic peers to stay motivated to persist in our endeavors.

The *JoEMLS* is celebrating its 50th anniversary this year. Due to the COVID-19 pandemic, only online academic seminars are organized. We look forward to the next decade and will continue to strengthen the foundation and

accomplishments of scholarly journal publishing. In this issue (Issue 2, Volume 58), 14 manuscripts have gone through the review process. Five manuscripts were rejected at the internal review process. Nine manuscripts have gone through the whole review process, and 3 were accepted, with a rejection rate of 78.6% (11 out of 14). The articles published in this issue include: “A Study of Converting MARC 21 to BIBFRAME 2.0: A Case of Printed Text Material ‘Hong Lou Meng’” by Ying-Jhen Fu and Hao-Ren Ke, “Design of Interoperability in Digital Humanities: A Case Study of the Interpretation and Restoration of the Han Dynasty Wooden Slips From Edsen-Gol” by Shu-Jiun Chen, and “An Exploratory Study on the Taiwanese Primary and Secondary School Teachers’ Understanding of *Personal Data Protection Act*” by Mei-Lien Hsueh and Chien Chou. Special thanks are dedicated to the reviewers and authors.

Jeong-Yeou Chiu  
*JoEMLS* Chief Editor



# A Study of Converting MARC 21 to BIBFRAME 2.0: A Case of Printed Text Material “Hong Lou Meng”<sup>ψ</sup>

Ying-Jhen Fu<sup>a</sup> Hao-Ren Ke<sup>b\*</sup>

Research Article

## Abstract

*The purpose of this study is to explore the process of converting bibliographic records from MARC 21 to BIBFRAME 2.0, using the work of Hong Lou Meng as an example to analyze the process of converting MARC 21 bibliographic records to the BIBFRAME framework, including how to merge entities and how to adjust the MARC fields for converting MARC 21 records to BIBFRAME triples. The conclusion of this study is that BIBFRAME implements entity consolidation based on the concept of super work, and generates URIs in a hash function through a set of fixed vocabularies generated by author names and work titles, and attaches them to different MARC 21 fields. The bibliographic records with different relationships are linked by specific URI, so that the bibliographic records can be integrated by Hub. The bibliographic relationships that can actually be integrated and automatically linked by LC BIBFRAME database includes original relationship, translation relationship, subject relationship, and related relationships. For the Hong Lou Meng bibliographic records discussed in this study, four relationships can be presented. The key to the consolidation process is a set of author names and titles of works with a fixed format. Therefore, in terms of cataloging, the description methods and vocabulary of related fields need to be more consistent.*

**Keywords:** BIBFRAME 2.0, Bibliographic Framework Format, MARC 21, Machine-readable cataloging format

## SUMMARY

### Introduction

The Internet has become an essential source of information for people (Ke & Chen, 2013). However, the machine-readable cataloging format (MARC)

<sup>ψ</sup> This article was adapted from a master's thesis under Ying-Jhen Fu “A Study of Converting MARC 21 to BIBFRAME 2.0: A Case of Printed Text Material “Hong Lou Meng.”

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commonly used in the library community makes bibliographic information difficult to be found by search engines (Hsu, 2014). For the bibliographic information of the library to have a stronger connection with the Internet, it needs to be converted into linked data (Schreur, 2018). Wallis (2018) proposed three approaches to converting MARC records into linked data structure, BIBFRAME 2.0, Schema.org, and linky MARC. This paper adopts the BIBFRAME 2.0 approach. BIBFRAME initiated by Library of Congress (LC) in 2011 can transform MARC 21 into a linked data structure. BIBFRAME builds a model for bibliographic information in a three-level framework that contains the entities of "Work," "Instance," and "Item." To make it easier for users to retrieve bibliography and obtain relevant information, the relevant entities should be merged or linked. This study intends to explore the process of converting MARC 21 to BIBFRAME 2.0. The MARC 21 bibliographic records of *A Dream of Red Mansions (Hong Lou Meng)* of the National Taiwan Normal University Library will be used for conversion and analysis to explore how conversion to BIBFRAME 2.0 is performed.

### Research Method

This study employed *MARCEdit* and the conversion tools released by LC, *marc2bibframe2*, to convert bibliographic data, and then used the conversion results to analyze how MARC 21 can be mapped into the classes and properties of BIBFRAME 2.0. The MARC 21 records of the 502 printed materials of *A Dream of Red Mansions* were used for conversion, and 11 of which were selected as examples to demonstrate bibliographic relationships. After the conversion, we referred to the BIBFRAME database built by LC to compile the mapping relationship between the bibliographic records and establish the steps for converting MARC 21 to BIBFRAME 2.0. During the process, we also reviewed which fields of the MARC 21 records obtained from the National Taiwan Normal University Library have to be revised, and how the field descriptions should be revised for the consolidation of the BIBFRAME 2.0 entities. The bibliographic relationships considered in this study include original relationship, translation relationship, subject relationship, and related relationships. According to Tillett (1987), the former three relationships correspond to derivative relationships, and the related relationships correspond to the third group of entities.

### Research Results and Suggestions

The conversion results show that the four bibliographic relationships, original relationship, translation relationship, subject relationship, and related relationships, can be successfully converted into BIBFRAME from the original

MARC records with the following modification notes. The resultant BIBFRAME files are listed in [https://github.com/jhen60615017e/Hong-Lou-Meng\\_rdf\\_file](https://github.com/jhen60615017e/Hong-Lou-Meng_rdf_file).

Investigating into the conversion results, this study finds that the LC conversion tool cannot convert the call numbers at the item level. At present, the LC conversion tool only automatically converts field 050, Library of Congress Call Number, for the relevant fields of call numbers. The cataloging specification of the National Taiwan Normal University Library records the call number in the field 945. As the 9XX fields are independently defined by each library, no rules are formulated regarding this aspect; therefore, the LC conversion specification does not give any rules for conversion. On this account, conversion should be separately performed in terms of the individual item level corresponding to the call number.

The original method to form a “Work” entity lied in merging identical Title/NameTitle access points; however, this method did not provide good solution. In 2019, LC entered into partnership with the SHARE-VDE project and the library integration service company Casaliniand to construct bf:SuperWork concept. To achieve better results of the integration between entities, LC decided to use the idea of Hub, which is similar to bf:SuperWork, as a new consolidation method (Ford, 2019a). Both share similar concepts with super work, primarily functioning to gather related works (Bigelow, 2019). If the National Taiwan Normal University Library intends to establish a Hub of *A Dream of Red Mansions*, the title in the title information of the Hub shall be obtained from the uniform title field. And the concept of the main entry remains at the core of the consolidation process. However, because CCR does not have the concept of the main entry, the Taiwan Normal University Library did not distinguish between 1XX and 7XX in its cataloging in the past. Such distinction began to be made only after the revision of the library’s cataloging rules. If no specific revisions are made to the rules by the libraries in Taiwan, there will be no main entry fields as per CCR descriptions. For that reason, the conversion from MARC 21 to BIBFRAME 2.0 with LC’s existing conversion tools will encounter problems in linking with the Hub and forming bibliographic relationships.

In the process of merging the bibliographic records, a matching field is based on the author name(s) and the uniform title, because these two fields provide the most intuitive information to identify the work and can also be expressed using fixed authority vocabulary. Take *A Dream of Red Mansions* as an example. The different bibliographic records should have consistent usages and descriptions as regards “100+240,” “600” or “700.” This means that after removing the subfield codes and punctuations, the fields of the same work should be able to be concatenated into a fixed string, whereby the hash function can be used to generate a unique URI for bibliographic matching subsequently.

This study suggests that domestic libraries gradually adopt MARC 21 and work with programmers to modify the LC conversion tool in the future. In addition, the relevant provisions of CCR and RDA may also be listed and compared. Based on the results of this study, the reasons for the addition, deletion, modification, and use of other MARC fields in the original MARC data can be systematically listed. This will help convert the domestic bibliographic records that use CCR as the cataloging rule to BIBFRAME in the future. Furthermore, this study suggests that BIBFRAME related workshops should be held regularly so that librarians can be familiar with the theory and practice of linked data and BIBFRAME. Finally, this study recommends that, in the future, the domestic BIBFRAME database and Hub should be established following the practice of LC. By linking the bibliographic fields with authoritative data such as the virtual international authority file (VIAF) during the conversion process, the effect of linked data may be achieved.

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# Design of Interoperability in Digital Humanities: A Case Study of the Interpretation and Restoration of the Han Dynasty Wooden Slips From Edsen-Gol<sup>ψ</sup>

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## Abstract

*This study explores the use of ontologies and the International Image Interoperability Framework (IIIF) in digital humanities from the perspective of interoperability. Focusing on imaged texts, it takes as its case study the text interpretation and slip restoration of the “Juyan Han Wooden Slips,” integrating the demands of humanities scholars in wooden slip research, and exploring and establishing the basic tasks, scholarly primitives, and interoperability mechanisms of this digital environment. The study first determines historical researchers’ basic procedure when investigating wooden slips, and discerns 10 functional primitives for these scholarly activities. It then proposes “Wooden Slip Research Ontologies” composed of interrelated “Wooden Slip,” “Chinese Character,” and “Annotation” ontologies to support digital wooden slip research and enable the cross-institutional search for Chinese characters. Finally, the integration of the Wooden Slip Dictionary and the Multi-database Search System for Historical Chinese Characters demonstrates how interoperable design applies to digital humanities image platforms.*

**Keywords:** Interoperability, Digital humanities, Ontologies, International Image Interoperability Framework, IIIF

## SUMMARY

For over twenty years, global cultural resources and academic materials have been undergoing large-scale digitization. Researchers have begun to investigate how to optimize the use of digital materials to improve or make breakthroughs in academic research. Nevertheless, when it comes to digital humanities research on ancient and medieval sources, many challenges remain. It is still difficult to carry

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out accurate analysis and identification of digitized early written documents using optical character recognition technology and compared to text analysis tools, there are currently still fewer image-based digital humanities systems in development. Moreover, image resources are limited by their respective institutions' system frameworks and usage rights. The difficulty of achieving cross-institutional resource interoperability has become an obstacle when digital humanities research involves discovery, comparison, referencing, analysis, exchange, reuse, and collaboration on image resources. Wooden slips are a representative example of imaged text resources that would benefit greatly from the further development of digital humanities tools to study their content and organization. Wooden slips were the basic medium for recording ancient culture throughout the development of Chinese civilization before paper became the most widespread writing material. Wooden slip data accurately and reliably reflects specific, contemporary political systems, economic forms, and social phenomena.

This study examines the "Han Dynasty Wooden Slips from Edsen-Gol," excavated from the frontier regions of Han dynasty China (202–220 CE) and stored at the Museum of the Institute of History and Philology, Academia Sinica. This cultural treasure trove of official slip correspondence directly records the local military, legal, educational, economic, religious, and everyday affairs of military personnel and civilians in the border regions. The primary challenges facing the basic work of wooden slip historians are the deciphering of the Chinese characters written on the wooden slips, which sometimes appear ambiguous or illegible, and the reconstruction of the sequence and relationships of wooden slips organized into booklets. By analyzing and deconstructing historians' work on "character interpretation" and "manuscript restoration" into discrete tasks and categories, the study investigates the design issues of hierarchically structured interoperability in digital humanities infrastructure regarding such image research and attempts to answer two questions: (1) what demands do researchers have regarding scholarly primitives and the functionality of technological platforms? and (2) how does the adoption of interoperability approaches on a digital humanities platform match such demands regarding scholarly primitives?

This paper focuses on the analysis of scholars' needs and the modeling of knowledge in a four-step procedure: (1) Through four in-depth interviews with a historian heading a wooden slip research group and by compiling related documents, a workflow was reconstructed and supplemented to match the historian's description of the conceptual work of "character interpretation" and "manuscript restoration," delineating the work as concrete, clear, and comprehensive tasks. (2) These tasks were then further analyzed, deconstructed, and reformulated as scholarly information activities and the basic functional

actions comprising each activity, in other words, the “scholarly primitives” discussed by authors such as Unsworth and Palmer. In addition, these tasks and their primitives were considered in the context of how they would translate to the functional needs of a digital research platform, including specific ontologies and IIIF. (3) Wooden slip ontologies were developed for the digital research platform. Elements from existing ontological models were evaluated and selected to build new ontologies, the original wooden slip interpretation data was situated within these new ontologies, and the ontological frameworks and content (categories, properties, extensions, etc.) were then constructed. (4) By integrating the results of the aforementioned steps, specifications for system functions were provided to the technical team to accordingly develop a digital humanities platform for imaged text.

Answering the study’s first question about researchers’ demands and scholarly primitives, the analysis found that the 10 most significant scholarly primitives for wooden slips researchers were: searching, scanning, assessing, reading, annotating, comparing, referring, gathering, monitoring, and networking. For example, the digital humanities research platform needs to be able to provide a complete, structured annotation function that allows input of annotated information from different knowledge fields, thus, recording the reasoning of scholars from different backgrounds and documenting the process for posterity. In addition, it needs to provide functions for reading, comparing, and referring to images, such as in the annotation of interpretations onto wooden slip images, zooming in or out of image areas, or side-by-side image comparison for multiple wooden slip regions, which allow arguments about a character’s surrounding context, (such as related academic documents, related character forms, reasoning, and feedback), to be displayed together on the image interface. The use of IIIF and linked open data (LOD) enable access and cross-referencing for these resources. Thus, in the case of wooden slip research, the digital humanities platform needed to (1) provide comparing and reading functions of different granularity for images at the level of wooden slips or of individual characters; (2) provide resource links to cross-reference the wooden slips or the shapes of individual characters; (3) provide functions to rank the possible relatedness of wooden slips; (4) provide functions to virtually assemble and arrange multiple wooden slips, such as into booklets; and (5) provide functions to annotate with keywords the people, events, times, places, official positions, etc. mentioned in deciphered content, which would serve as a basis for future automatic machine-learning text markup and analysis.

Answering the study’s second question about the adoption of interoperability platform standards, in accordance with the scholarly information activities of

humanities researchers, the study's developed platform expanded on the bases of the CIDOC Conceptual Reference Model (CRM) and Web Annotation Data Model ontologies to put forward "Wooden Slip Research Ontologies" that support digital academic work in Han wooden slip text interpretation and booklet reconstruction, as well as serving as a model for a cross-institutional integrated search system for historical Chinese characters. This set of ontologies is composed of three parts by the interrelated Wooden Slip Ontology, Chinese Character Ontology, and Annotation Ontology. The Wooden Slip Ontology enables descriptions of the wooden slips' data content such as their materials or design, related events such as excavations or acquisitions, and the relationships between collection items. Because it incorporates contextual information on events such as excavations, it is built to be compatible with both object-based and event-based models. The Chinese Character Ontology enables descriptions of wooden slip objects at the level of finer granularity of written content, character shapes, etc. Finally, the Annotation Ontology enables documentation of changes in the discussion process and enables the classification of different types of annotations.

In addition, "The Wooden Slips Character Dictionary—Database of Juyan Han Wooden Slips from the Institute of History and Philology Collections" ([https://ndweb.iis.sinica.edu.tw/woodslip\\_public/System/Main.htm](https://ndweb.iis.sinica.edu.tw/woodslip_public/System/Main.htm)) and the "Multi-database Search System for Historical Chinese Characters" (<https://wcd-ihp.ascdc.sinica.edu.tw/union>) were employed as practical examples to explain how interoperability is utilized in digital humanities systems. The former database contains digitized content from the Academia Sinica's massive collection of over 10,000 wooden slips, for which adoption of the interoperability standards discussed in this study represents a transformation in the efficiency of wooden slip research. The latter database was a collaboration between Academia Sinica and five top Japanese institutions in the field of wooden slip studies and archival, representing a quintessential example of how interoperability standards are vital to enable searching and cross-referencing across multiple institutional collections. Ultimately, the study recommends that these research results serve as a model for the future construction of imaged text analysis research platforms, which can be further integrated with textual research platforms to assist in the analysis and visualization of imaged text.

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### **ROMANIZED & TRANSLATED REFERENCE FOR ORIGINAL TEXT**

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# An Exploratory Study on the Taiwanese Primary and Secondary School Teachers' Understanding of *Personal Data Protection Act*

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## Abstract

*In this study, the researchers would like to explore Taiwanese primary and secondary school teachers' understanding on the provisions of the Personal Data Protection Act (hereinafter referred to as "PDPA"). A self-developed test, with 17 questions in 7 scenarios, was distributed to 519 primary and secondary school teachers in all regions of Taiwan. Results of the survey stated that, firstly, the teachers surveyed displayed a medium or low level of understanding in terms of areas in which the PDPA is not applicable depending on different circumstances. Secondly, the participating teachers showed a low level of understanding in terms of whether teachers should be held liable for damages if his/her conduct is not gross negligence. Moreover, the teachers surveyed manifested a medium level of understanding in terms of the scope of government agencies, liability for damages of the commissioning agency and the commissioned agency, the collection of special category personal data, and the conditions for exemption of damages from government agencies. Finally, the teachers in the survey demonstrated a high level of understanding in the following aspects: protected objects; the collection, processing and use of general personal data; notification obligation; the liability for damages (e.g., the teacher's conduct of gross negligence, the school's practice of assigning dedicated personnel to implement security measures for personal data protection); requested circumstances where it is impossible to estimate the amount of damages. The results of this study can be used as reference materials for school teacher workshops or for learning content development.*

**Keywords:** Primary and secondary school teacher, Personal data, Collection, Use, Information privacy

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## **SUMMARY**

### **Introduction**

There have been numerous news reports on teachers' infringement upon student data privacy in the education scene. This may cause teacher-student conflict and affect education promotion for schools. Judging from the news stories that involved student data privacy, the behaviors of teachers appeared to violate the Personal Data Protection Act (hereinafter referred to as the PDPA) as per its provisions. In Taiwan, the PDPA took effect on October 1, 2012, with some provisions amended in 2015 and implemented on March 15, 2016. To explore the level of understanding and possible misunderstanding of the PDPA among primary and secondary school teachers in the education scene, this study designed campus-relevant scenario cases and conducted empirical research using the questionnaire survey method. The research results may serve as a reference for elementary and secondary school teachers in studying the content of the PDPA or developing teaching materials.

### **Methods**

The study employed a self-developed questionnaire as the research instrument, which was reviewed and approved by the Institutional Review Board. The questionnaire contains two sections. The first section covers general information; the second section includes seven campus scenario cases and 17 related questions based on the provisions of the PDPA. A total of 600 copies of questionnaires were mailed to convenient-sampled Taiwan secondary and elementary school teachers, and 520 responses were received, achieving a returning rate of 86.67%. Among the returning samples, one was invalid and 519 were valid.

### **Research Results**

Based on the fully completed questionnaires by 519 primary and secondary school teachers, the study classified the respondents' understanding of the PDPA into three levels, i.e., a high-level understanding (with an overall correct answer rate of 67% to 100%), a medium-level understanding (with an overall correct answer rate of 34% to 66%), and a low-level understanding (with an overall correct answer rate of 0% to 33%). Details are described as below.

Research results revealed the following. Firstly, the teachers surveyed displayed a medium or low level of understanding in terms of areas in which the PDPA is not applicable depending on different circumstances. One is the circumstances in which the personal data is collected, processed or used by a natural person and is purely for the purpose of personal or household; the other is the circumstances in which audio-visual data is collected, processed or used

in public places or public activities and is not connected to other personal data. Secondly, the participating teachers showed a low level of understanding in terms of whether teachers should be held liable for damages if his/her conduct is not gross negligence. Moreover, the teachers surveyed manifested a medium level of understanding in terms of the scope of government agencies, liability for damages of the commissioning agency and the commissioned agency, the collection of special category personal data, and the conditions for exemption of damages from government agencies. Finally, the teachers in the survey demonstrated a high level of understanding in the following aspects: protected objects; the collection, processing and use of general personal data; notification obligation; the liability for damages (e.g., the teacher's conduct of gross negligence, the school's practice of assigning dedicated personnel to implement security measures for personal data protection); requested circumstances where it is impossible to estimate the amount of damages.

### **Conclusion and Suggestions**

Based on the research results stated above, the teacher participants in this study have inconsistent levels of understanding about the provisions of the PDPA. The study thus proposes the following specific suggestions:

#### **1. Strengthening advocacy efforts**

In terms of those aspects where teachers displayed a high level of understanding, the study suggested that flyers, posters, or Q&A pamphlets related to personal data protection issues may be printed to serve as a reminder for teachers. For the areas where teachers showed a medium or low level of understanding, the study recommends that institutions or school authorities may invite scholars and experts to deliver speeches or have lectures to explain the provisions of the PDPA in detail using campus scenario cases. In addition, small-scale workshops can be organized to engage participants in discussions and opinion exchanges based on campus scenario cases. Furthermore, a channel for consultation should be established so that teachers in the education scene may seek consultation on issues associated with the PDPA.

#### **2. Developing reference resources and teaching resources**

- (1) Books: Books on the PDPA should incorporate campus scenario cases, and explicate the relevant provisions of the PDPA through the cases with easy-to-understand texts. Such books should also provide additional information on related administrative rules and proclamations, as well as appropriately-designed pertinent test items.
- (2) Online teaching materials: Online teaching materials may present campus scenario cases in the forms of E-books, animations, comics, and videos among others. Moreover, questions related to the provisions

of the PDPA may be developed to encourage critical thinking among learners and enhance their sensitivity to data privacy, thereby enabling the learners to fully comply with the relevant provisions of the PDPA in their professional careers and in their daily lives.

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