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Changing Humanities and Smart Application of Digital Technologies

Edited By:

Kuo Hung Huang
Department of E-learning Design and Management,
National Chiayi University,
Taiwan

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CONTENTS

FOREWORD

It is with pleasure that I take advantage of the opportunity to write the foreword for this book, which is the work and effort of scholars to explore new ground and participate in research that infuses innovative methods and thinking into academic investigations around people's lives.

Innovative contributions are being made in literature, in history, in geography, in religion, and in education. These contribution are providing the basis for new ways of understanding the contextual nature of technological application practices emerging from humanities research and instruction.

Not only is this book of great value to the digital humanities researchers, but it is equally important and instructive to scholars who are interested in the interdisciplinary research from diverse fields. I hope this book will inspire you to pursue innovative research within existing culture.

Dr. David Tein-Yaw Chung
Department of Computer Science and Engineering
Yuan Ze University
Taiwan

PREFACE

As the title of this book implies, its purpose is to utilize a perspective derived from humanities to consider some of the potential uses of computers in humanities teaching and research. Our intent in producing this book is to provide readers with exemplars of the types of combining computers and subject matters in social science and humanities. Accordingly, our contributors address a variety of computer applications to education and research, which range from humanities, such as literature, geography, history, and religion, to the more technical domains of GIS, mobile devices, and networks.

If this book has any major objective, it is to draw attention to the inter-disciplinary nature of digital humanities, which remain controversial in scholarships or methodologies among academic communities. In doing so, the issues addressed draw on the themes of researching and teaching from a number of subject areas. Our strategy for introducing and synthesizing these issues is to hold an independent and open view of technology adoption. We try to present the various concerns of digital humanities as they emerged in discussions at academic gatherings.

The book is organized loosely into four sections. In Part 1, a chapter by the editor focuses on the situation of digital humanities in scholarly community. Although the advantages are acknowledged prevalently, the debate on applying digital technology on humanities research still continues. The ongoing controversy surrounds the academic values and social acceptance of digital humanities. Thus, more innovative applications in various fields, such as history, religion, or language, should be attempted, reported, or even criticized to inspire elaboration on the forms or values of digital humanities.

In Part 2, four chapters report on adopting spatial technology in humanities research in religion, Chinese literature, geography, and history. GIS (Geographic Information System) is widely used for professional purpose or daily task. With tremendous accumulation of spatial data such as satellite images, street view pictures, and digital maps, GIS provides the humanities researchers with a spatial perspective to explore the connections between places, time, events, or even sentiment. In Chapter 2, the authors introduced the use of Google Earth to conduct an exploratory study on the forbidden religious topic- burial site. In Chinese culture, death is associated with mysteries and taboos. Particularly, conversation about afterlife arrangement with the elderly is seen as an offending behavior. Visualizing the places of good Feng Shui, GIS with 3D views serves as a communication medium for understanding old people's feelings. In Chapter 3, the authors share the innovative instruction experience in a Chinese literature course by combining GIS and famous war in history. Through visualizing maps and animation, students are able to better understand the spatial movements and use of

military strategy and tactics while reading paragraphs about a famous war in “Shi-ji”. Chapter 4 demonstrates how GIS is capable of researching on history data by analyzing the distribution characteristic of commemorative shrines and steles of the Song Dynasty. After cross-checking the historical documents, these geographic evidences can play a crucial role initiating the cooperation between two fields. The authors of chapter 5 show that GIS transformed history data into drawn maps regarding a historical event, namely Batu Caves Turmoil. And thus, these maps can help to illustrate the cause, the process of and solutions to this event.

In Part 3, three chapters describe how to utilize network applications to support educational activities. Internet usage grows rapidly and tremendously. More importantly, innovative services are developed and incorporated into virtually every aspect of modern life. For example, Internet applications like cloud computing, virtual community, social media, digital library, or MOOCS are creating new forms of social interaction. Also, the online educational materials and activities enable self-learning and encourage new ways of learning, collaboration, and information sharing. Through the cases in chapter 6 to chapter 8, the Internet applications have proven to be a significant influence on education. Chapter 6 introduces the network educational system for Shogi, a Japanese chess game. As an important form of activities to improve skills, post-game discussions frequently take place among Shogi players. The authors designed SAKURA (Shogi Archives and Kansousen Utilities for Research and Advice), an Internet architecture for Shogi. With servers for shared database storing game records and comments, SAKURA supports discussions with shared boards and graphical interfaces visualizing variations of moves. In Chapter 7, the authors describe the process of adopting ODIS (Official Document Information System) in educational administration. Initially, directors and staff resist ODIS to operate on information system because of inconveniences and environmental changes. After constantly interacting with the leadership assignment as leaders or followers, directors and staff gradually accept the new way of distributed leadership. Therefore, work effectiveness is evidently improved. Chapter 8 describes the establishment of eK4 (e-Knowledge Consortium Shikoku) as a local university alliance to provide e-Learning courses related to Shikoku island. For the purpose of facilitating deeper understanding of humanities contents regarding Shikoku region, the consortium organizes e-learning contents of the characteristic lectures at eight universities and implements features of distributed Learning Management System and Shibboleth identification for credit transfer.

In the last part of this book, three chapters examine the effects of the technology on human behavior from a theoretically orientated perspective. Chapter 9 clarifies Transactive Memory Theory that human has the ability to store memory with the aid of the externally stored memories with the advancement of information technology. In chapter 10, the authors present

an empirical study indicating that the use of mobile technology as a medium is able to facilitate bilingual language acquisition. Chapter 11 claims the urgent needs for moral development of the Internet users because the anonymity and online free expression significantly characterizes the virtual world which is full of moral dilemmas and value conflicts.

While not attempting to provide a comprehensive examination of all the possible uses of computers in humanities, we purposefully invite contributors to reflect their theoretical philosophies and hand-on experiences, with which we are concerned, as well as a wide range of practical applications. Hopefully, this book will draw the attention of or bring inspiration to digital humanities among academic communities.

Dr. Kuo Hung Huang
Department of E-learning Design and Management
National Chiayi University
Taiwan

List of Contributors

Chen Ming-Chung	Department of Special Education, National Chiayi University, Chiayi, Taiwan
Cheng Ching-Ching	Department of Early Childhood Education, National Chiayi University, Taiwan
Cheng Kuang-Ting	Department of Information Management, National United University, Taiwan
Chuang Su Chong	Graduate Institute of Public Policy, National Chiayi University, Taiwan
Hayashi Toshihiro	Information Technology Center, Kagawa University, Japan
Ho Hsiang-Ju	Department of Early Childhood Education, National Chiayi University, Taiwan
Huang Kuo-Hung	Department of E-learning Design and Management, National Chiayi University, Taiwan
Kinuhata Toshiki	Faculty of Engineering, Kagawa University, Japan
Lee Pei-Lun	Department of E-learning Design and Management, National Chiayi University, Taiwan
Liang Chin-Tu	Graduate Institute of Education, National Chung Cheng University, Taiwan
Liu Hsin-Chun	Department of Education, National Chiayi University, Taiwan
Miura Ryu	Faculty of Engineering, Kagawa University, Japan
Tarumi Hiroyuki	Faculty of Engineering, Kagawa University, Japan
Tsai Jung-Tao	Department of Chinese Literature, National Chiayi University, Taiwan
Yeh Yu-Ching	Department of Early Childhood Education, National Chiayi University, Taiwan

Part 1: Humanities and Application of Digital Technologies

CHAPTER 1

E-research Acceptance and Humanities Community

Kuo-Hung Huang*

Department of E-learning Design and Management, National Chiayi University, Chiayi, Taiwan, R.O.C.

Abstract: Digital humanities is broadly characterized as humanities research associated with data-driven activities. Computational technologies are adopted to explore new methods and tools supplementing established research routines in humanities. However, humanities researchers expressed concerns that the enthusiasm to promote and accelerate the application of technology in humanities teaching and research might overlook the significance of humanities itself. This article points out the advantages of technologies in respond to humanities concerns.

Keywords: Digital humanities, Digital scholar, e-research, Humanities, Mutual dependence, New media, Scholarly communities, Social media, Task-uncertainty, Technology Acceptance.

INTRODUCTION

Digital Humanities, a term used during the early 2000s, was defined, by researchers from a variety of fields, as a new discipline exploring computational methods for traditionally-defined humanities scholarships (Puschmann & Bastos, 2015). In fields of humanities research, such as archive collection, text analysis, map digitalization, and history visualization, computational technologies are adopted to explore new methods and tools supplementing established research routines in humanities (Juola, 2008). Due to its interdisciplinary and technolo-

* **Corresponding author Kuo-Hung Huang:** Department of E-learning Design and Management, National Chiayi University, Chiayi, Taiwan, R.O.C.; Tel/Fax: +886-5-2263411; E-mail: kuohung@mail.ncyu.edu.tw

gical nature, digital humanities are broadly characterized as humanities research associated with data-driven activities. Incorporating a range of different interpretations and innovative technologies, digital humanities has evolved to a unique scholarly field or movement. Studies in media and culture, archive creation and digital library, e-learning, and the prevailing community websites have also been referred to as digital humanities generally (McPherson, 2009).

The suffix "digital", which has affinity to information technology, is progressively used to delimit the new computational areas of humanities research. Due to the pervasive use of communication tools, such as social media, it is most commonly defined as new media, which refers to content accessible on any digital device through interactive user feedback and creative participation on the Internet. With information and communication capabilities to improve intellectual and social life, new media provides a way to interact with other people in a manner that is fundamentally different from what we have had before. People are able to take advantage of expertise spread around the globe or ask virtual friends for advice. Furthermore, the human mind is no longer isolated by location, but is distributed all over the Internet. The entire wealth of stored human knowledge can be accessed through shared mental tools.

CONCERNS FROM THE HUMANITIES COMMUNITY

However, the concept of the use of computers to offer the potential of the expansion of human intellect is little more than a vision, as such claims are not strongly supported by empirical evidences (Olson, 1985; Pea, 1985; Sewell, 1990). Information is not equal to intellect. Access to millions of copies of digital textbooks or online courses of elite universities does not guarantee users' successful learning. Given the availability of such tools and resources, students will rely on finding more and learning less. In fact, the majority of the population use new media for social or entertainment purposes. Furthermore, Striebel (1986) argued that, within a technological framework, all these approaches reflect a shift towards technologizing education, which is consonant with a statement by Elkind (1985) "delegitimize non-technological methods of learning and thinking about problems".

Similar reservations have been expressed by several humanities researchers. They worry that our enthusiasm to promote and accelerate the application of technology in humanities teaching and research might overlook the significance of humanities itself. In spite of the enormous educational value and research inspirations, particularly association with the convenient use of resources, technology is deeply mistaken as a 'fast-food approach' necessarily required in the digital era, and therefore, reduces the educational perspectives and aims that emphasize holistic approaches to nurture humanist whole development.

On the contrary, some humanities researchers in the design field reiterate the importance of digital scholarships. The scholarly digital projects not only provide a researching opportunity for practitioners, but also post an issue regarding role of design in the creation and representation of knowledge for design thinking researchers (Burdick & Willis, 2011). For example, Christine Borgman asserted that, making the digital scholarship an innovating force in humanities research will prevent the community from falling behind in this multimodal and dynamic world, and thus, avoid becoming a victim of the tremendous restructuring of higher education (Borgman, 2009). Additionally, Sams, Lim, and Park (2011) claimed that the online content will provide a rich source of data for academic researches, particularly in social science and humanities. For example, they found that news blogs formed a centerpiece of election campaigns after using blog posts to examine the relationship between the number of votes received by political candidates and the level of their online presence. Consequently, the development of e-Research tool providing access to large online datasets instead of established data collection led to discover new sociopolitical phenomena or theoretical model.

The differences of attitudes regarding information practices between scholarly communities have been revealed by several studies. Digital learning repositories are increasingly important, as they provide resources for teaching, have the potential of fostering innovative new professional behavior, and facilitate the sharing of good pedagogical practices (Millard, Borthwick, Howard, McSweeney, & Hargood, 2013). With abundance of digital collections presently available, integrating primary sources into humanities teaching and learning at the university level becomes more convenient than before; however, collections of online primary sources are still underutilized (Lindquist & Long, 2011). Harley (2007)

Part 2: Spatial Technology and Humanities Understanding

CHAPTER 2

Feng Shui and Technology: Case Studies of Spatial Information Applications

Kuo-Hung Huang[1,*] and **Ching-Ching Cheng**[2]

[1] *Department of E-learning Design and Management, National Chiayi University, Chiayi, Taiwan, R.O.C.*

[2] *Department of Early Childhood Education, National Chiayi University, Chiayi, Taiwan, R.O.C.*

Abstract: This paper reports several case studies on creating innovative applications of spatial technology with Feng Shui in order to meet the requirements of burials. Case study research is used to investigate how individual behaviors are influenced by integrating technology with Feng Shui, within its context. A qualitative design is chosen to collect data from interviews, participatory observations, and demonstrations. The researcher interviewed the case subjects in order to assess their needs, and then accompanied them on their trips to family tombs and recorded the traverse path. Finally, this researcher displays the maps and discusses the applications. Findings indicated that Google Earth could be used with Feng Shui for filtering information regarding site selection, as well as recording and sharing information on burial activities. Above all, spatial information on the Internet could serve as a medium for cultural communications between generations. This study increases our understanding of the meaning of Feng Shui to our elders, and how to integrate spatial information with traditional culture.

Keywords: Burial, Burial site, Cultural communication, Elderly, Feng Shui, Google Earth, Spatial information, Traditional culture.

INTRODUCTION

Originally developed in China, the Feng Shui theory has long been used in architecture and landscape design and planning in East Asian countries, and has

[*] **Corresponding author Kuo-Hung Huang:** Department of E-learning Design and Management, National Chiayi University, Chiayi, Taiwan, R.O.C; Tel/Fax: +886-5-2263411; E-mail:kuohung@mail.ncyu.edu.tw

been extending its influences into daily lives (Huang & Teng, 2009; Mak & Ng, 2005). The main premise of the Feng Shui theory is to maintain a harmonious relationship between humans and environment. The literal meaning of Feng Shui is wind and water, and its major concerns are protecting sites from wind, and obtaining fresh water. The theoretical basis of Feng Shui relies on the concept of chi, the vital force that influences the fate of the space's occupants. Accordingly, decision-making regarding living spaces and burial sites are at the center of Feng Shui practices (Chang & Lii, 2010; Chen & Wu, 2009). In fact, Feng Shui has developed into two main fields, namely, "Yang House" Feng Shui, which is applied to palaces, cities, villages, and housing, and "Yin House" Feng Shui, which is applied to graves. Both have similar criteria for deciding grave and housing locations. Believing the quality of their Feng Shui influences both the physical and mental health of the inhabitants, many Chinese link the construction and the main direction of their houses with their fate (Mak & Ng, 2005).

The Chinese believe that fortune and health follow the gathering of positive chi. According to Feng Shui principles, the site of human dwellings must be located at a place where the heavenly chi and earthly chi are constantly interacting in harmony (Chang & Lii, 2010). Feng Shui concerns the physical form of the site under consideration and its surrounding environment. For an auspicious orientation, the Feng Shui master searches for propitious locations and directions, such as a favorable mountain range, lucky surrounding hills, or a nearby river. The process of searching is unpredictable, time consuming, and sometimes disturbing, particularly if a location is in urgent need, as in cases of funerals. Field observations have the disadvantage of only providing limited information on the area-wide distribution of the Feng Shui locations.

In China and Korea, burying one's parents in a place deemed propitious under Feng Shui principles is seen as a way to demonstrate filial piety. Most individuals take the responsibilities of maintaining and cleaning their ancestor's burial areas. Therefore, Feng Shui practice is the embodiment of cultural beliefs in burial activities. In recent years, spatial technology has become prevalent and is easily used. These emergent resources can be used as tools for the practice of Feng Shui. In this paper, the researcher reports several case studies on the Feng Shui of tombs by integrating Global Positioning System (GPS) and Google Earth capabilities,

and creates an innovative application of spatial technology through Feng Shui in order to meet the needs of individuals. Through interactive demonstrations and communications, the case studies can enhance our understanding of the contextual meaning of Feng Shui for the elderly.

FENG SHUI AND BURIAL SITE SELECTION

The Feng Shui of tomb location is extremely important in East Asia, where it is a common belief accepted by the public that the location of the tomb would affect the descendant's well-being (Um, 2009). In addition, it is well known that ancient Chinese emperors consulted Feng Shui experts before building their tombs. Although many consider Feng Shui as a superstition, the spirit of Feng Shui is still tightly integrated into individual lives. The mysterious forces of Feng Shui on tombs are commonly believed to be associated with health, prosperity, and good luck. For example, several leaders of major political parties in South Korea have moved their ancestors' graves to propitious locations. In Taiwan, Chiang Kai-shek's rise to power is said to be based on the good Feng Shui of his mother's grave. His downfall is blamed on the communists later relocating this grave (Rossbach, 1983). Even today, some TV programs predict who will win the presidential election by comparing the Feng Shui of candidates' ancestral tombs.

The direction and position of a grave are carefully selected by Feng Shui experts who concentrate on the analysis of sites. They first observe the land formation and terrain, and then determine location and orientation. An ideal Feng Shui site for a tomb is backing the tomb onto a mountain side and facing the water side (Hwangbo, 2002; Tam, Tso, & Lam, 1999). A watercourse is supposed to flow from an auspicious direction towards an inauspicious direction, which symbolizes sweeping bad things away, and the site is enclosed by mountains with an opening towards the south. The site chosen by this Feng Shui method is supposed to be the place where chi from Heaven and Earth meet, and is therefore symbolically centered in the cosmos. The Feng Shui spot, "hsueh", is the very place where chi is clustered, thus a house or a tomb is erected, and the courtyard in front of the location is called ming-tang, literally meaning "a bright house" where chi comes through (Hwangbo, 2002).

CHAPTER 3

Application of GIS in the Teaching of "Shi-Ji"-<Huaiyin Hou Biography> as an Example

Jung-Tao Tsai[1] and **Pei-Lun Lee**[2,*]

[1] *Department of Chinese Literature, Chiayi University, Chia-Yi, Taiwan, R.O.C.*

[2] *Department of E-Learning Design and Management, National Chiayi University, Chia-Yi, Taiwan, R.O.C.*

Abstract: This article was set out to be a new attempt at the teaching and research of "Shi-ji". It was supposed to create maps for the sections and chapters in "Shi-ji" relating to powerful generals with the assistance of GIS so that the readers could better understand the spatial movements and use of military strategy and tactics while reading paragraphs about war in "Shi-ji". The method won acclaims from most students in the preliminary classroom experiment, who showed the wish that more maps be created in the future to improve the teaching and research of "Shi-Ji".

Keywords: Biographies, Generals, GIS, Google earth, Han dynasty, Han Xin, Huaiyinhou, Military strategy, Shi-Ji, Spatial movements.

INTRODUCTION

"Shi-Ji" was written by Sima Qian in the second century B.C. as the first biographical general history book in China, imposing profound influences on history, literature, or even intellectual thinking of later generations. It is unashamedly a classic of Chinese culture and reading "Shi-Ji" has always been the common experience of traditional scholar-officials. To this day, most departments of Chinese studies and departments of history are still offering courses relating to "Shi-Ji". When Fu Sinian was the Chancellor of the National

* **Corresponding author Pei-Lun Lee:** Department of E-Learning Design and Management, National Chiayi University, Chia-Yi, Taiwan, R.O.C; Tel: 886-5-2717226; Fax: 886-5-2062328; E-mail: peilun@mail.ncyu.edu.tw

Kuo Hung Huang (Ed.)

Taiwan University, all the freshman students were required to read "Shi-Ji" closely. The two texts of "Shi-Ji", Zhangshizhi Zhifa and Hongmenyan, are included respectively in the middle school and senior high school Chinese textbooks. Of all the monographs concerning "Shi-Ji", two thirds are the attempts to popularize the work, including abridged editions, annotated editions, translated editions in vernacular Chinese and adaptations. It is thus clear that neither school students, nor the general public are unfamiliar with "Shi-Ji", but rather interested in it.

"Shi-Ji" is not only widely known and spread in Chinese cultural circles, but also fruitfully studied in international sinology. It was introduced to Japan in the Tang Dynasty (8th century A.D.) and to Korea before that. It has complete translations (containing the130 volumes of "Shi-Ji") in Japanese, Korean and English and the complete translation of it in Russian has also been published. "Shi-Ji" could thus well be called the precursor in the spreading of Chinese culture. When invited to deliver a paper on "Shi-Ji" on the international conference on sinology of the European Association for Chinese Studies in 2014, the author found that many scholars from Russia, America and Hong Kong had read "Shi-Ji" closely and offered relevant courses. "Shi-Ji" could thus well be a common language in sinology, whose significance will be increasingly obvious in the course of globalization.

The reading of classics begins with the study of words, followed by in-depth reading and hard thinking to discern the messages of the classics, and ends in the dialogue between oneself and the classics, when the classics will be activated and their contemporary significance be brought out. In this exploration of the classic's contemporary significance, words are the bridge while the dialogue with oneself is the central pathway. In the reading of historical books, apart from the mastery of words and temporary sequence, the spatial background is also indispensable. This is especially true when it comes to the narratives about powerful generals. If the spatial contextual illustrations could be added in the picture, it will surely be very conducive to the teaching of "Shi-Ji".

This paper was thus set out to explore the new possibilities of teaching "Shi-Ji" by studying "Shi-Ji" and the relevant texts about powerful generals with the help of

GIS. It was hoped that through this interdisciplinary effort, the interpretation of "Shi-Ji" could be spatialized and contextualized, the teaching content of "Shi-Ji" could be deepened and enriched, and the students be more understanding of the classic wisdom, hence elevating their life. This paper is comprised mainly of three parts: The first part is devoted to the war narrative in "Shi-Ji"-Huaiyinhou Biography, followed by the second part describing the application of GIS in the teaching and research of "Shi-Ji", with "Shi-Ji"-Huaiyinhou Biography as the example. The feedbacks from the students on the GIS-assisted "Shi-Ji" teaching are analyzed in the last part, which also points out the room for future studies.

ANALYSIS OF THE THREE BATTLES IN HUAIYINHOU BIOGRAPHY

When reading "Shi-Ji", especially the biographies, the readers could easily notice the different number of characters that are depicted in each biography. Some of them might be devoted solely to one person, such as Wuzixu Biography. Others might be the combined biography of two people, like Guan Yan Biography. Still others might be the classified biography of over three people, namely the total of 10 chapters including Cike Biography, Xunli Biography and Huozhi Biography. Dealing with the history of more than 2,500 years in 130 chapters and more than 500,000 words, it is necessary for "Shi-Ji" to have its own system and framework to address the chronological span. The framework is constituted by the five categories of Basic Annals (benji), Tables (biao), Treatises (shu), Hereditary Houses (shijia) and Ranked Biographies (Biography) while the characters are classified in the feasible manner of handling complexity by simplicity. The classified biographies are designed to demonstrate the historical development *via* several categories of characters. These characters, therefore, should be representative in the historical development, besides featured by clustering effects. Take Kuli Biography for example. It depicts a group of officials favored by Emperor Wu that knowingly break and interfere with the law. It thus not only reflects the bureaucratic ecology, but also satirizes Emperor Wu's rule by draconian law. Other important categories of characters, on the other hand, are not presented in the form of classified biographies. Rulers, for example, are mostly dedicated with an entire chapter like Gao Zu Benji due to their prominent status and profound influence. Basic annals could thus be treated as a "large classified biography" comprised of 12 chapters. This is also true for Hereditary Houses.

CHAPTER 4

Effect of Grid Space Resolution on Historical Data Analysis

Pei-Lun Lee[1] and **Hsin-Chun Liu**[2,*]

[1] *Department of E-Learning Design and Management, National Chiayi University, Chia-Yi, Taiwan, R.O.C.*

[2] *Department of Education, National Chiayi University, Chia-Yi, Taiwan, R.O.C.*

Abstract: This article uses GIS technology to analyze the distribution characteristic of commemorative shrines and steles of the Song Dynasty. The findings show that for the highly discrete historical data, smaller grid is not better. The major distribution is in the southeast coastal administrative regions, and inland Chengdufu Lu and Jinghunan Lu. The hot spot analysis shows that Liangzhe Lu, Huainandong Lu, Jiangnanxi Lu, Guangnandong Lu and Chengdufu Lu have apparent hot zones of construction, and from the north Huainandong Lu to the south Liangzhe Lu, Jiangnandong Lu, Jiangnanxi Lu and Fujian Lu form an apparent belt. The records of commemorative shrines and steles show that Emperor Ningzong of Song has the maximum 75 units, and Emperor Yingzong of Song has the minimum 1 unit. It may be related to the length of reign. In terms of space, there was no obvious location characteristic of distribution in various emperors' reigns in the Northern Song Dynasty, but the major distribution was in the south administrative regions in the Southern Song Dynasty. The results of this study can be provided for history researchers to discuss the historical background and space-time characteristics of the hot zone of construction.

Keywords: GIS, Grid, History, Hot spot analysis, IDW, Shrines, Song Dynasty, Space resolution, Steles, TIN.

[*] **Corresponding author Hsin-Chun Liu:** Department of Education, National Chiayi University, Chia-Yi, Taiwan, R.O.C.; Tel: 886-5-2717328; Fax: 886-5-2266568; E-mail: hsinchun@mail.ncyu.edu.tw

Kuo Hung Huang (Ed.)

INTRODUCTION

Few history researchers use GIS for history study due to high thresholds of funds and technology, and building a literary history database costs much labor. Therefore, it is difficult to be used for history. However, the space is correlated with time, an additional review of space is helpful to complete analysis of history. For example, Gu (2012) used GIS to establish the distribution of malaria control areas in the Japanese reign, and found that the control areas were not as universal as the epidemic areas of malaria, and the malaria control areas were not all in the high-risk zones of malaria, so the control areas were concentrated where there were dense Japanese, tightly correlated with the nature of colonial medicine. The historical landscapes are reconstructed by using DTM to let the readers know the battle field landscapes or the causes of decisions in the past (Harris, 2002; Knowles, 2004; Rumsey & Williams, 2002) indicated that the GIS actually contributes to clarifying and unfolding historical facts. Therefore, the GIS can integrate the numerous historical materials effectively, the visual data display enables us to analyze and understand regional difference and environmental impact, so as to review historical subjects in a more extensive field.

The historical research on commemorative shrines and steles mostly laid emphasis on the explanation of historical documents, analysis of commemorative stele cases and discussion about administrators' achievements (Liu, 2015; Liu, 2009; Zhao, 2006; Lei, 2004), seldom on space. However, to convert historical data into time dependent spatio-temporal data by combining space with time, and to use GIS spatial analysis to review the spatial layout of historical data will be helpful to understanding the distribution characteristic, so as to analyze the time-space relationship.

Therefore, we use GIS grid analysis technique to research the space dimension of distribution places, hoping to understand the characteristic of spatial distribution, and to analyze the correlation among time, place and neighborhood, so as to look for the hot spot clustering range and recognizable zones in space by hot spot analysis. The data can be provided for literary history researchers to further analyze various location characteristics and the causes of formation, forcing history researchers to research into the time-space relationship of literary history

events more comprehensively.

RESEARCH METHOD

The Geographic Information System (GIS) is an integrated system, implementing the creation, access, management, analysis and demonstration of spatial data based on computer. Added to this, it can be integrated with the successively emerging technologies or internet to provide decision making and foreseeing the future by reviewing the past, such as MM, HM, ES, DSS, GPS, RS and Google Earth. The chief values are high flexibility and integration and analysis capability of data processing.

This study uses Mapinfo12.5 as analytical software, there are 442 data of commemorative shrines and steles analyzed, the data are derived from prefectural good governance records in the Song Dynasty (AD960-1278). The time series, personal names, officials, places, administrative content and history sources are displayed in a form. The original construction place is in unit of prefecture. Therefore, this paper uses the prefecture location as locating point, and uses the "Atlas of Chinese History" edited by Tian (1980) as base map to make relevant places and administrative divisions of the Song Dynasty, and corrects the places referring to the layers of Version 2.0, CHGIS of University of Cambridge and Fudan University (Berman, 2004).

In GIS cartographic analysis, the most universal maps are digitized and filed in vector format, such as roads, places and regions. Comparatively speaking, grid data are seldom seen, but they are likely to be calculated and analyzed, so they are mostly used in spatial analysis. Therefore, this study uses vector and grid data formats for related analysis and discussion.

RESULTS AND DISCUSSION

Site Analysis

According to (Figs. **1-3**), the commemorative shrines and steles of the Song Dynasty spread over various administrative regions of the Song Dynasty, but mainly in the southeast. Table **1** shows the top ten administrative regions (Lus) of

CHAPTER 5

Visualizing Place Connection: Application of GIS in Turmoil History Research

Hsin-Chun Liu[1] and **Pei-Lun Lee**[2,*]

[1] *Department of Education, National Chiayi University, Chia-Yi, Taiwan, R.O.C.*

[2] *Department of E-Learning Design and Management, National Chiayi University, Chia-Yi, Taiwan, R.O.C.*

Abstract: The geographic information system (GIS) database contains spatial data from modern and ancient maps, satellite images, natural environments, and artificial scenery, special event, communications network, natural disasters; it even tells the differences between town and country and conflicting events between populace groups from the Song Dynasty. When researches of similar historical themes are lined up together, a GIS with related spatial data and geo-temporal visualization could be designed and implanted. With the aid of GIS, it is possible to draw maps of the Batu Caves Event and to illustrate the cause, the process of and solutions to it. This thesis intends to analyze the boundary management policy within the Song dynasty territory; and the growing state power, and further gains an insight into the governance of the Dong Militia, the economy of Mountain barbarians and also its cultural values. With a literature of Song anthology, epitaphs, and visuals and maps drawn by GIS, this thesis presents a historic scene from 800 years ago and the turmoil in local development.

Keywords: Batu caves, Dong militia, GIS, Mountain barbarians, Provincial people, Regional armies, Savage boundary, Sidong people, Song Dynasty, Subdued tribe.

INTRODUCTION

Because of the high threshold of funds and technology, many historians hesitates

* **Corresponding author Pei-Lun Lee:** Department of E-Learning Design and Management, National Chiayi University, Chia-Yi, Taiwan, R.O.C; Tel: 886-5-2717226; Fax: 886-5-2062328; E-mail:peilun@mail.ncyu.edu.tw

Kuo Hung Huang (Ed.)

to apply the geographic information system (GIS) to their research, and it becomes even harder when building historical databases always takes massive amount of time. Though there is always this difficulty, space and time are closely related and one cannot afford to overlook either one when researching on history. GIS increases the view of space and thus enables a more comprehensive analysis. Therefore, when we look at space and time together simultaneously, the historical data could be transformed into different timing of spatial and temporal data, and this approach helps users to understand the spatial characteristics and allocation patterns of historical data, facilitating an analysis of the spatial and temporal relationship (Mostern, 2011).

History study is always based on large numbers of original materials and solid literature review. In addition, one has to overcome the difficulty of interpreting classical Chinese writings when researching the history of Song dynasty (960-1279). According to ancient materials, Batu Caves was located in the mountain area in Hunan but geographically closer to Jiangxi. The indigenous peoples there were not Han people and were called Sidong people—meaning they were the citizens living in Mountain barbarians' area. During the Batu Caves Turmoil, Dong Militia didn't always hold their ground firmly: they could be anti-government in some cases but also served as local troops suppressing the rebellion in some other. Using the GIS for map drawing, the thesis delves into the cause and process of the Batu Caves Turmoil and also the post-turmoil measures taken by the government; and moreover, this thesis then analyzes the later policy for events that took place near the boundaries between administrative regions within Song's territory. Looking into the growth of government power, this paper offers an insight into the organization and governance of the Dong Militia, as well as the economy and cultural values in the Mountain barbarians' area.

Although the location of Batu Caves has been hand drawn by scholars, those maps are not completely useful for readers to figure out the administration of the Mountain barbarians' area where non-Han people lived (Li, 1969). Some scholars, like Hiroshini (2002) and An (1995), believe Dong Militia only existed along the Zuo River and You River in Guangxi. However, my research points out that the Dong Militia also showed signs of activity in Hunan and Hubei province. For example, the arrow army in Hubei, and the Village Militia and Stockade Militia,

are all various types of Dong Militia (Liu, 2008). This paper details how my argument is supported by Batu Caves Turmoil graphics drawn by GIS.

RESEARCH METHOD

GIS is an integrated system that uses computer as a supporting measure that establishes accesses, manages, analyzes and presents spatial data. Moreover, it can be integrated with any types of new technology, especially with the Internet, to provide decision-making and outcome predication. Its main value lies in high degree of flexibility and capacity in integration for data processing and analysis.

Visualizing is distant reading. It makes distance no longer an obstacle but a form of knowledge. With only a few elements, GIS and visualization could pull the tricks and draw forms or models that delineate the shape, relationship and structure that display the entire spatial interconnectivity. Thus, it helps explain research questions more clearly (Franco, 2005).

The theory that Batu Caves Turmoil started as a result of the Luo Shichuan case in 1208 was widely circulated and accepted, but the truth is the droughts that happened in 1206 in various places of Jiangxi, Hunan and Hubei already triggered an unrest and followed by plunders in prefectures and counties. Some might jump to conclusion and simply attributed the cause of Batu Caves Turmoil to either prefectures and counties or the case of Luo, but I am not eager to believe such convenient explanations. Some argue the cause to be Luo Shichuan being a Yao (non-Han people), but it is less likely to be so since he may already pay allegiance to the Song government and become a registered permanent resident. In Luo Shichuan's case where he fought against his uncle, Luo Shi, the verdict that found Shichuan guilty was given by a Han official who held a strong Han ethical idea that emphasizes the younger shall always respect the elder. Later after the turmoil broke out, the tough terrain in Mountain barbarians' areas hindered military events organized by local officials. Because even at places where provincials and non-Han people paid their allegiance to Song government, once the local government showed any signs of weakness, an inevitable decline of governance and stability was surely to come. All in all, we use GIS to analyze a large number of ancient texts and draw maps by using over 120 books and 1113 records. Is it

Part 3: Internet and Learning Resources

CHAPTER 6

Developing Non-Playing Network Applications for Japanese Chess

Hiroyuki Tarumi[*], **Ryu Miura** and **Toshiki Kinuhata**

Faculty of Engineering, Kagawa University, Takamatsu, Kagawa, Japan

Abstract: Japanese Chess (Shogi) is the most complex board game among chess-like games in the world. Because it is a big challenge, computer scientists, especially AI researchers, have been developing strong programs to play Shogi. However, non-playing applications for shogi have not been studied well.

Human players need various supporting tools for Shogi, including educational applications, research aids, and databases. Especially, post-game discussions (Kansousen, in the Shogi jargon) are very popular among Shogi players, but we do not have well-designed tools for shared discussions on the Internet. In order to satisfy such users' requirements, we have designed a total architecture for Shogi on the net, called SAKURA (Shogi Archives and Kansousen Utilities for Research and Advice). SAKURA has servers for shared database and for discussion management. SAKURA's client software has features to support discussions on game records with shared boards and graphical interfaces to deal with game records with variations of moves. Software interfaces to incorporate AI programs into SAKURA are also defined. Key design issues are database architecture and discussion support features.

SAKURA's environment and tools have been developed as a prototype and evaluated by university Shogi players. In this chapter, we will discuss how Japanese chess can be supported totally by SAKURA. The basic design of SAKURA can be applied to other networked board games.

[*] **Corresponding author Hiroyuki Tarumi:** Faculty of Engineering, Kagawa University, Takamatsu, Kagawa, Japan; Tel/Fax: +81-87-864-2214; E-mail: tarumi@acm.org

Kuo Hung Huang (Ed.)

Keywords: API, Artificial intelligence, Chess, CSCW, Discussion support systems, Human computer interaction, Learning support systems, Performance evaluation, Shogi, Software platform.

INTRODUCTION

Shogi --- Japanese Chess

Shogi (Russel and Cohn 2012) is one of the chess-variant games, which is very popular in Japan. In Japan, more than 150 professional tournament players are active. Regular TV programs on shogi are weekly broadcasted by NHK (a public broadcasting station in Japan) and a couple of other satellite broadcasting stations. Many cities have private schools of shogi, where people of all ages are playing or learning it. People can also play shogi on the Internet with other human players using game servers (*e.g.*, Shogi Club 24 (n.d.) and 81 Dojo (n.d.)), or play against computer programs on personal computers, tablet PCs, or smart phones.

Shogi is the most complex board game among the chess-variants, because of the following rules. (1) The board size is 9x9, whereas it is 8x8 in case of international chess. (2) Captured pieces can be reused by the opponent player, so that the total number of active pieces does not decrease towards the end of the game. It is a very unique rule that is not found in any other chess-like games. Because of these reasons, Shogi has approximately 10^{226} possible *positions* (*i.e.*, total number of board status). It is much more than the case of the international chess, which is estimated as 10^{120}.

AI Programs to Play Shogi

In case of the international chess, computers won against top-level human players many years ago. The most famous match was the game between “Deep Blue” IBM computer and the champion, Mr. Kasparov, in 1996. However, in case of shogi, computers had not been able to win against human strong players until recent years. Of course the difficulties in developing strong programs are caused by the complexity of shogi.

It has been a good challenging problem for AI researchers in Japan to develop

stronger shogi playing programs. After some breakthroughs (given by Bonanza (Hoki 2006), for example), computer programs have been improved. In recent years, AI programs won against top-level professional players many times. In the series of "Den'ousen," games between AIs and human professional players in 2013 and in 2014, computers had more wins than loses against professional players.

It was a big challenge to develop programs to defeat human shogi players. However, because it was too exciting to computer scientists who have interests in shogi, other computer supports for shogi players were left undeveloped.

Requirements

Then, what kinds of supports from computers are required by shogi players? In order to play games, many services on the Internet and game programs are already available. We have focused on other services provided by computers or using the Internet, such as supports for learning shogi and communication between players.

To learn shogi skills, one considerable method is to play game with a strong computer program. However, they are too strong to most of the amateur players. Of course it is possible to tune the strength of AI programs, but even tuned programs do not give instructions to players; they just play badly. It is required to develop interfaces between strong AI programs and average human players, with which players can learn something.

We also focus on *Kansousen*. Kansousen is a Japanese word used commonly by shogi players, which means discussions between the players after playing a game. They discuss the game, examining the moves they played, and other moves they should have played. Typical utterances during the discussion are: "what would happen if I (or you) played this alternate move?" or "which move is better at this position, this move or that one?" A series of supposed moves after an alternate move is called *henka* in Japanese, which means a variation. We call it a *variation* in this chapter. Kansousen is popular among shogi players and it helps players to improve their skills of playing shogi. A good computer-supported environment for Kansousen is required.

CHAPTER 7

An Analysis of the Distributed Leadership Practices in an Elementary School: Focus on the Application of an Official Document Information System

Chin Tu Liang*

Sishih Elementary School, Changhua County, Taiwan; Graduate Institute of Education, National Chung Cheng University, Taiwan, R.O.C.

Abstract: The purpose of this study was to analyze the distributed leadership practices in an elementary school and focus on the application of an official document information system (ODIS). A case study was selected, and participatory observation, interviews, and documents were adopted as the instruments for collecting data. After analyzing and discussing the data, we identified four leadership practices moving toward a professional creative system, where the leaders have positive intervention characteristics, from passive to active followers, a somewhat productive trait on the practices of distributed leadership, and the important finding that the ODIS is a key factor for the practices of distributed leadership.

Keywords: Artifact, Distributed leadership, Elementary school, Follower, Information system, Leaders, Leadership practice, Multiple leaders, Official document, Situation.

INTRODUCTION

Most researches on educational workers and policy decision-makers have studied the issues of school leadership in recent years (Leithwood & Duke, 1999). In such

* **Corresponding author Chin Tu Liang**: Sishih Elementary School, Changhua County, Taiwan; Graduate Institute of Education, National Chung Cheng University, Taiwan, R.O.C.; Tel: +886-19013755; Fax: +886-47786287; Email: lingjindu@gmail.com

Kuo Hung Huang (Ed.)

researches, leadership style usually centers on the leadership mode of a single person, but this approach has been replaced with the perspective that leadership is able to distribute to other staff (Hulpia, Devos, & Rosseel, 2009). In other words, distributed leadership stresses that everyone could lead the organization and its practice transforms formal leaders into informal ones and focuses on the interactive network of leaders, followers, and school situations (Spillane & Diamond, 2007). Spontaneously, it could be inductive to the accomplishment of the complicated projects and tasks and to the improvement of organizational effectiveness.

Recent studies on distributed leadership have focused on the theories of interaction among leaders, followers, and situations (*e.g.*, Spillane, 2006; Spillane, Halverson, & Diamond, 2004), while others have sought to analyze the relationship between teaching accountabilities and teachers' professional development with it (*e.g.*, Harris, 2005; Hulpia *et al.*, 2009; Law, Galton, & Wan, 2010; Lima, 2008). In addition, some studies have centered on the actions of leaders-plus (Spillane, 2005), ignored the need to understand deeply the trust and interpersonal relationships among staff members in school (Gunter, 2003; Lloyd, 2005) or explored the artifacts about the situation (Hutchins, 1995), routines, and tools in school. Thus, they impacted the effectiveness of distributed leadership practice (Spillane, 2006). Relatively, few studies have investigated the interaction among leaders, followers, and situations in day-to-day operational activities (Gronn, 2002) or understand its practice focused on the application on artifacts. In this vein, the current study aims to explore the practices of distributed leadership through the application of an official document information system (ODIS) in an elementary school.

DISTRIBUTED LEADERSHIP AND ODIS

This section examines distributed leadership and ODIS, focusing on the relationship between them, to carry out the subsequent procedures in this study.

Distributed Leadership

Based on the above, *via* distributed leadership, staff can interact with the situation and followers, denoting everyone can be leaders in school, and the school's

accountability can also be promoted or changed. First, the practice of distributed leadership is often analyzed through the interaction among the situation, leaders, and followers. However, from the distributed perspective, the situation does not simply "affect" what school leaders do as some sorts of independent variable; it also constitutes leadership and management practice (Spillane & Diamond, 2007). That is, it not only opens the contexts of leadership practice (Spillane, 2006) but also decides the roles between leaders and followers (Lumby, 2013; Timperley, 2005). Moreover, it advances accountability in leading activities, yet it is transformed in the leadership practices (Spillane & Diamond, 2007; Spillane *et al.*, 2004). More specifically, situation has several connotations for distributed leadership, such as artifacts, language (Spillane *et al.*, 2004), routines, and tools in the school (*e.g.*, data on students' test scores) (Spillane, 2006).

In addition, using their available operational power, leaders can achieve the leadership goals (Lumby, 2013). For example, they influence followers' positive actions and other knowledge (Spillane & Diamond, 2007). Either formal leaders or others as informal leaders in the organization can be perceived as leaders in distributed leadership (Hulpia, Devos, & Keer, 2010; Law *et al.*, 2010; MacBeath, Oduro, & Waterhouse, 2004), such as the director of a division or teaching expert in designing curriculum (Lima, 2008; Lumby, 2013).

Finally, the followers are not only an outside variable affecting what leaders do, but also key factors to constituting the leadership practice (Spillane *et al.*, 2004). Furthermore, to reach common organizational goals, they could provide more support to leaders (Timperley, 2005), and their expertise could influence leaders' actions and the situation in the school (BALOĞLU, 2012; Sergiovanni, 2006; Spillane, 2005; Yekovich, 1993).

According to these analyses, the practice of distributed leadership emphasizes the situation, leaders, and followers as critical factors that can all impact accountability in the school's leadership practice.

Official Document Information System

Regarding the form of official paper documents adopted by staff in schools, the ODIS in the operations of the school administration has been accepted due to the

CHAPTER 8

E-Knowledge Consortium Shikoku: E-Learning Activities on Local University Alliance

Toshihiro Hayashi*

Information Technology Center, Kagawa University, Takamatsu, Kagawa, Japan

Abstract: *Shikoku* is an island of Japan. To create cooperative region where the people can share the awareness of "*Shikoku* is one community", eight universities in *Shikoku* established e-Knowledge Consortium Shikoku (eK4) for realizing educational collaboration by e-Learning for the purpose of human resource development for *Shikoku* region. The consortium organizes e-Learning contents of the characteristic lectures of the eight universities in order to provide e-Learning courses among them. The e-Learning infrastructure of eK4 has typical features of distributed LMS and Shibboleth identification. eK4 has provided serval e-Learning courses based on credit transfer system since 2010. This chapter describes eK4 as a local university alliance and the educational activities in the viewpoint of providing e-Learning courses.

Keywords: Chipla-e project, Distributed LMS, e-Knowledge Consortium Shikoku, e-Learning, eK4, Human resource development, Local university alliance, Shibboleth, *Shikoku*, Study of *Shikoku*.

INTRODUCTION

Shikoku --- An Island of Japan

Japan consists of four main islands (*Honshu*, *Kyushu*, *Shikoku* and *Hokkaido*) and a lot of small islands. *Shikoku* is the smallest in the main islands. Fig. (**1**) shows the main islands of Japan and magnified *Shikoku* island map. *Shikoku* is located in

* **Corresponding author Toshihiro Hayashi:** Information Technology Center, Kagawa University, Takamatsu, Kagawa, Japan; Tel/Fax: +81-87-864-2227/2262; E-mail: hayashi@eng.kagawa-u.ac.jp

Kuo Hung Huang (Ed.)

the south-west side of Japan so that the climate of *Shikoku* is generally warm. It can be said *Shikoku* is easy for people to live.

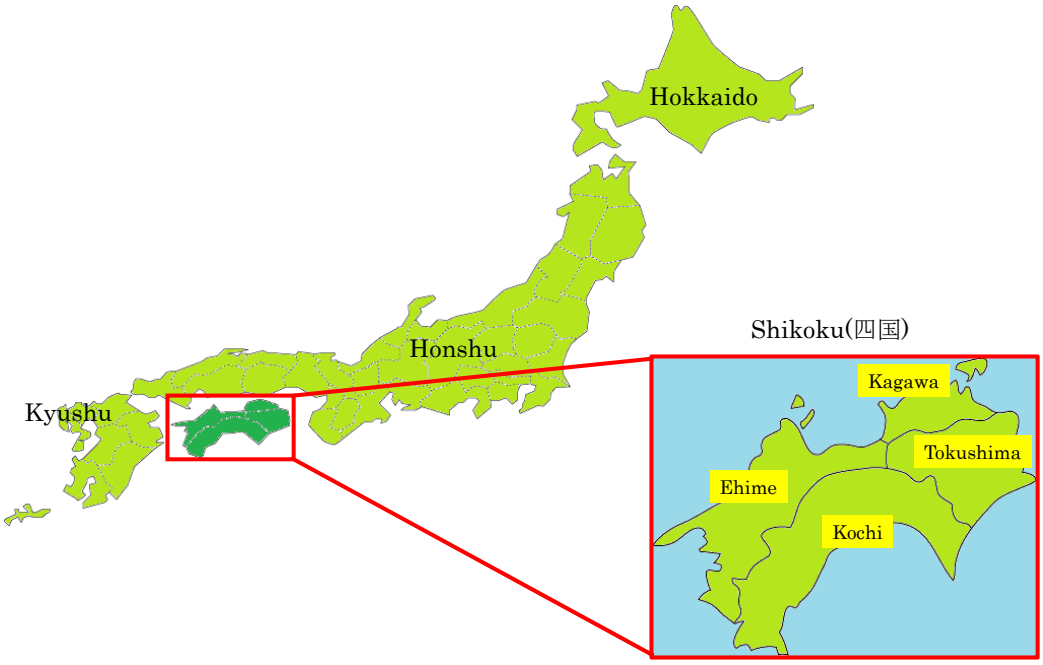

Fig. (1). *Shikoku* in Japan and the four prefectures.

Shikoku is consists of four prefectures: *Kagawa*, *Tokushima*, *Ehime* and *Kochi*. This administrative structure is derived from four old provinces in *Shikoku* respectively *Sanuki*, *Awa*, *Iyo* and *Tosa*. The name of *Shikoku* means four provinces. Four provinces originally had different history, geography, products, culture and tradition. These features have been inherited to current four prefectures in *Shikoku*.

As the total performance of four prefectures, current economical scale of *Shikoku* is small compared with other areas in Japan. Young people tend to leave from *Shikoku* for getting their jobs and for having convenient life style at urban areas. Therefore, *Shikoku* is now facing serious issues such as low birthrate and longevity as a worse result of the population flow. In order to solve these serious issues, talented persons who have high specialty and think of *Shikoku* region are needed. This is a substantial background of e-Learning activities on local

university alliance and collaboration in *Shikoku*.

University Collaborations in Japan

Recently, there have been increased new styles of educational practices based on collaboration by plural higher educational organizations including universities. Japanese government has also enhanced such university collaborations by special budgets for their activities and so on. The followings are concrete examples of university collaborations.

University Consortium Saga (University Consortium Saga, n.d.) realizes cooperative education by six universities located in Saga prefecture (Saga University, Nishikyushu University, Kyushu Ryukoku Junior College, Saga Women's Junior College, Nishikyushu University Junior College and The Open University of Japan). Saga is a prefecture in Kyusyu island of Japan and is not so urban area. In this cooperative education, Saga University as a national university in this region mainly coordinates various kind of educational activities including credit transfer by using e-Learning.

The Consortium of National Universities in Hokkaido for Liberal Arts Education (The Consortium of National Universities in Hokkaido for Liberal Arts Education, n.d.) consists of seven national universities located in Hokkaido (Hokkaido University, Hokkaido University of Education, Muroran Institute of Technology, Otaru University of Commerce, Obihiro University of Agriculture and Veterinary Medicine, Asahikawa Medical University and Kitami Institute of Technology). This consortium realizes liberal arts education by credit transfer system using bi-directional remote lecture systems.

In addition, Kyoto Institute of Technology, Kyoto Prefectural University and Kyoto Prefectural University of Medicine collaboratively provides same liberal arts education. This liberal arts education is managed by Institute of Liberal Arts and Sciences (Institute of Liberal Arts and Sciences, n.d.). The typical feature is that getting credit is not realized by credit transfer system but also students can take other universities' classes as those of own universities.

Part 4: Technology Influence and Human Behavior

CHAPTER 9

Information Technology is Changing People's Transactive Memory

Kuang-Ting Cheng*

Department of Information Management, National United University, MiaoLi, Taiwan, R.O.C.

Abstract: Transactive Memory Theory was proposed by Wegner (1986). He considers that in addition to the memory owned by the individual, human has the ability to store memory with the aid of the external reality. Such externally stored memories contain messages that people rely on the memories of one and another other than memorandums and directory data. For instance, John has no idea of Mary's birthday, but he knows Jane remembers it. Therefore, he can know Mary's birthday by asking Jane instead of memorizing it by himself. In the studies for nearly 30 years in the past, the transactive memory theory proposed by Wegner (1986) has almost been applied to the level of the team. However, with the advancement of information technology and popularity of Internet, transactive memory is no longer limited to discussion of team work; rather, it can be further applied to studies in the individual level, just like Google effect and Cloud application.

Keywords: Google effect, Knowledge management, Mental model, Transactive memory systems.

THE DEFINITION OF TRANSACTIVE MEMORY THEORY

The 21st century is an age of innovation. Basically, innovation is founded on multidisciplinary integration, and the basic unit of such integration is knowledge. Therefore, knowledge management is valued by professionals and scholars gradually. Knowledge is the product of an individual with the characteristic of subjectivity. Knowledge of the individual is experience generated from the indivi-

* **Corresponding author Kuang Ting Cheng:** Department of Information Management, National United University, MiaoLi, Taiwan, R.O.C.; Tel/Fax: 886-37-381512; E-mail: KTCheng@nuu.edu.tw

Kuo Hung Huang (Ed.)

dual's deduction and prediction of an event's status through his/her mental model. As Craik (1943) defined, mental model is a kind of dynamic characterization and simulation of the external reality. In his viewpoint, the individual tends to convert the external activities into internal models, with which he or she predicts then current conditions. Also, Norman (1983) regarded that the mental model is the internal phenomenal characterization transformed from the individual's continuous interaction with the external. As for Johnson-Laird (1983) and Gilbert and Boulter *et al.* (2000), the former held that the mental model the external phenomenal characterization transformed from the individual's continuous interaction with the internal, and the latter proposed that it is a kind of composite model over the structure of the external reality and a kind of private recognition of the individual.

In the studies of team knowledge, the mental model is a factor proposed for discussions by numerous scholars. Mohammed and Dumville (2001) indicated that the mental model is a kind of knowledge structure owned by the member individual in the team to organizationally aid to describe and explain the state where individual is situated, so that he or she can be guided to interact with other team members in the required environment. To probe into the team's mental model, Klimoski and Mohammed (1994) suggested that it can be divided into three parts: the content refers to knowledge of the team's current condition and the activities they are engaged. Knowledge of the team's current condition consists of the environment it is situated and the issues it has to handle. As for knowledge of the activities the team is engaging, it includes what they are working for and what are its routine tasks. The part of the content can be classified into the environment model with environment related knowledge, the task mental model with knowledge of the team's tasks, the team member mental model with knowledge aiming to understand who knows what among the team members, and finally, the teamwork schema model with knowledge of the task treatment process. The 2nd part of the team's mental model is form that indicates how the team's knowledge is represented organizationally, such as the causal relationship of an event or the way to categorize knowledge systematically. The last one is function that involves three patterns to save the team's knowledge in the team; that is, common knowledge share by the team members or divergent knowledge owned by

divergent team members. The third is the mixture pattern, referring to common knowledge and different knowledge owned by the members in the team.

The knowledge of an individual is restricted in the team, it is impossible for merely an individual to store all knowledge required by the whole team. As a result, when the individual encounters the issue unable to be solved solely by his or her knowledge, it is necessary to search for it from other members timely, and the transactive memory is generated whereof. Transactive Memory Theory was proposed by Wegner (1986). He considers that in addition to the memory owned by the individual, human has the ability to store memory with the aid of the external reality. Such externally stored memories contain messages that people rely on the memories of one and another other than memorandums and directory data. For instance, John has no idea of Mary's birthday, but he knows Jane remembers it. Therefore, he can know Mary's birthday by asking Jane instead of memorizing it by him.

Wegner (1995) further illustrated transactive memory, claiming that the team must encode, store, and communicate messages coming from different knowledge territories. So he proposed a three-phase formation and maintenance of the team's transactive memory: Directory Update, Information Allocation, and Retrieval Coordination.

1. Directory Update: The team member is aware of the territories dedicated by the other members in the team, so by the process of the team members' communicating and interacting with one another or carrying out tasks together, a commonly shared foundation is established. With such foundation, he or she can not only enhance his or her devoted territory consistently, but also understand other members' through sharing experiences. With long-term accumulation, they will be able to clearly understand who knows what, and who is good at what.
2. Information Allocation: The team member delivers new information other than what he or she is good at to the expert in that territory in the team, which means to store new information of the team in the most applicable member. In Wegner's point-of-view, if each team member has to memorize all knowledge in the team, it will increase his/her burden of recognition and therefore leads to

CHAPTER 10

Using Picture Book Apps to Assist Children's Heritage Language Self-Learing

Yu-Ching Yeh[1], Hsiang-Ju Ho[1,*] and **Ming-Chung Chen[2]**

[1] *Department of Early Childhood Education, National Chiayi University, Chiayi, Taiwan*

[2] *Department of Special Education, National Chiayi University, Chiayi, Taiwan*

Abstract: Prior studies have shown that information technology is effective in increasing children's vocabulary learning and reading comprehension; however, its effect on bilingual or heritage language learning needs further investigation. This study examines the effect of a self-learning vocabulary program by using bilingual picture book apps designed employing the universal design for learning approach. Data were collected from 39 primary school pupils from international marriage families in Taiwan. The pupils were randomly assigned to experimental and control groups. The experimental group used the tablets to read picture book apps while the control group used printed picture books. The results showed that the experimental group performed better on a Vietnamese vocabulary test than the control group. The results also indicated that the pupils with higher proficiencies in their first language performed better in Vietnamese vocabulary learning. Tablet picture book apps can be effective for supporting bilingual learning because they are easy to operate and more fun to use than traditional books. In addition, tablet picture books consist of a story context, word games, and sounds, thus motivating children to learn the heritage language actively.

Keywords: Bilingual, Computer-assisted language learning, Cross-national marriage, Heritage language, Information communication technology (ICT), Mobile learning, Picture book apps, Self-learning, Tablet, Universal design for learning (UDL).

[*] **Corresponding author Hsiang-Ju Ho:** Department of Early Childhood Education, National Chiayi University, Chiayi, Taiwan; Tel/Fax: +886-5-2269304/+886-5-2260582; E-mail: hjho@mail.ncyu.edu.tw

Kuo Hung Huang (Ed.)

INTRODUCTION

Immigrant children use their heritage language less the longer they stay in the host society. Maintenance of the heritage language depends on the immigrant parents' positive attitude (Park & Sarkar, 2008; Yeh, 2012). Tseng and Fuligni (2000) found that immigrant parents tend to shift from their heritage language to English when they see that their adolescent children prefer to speak English at home. Park, Tsai, Liu, and Lau (2012) also suggested that immigrant parents tend to modify their own language behaviour according to their children's language use and proficiency. Immigrant parents may expect their children to master the host language instead of the heritage language, for the sake of their children's future development (Uttal & Han, 2011). However, children learn their heritage language with great difficulty when their family cannot provide a supportive environment.

Although heritage language acquisition and maintenance builds children's confidence and enables their development (Nomura & Caidi, 2013), it is not given adequate attention in education. Heritage language is seldom included as part of the school curriculum (Moin, Schwartz, & Breitkopf, 2011), and it rarely achieves a status equivalent to that of a national standard language (Spolsky, 2011).

A heritage speaker acquires the heritage language as his/her first language through natural input in the home environment (Montrul, 2002). Since the heritage language is transmitted in the form of 'daily conversations' with the family, language learning materials or pedagogy may not be taken into consideration. However, it is difficult to expect that families alone should teach children given the limitations of immigrant parents' capabilities. The barriers include parents' education level, improper instruction methods and materials, and time limitations (National Immigration Agency 2010; Valdés, Fishman, Chávez, and Pérez 2008; Yeh 2004). Immigrant parents as educators usually adopt direct speaking methods and create opportunities for the children to use the heritage language frequently. However, this relies on family resources and on whether the parent educators adopt appropriate methods of instruction. Inappropriate instruction such as rigorous instruction may actually have a greater impact on the abandonment of home languages by children (Valdés *et al.*, 2008).

Heritage language learning seems to be more challenging for the cross-national marriage family, in which one of the parents is a first-language speaker and the other is an immigrant who is responsible for transmitting the heritage language. There are 498,368 married immigrants in Taiwan (about 2.1% of the total population). Sixty-eight percent of them are from the People's Republic of China (PRC), and remaining from Southeast Asian countries (mainly Vietnam 56.4%, Indonesia 17.5%, and Thailand 5%) (National Immigration Agency, 2015). Heritage languages (the languages used in Southeast Asian countries such as Thai, Vietnamese, Indonesian language, *etc.*) are seldom used in cross-national marriage families. Only 1.6%-2.8% of the parents in cross-national marriage families speak Southeast Asian languages at home, as indicated by the results of Yeh's investigation (2015). Mandarin (first language) or Taiwanese (local dialect) dominate in most cross-national marriage families.

Moreover, in Taiwan, the average level of education for immigrant mothers from Southeast Asian countries is primary school or lower-secondary school education (National Immigration Agency, 2010). Additionally, some parents have part-time jobs in the evening. Finally, Language learning materials for cross-national marriage families are also limited (Yeh, 2004). These factors create difficulties for heritage language learning at home.

With the development of globalization, multiple language capability has become a critical future requirement for people. The Taiwanese government has considered ways to familiarize children from cross-national marriage families with their mother or father's first language in Southeastern Asia. Many programs such as 'The National Torch Project', which encourages children from cross-national marriage families to attend heritage language courses at school, have been conducted (National Immigration Agency, 2013).

Parents were regarded as the main heritage language transmitters to children in the past. However, this approach was hampered by limitations in parents' abilities and the lack of learning materials (Yeh, 2012). Firstly, only one parent, usually the mother, is a southern Asia heritage language speaker in most cross-national marriage families in Taiwan. In addition, the parent needs to learn Mandarin or Taiwanese. It is very difficult for her/him to teach the child her/his heritage

CHAPTER 11

Issues of Communication Behavior on Using Internet

Su Chong Chuang*

Graduate Institute of Public Policy, National Chiayi University, Chiayi, Taiwan, R.O.C.

Abstract: Due to the Internet, a virtual platform filled up with networks, boundaries between people have become a lot less, the way people communicate and interrelate is changed. However, conflicts are embedded in interactions through electronic networks, while the new social norms are emerging and yet not legally nor ideally launched. Based on observations of hot issues in Taiwan, the author sees that the cyber world is full of moral dilemmas and value conflicts. Demanding for anonymity and online free expression may significantly characterize the virtual world from the real world, the moral development of Internet users in cyberspace shows a need for further studies.

Keywords: Communication behavior, Cyber addiction, Cyber bullying, Cyber pornography, Ethics, Internet, Interpersonal relationship, Moral development, Online expression, Online manhunt, Online user review.

INTRODUCTION

The last century has paved an astonishing way for the most revolutionary computer techniques to come, among which the information and communication technologies (ICTs), specifically the Internet, have a critical impact on people's life. According to the survey by the Internet World Stats in 2015, it is about 84% of Taiwan's population who are Internet users, while the Facebook subscribers on December 31, 2012 were about 56.5%. People are increasingly relying more on the Internet for daily lives. They work, consume, sell, do the banking, take

* **Corresponding author Su Chong Chuang:** Graduate Institute of Public Policy, National Chiayi University, Chiayi, Taiwan, R.O.C; Tel/Fax: 011886-5-2717977; E-mail: make2win@gmail.com

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classes, do the leisure, and communicate on line. By the Internet, a virtual platform filled up with networks, societies are tremendously influenced, lives are overwhelmingly impacted, boundaries between people have become less, the way people communicate and interrelate is changed. However, conflicts are embedded in interactions through electronic networks, while the new social norms are emerging and yet not legally nor ideally launched.

The electronic information systems, specifically the Internet either through smartphones or computers, are bringing us more sources for information and are changing the social networking. Nikou and Bouwman (2014) mentioned that people have been using computer as a communication tool to build online virtual community, and that people are using social network services *via* mobile devices, specifically the smartphones. Data from the most popular social network, Facebook, shows that its daily active users (DAUs) were 968 million on average for June 2015, representing an increase of 17% year-over-year. Mobile DAUs were 844 million on average for June 2015, representing an increase of 29% year-over-year (Facebook Report, 2015). The rate of social network users is dramatically increasing. Tencent QQ, the largest and most used internet service portal in China, revealed its smart device monthly active user (MAU) of QQ was 603 million, representing an increasing of 23% year-over-year, and its combined MAU of Weixin and WeChat were 549 million, representing an increase of 39% year-over-year (Tencent, 2015). Renren (2015), also in China, a leading real-name social networking internet platform, had approximately 223 million activated users by December 31, 2014. These mobile social network services are absolutely changing the way people communicate and interrelate.

The Internet has sped everything up, and it has made the world less boundary in all dimensions. However, the virtual online environment is much harder to control. Advantages of getting on the World Wide Web may be a lot, the risks of getting online could never be less. Socially, people may get their social connection instantly *via* Internet, but they also could get mistreated or victimized due to some Internet users' improper behavior. More and more businesses and industries have heavy usage of computer mediated communications, these electronic commercial activities have been creating paradigm shifts in business management and in business performances (Lagraña, 2010). The Internet

contributes to a momentous shift in world economy, and the political and social arena as well. A great number of researches (Tolbert & Mcneal, 2003; Kenski & Stroud, 2006) put their concern on the political consequences of using the Internet, particularly in aspects of political participation and civic engagement. Impacts of Internet are overwhelmingly spread out, this article is to focus on the communication behavior by using Internet, specifically ethical issues raised in between.

It has been more than 20 years since Margaret Lynch (1994) had her research on ethical issues in electronic information systems. Lynch noted the importance of ethics because she saw the power in information and the legal lag way behind new techs. Lynch believed the networks have exciting possibilities and they were sources of power that might threaten some systems. She also found networks to be social places enabling more social interactions. According to Lynch, the virtual anonymity of Internet allows more communication with users' characteristics hidden on one hand; on the other, it allows interaction without shared responsibility.

Lynch (1994) pointed out the issues of using electronic information systems include (1) standards of civility for rights and responsibilities in distributing information, (2) the access to information, (3) privacy, (4) misuse of data, and (5) international considerations. Lynch extended these issues to electronic networks, electronic databases, and geographic information systems. For each arena, Lynch believed ethical decisions are required for problems.

INTERNET USE IN TAIWAN

By the end of 2013, the population of Internet users was close to 18.6 million, which stood for an 80% penetration rate out of the 23.35 million total population. According to a 2014 report from Taiwan Network Information Center (TNIC), Taiwan's Internet growth rate reached 77.6% in 2014, and that the number of Wi-Fi and mobile Internet users above 12 years old reached 12.6 million. The TNIC also had a report in 2014 telling that social networking was the most popular smartphone activity (64%), with a highest social media penetration rate (69%) in the region.

SUBJECT INDEX

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

Y

Kuo-Hung Huang

Kuo-Hung Huang is distinguished professor in the Department of Elearning Design and Management at National Chiayi University, Taiwan. His research interests are e-learning, digital humanities, and social studies education. For years, he has been the principal investigator of research projects in the Taiwan e-Learning and Digital Archives Program as well as Digital Humanities Program. He and his team develop digital media to enhance students learning at schools. In addition, he distributes animations of the digitized resources to the general public for further disseminating knowledge and culture.

Professor Huang enjoys conducting interdisciplinary research with colleagues from various fields, including medical e-learning, science education, and mobile learning. His recent research on integrating GIS with science learning and humanity learning has increasingly being recognized in the scholarly community. In 2012, one of his published journal article was awarded 'best paper of the year' by National Council of Geography Education (USA). In addition, He has served as visiting scholar or invited speaker at universities in Japan, UK, Australia, USA, and Lithuania. Believing that learning is beyond discipline and culture, he spends much time establishing connections with foreign universities to pursue academic cooperation and exchange opportunities for students.