

The use of mixed methods by Chinese scholars in East China: A case study

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Abstract

Since mixed methods research began as an Anglo-American movement (Creswell & Plano Clark, 2011), there is little information about how it has emerged in non-Western cultural contexts such as East Asia and China. Without this knowledge, a gap in understanding occurs about the diffusion and expansion of mixed methods in some of the most populous cultures in the world. The objective of this qualitative case study is to present a detailed analysis of how mixed methods is being used by Chinese scholars in the region of East China. Five themes emerged from the inductive coding. These were the need for using mixed methods, the designs, the current status of the use, the ways to improve the use, and the contextual factors influence the expansion of mixed methods in China. With mixed methods research increasingly attracting worldwide attention, this discussion makes a unique contribution by exploring its expansion into Mainland China.

Keywords: mixed methods research, the use of methods, case study, East China

INTRODUCTION

This paper addresses the expansion and diffusion of mixed methods in a largely ignored cultural context: Mainland China. Mixed methods will be defined here as the combination and integration of quantitative and qualitative approaches in the same study (Creswell & Plano Clark, 2007; Creswell & Plano Clark, 2011). As both a method and methodology, it has been widely used in the social and behavioral sciences over the past three decades (Teddlie & Tashakkori, 2009).

Previous literature about mixed methods use suggests two major trends. First, mixed methods has been adopted across a variety of disciplines, including health, education, sociology, human behaviors, and psychological studies (Collins, Onwuegbuzie, & Jiao, 2009; Greene, 2007; Foss & Ellefsen, 2002; Freshwater, 2006; Hanson, Creswell, Plano Clark, Petska, & Creswell, 2005; Plano Clark, 2010; Plano Clark, Huddleston-Casas, Churchill, Green, & Garrett, 2008; Schifferdecker & Reed, 2009; Shih, 1998). Second, mixed methods was initially used in the US early in the 1980s, followed by countries including the UK, Australia, Pakistan, Africa, Tanzanian, Portugal, and Croatia (Andrew & Halcomb, 2006; Geere, Hunter, & Jagals, 2010; Johnstone, 2004;

Harding et al., 2010; Zhang, 2010; Camfield, Guillen-Royo, & Velazco, 2010; Chandler, Chonya, Mtei, Reyburn, & Whitty, 2009; Fave, Brdar, Freire, Vella-Brodrick, & Wissing, 2010; Ngulube, 2010; O’Cathain, Murphy, & Nicholl, 2007).

Despite this expansion, the use of mixed methods in Eastern Asian countries, such as China and Japan has not been explored. This literature gap is critical to our understanding of mixed methods’ viability in the East Asian culture and the diffusion of mixed methods in a diversity of cultural contexts. Because case study research provides an in-depth understanding of a phenomenon, the authors of this study used a qualitative instrumental single case study approach, and bounded the case analysis to East China in Mainland China. Further, the central research question posed in the study was: ‘How does an in-depth case analysis of East China provide insights into the use of mixed methods in China?’ Four sub-questions narrowed the study focus:

1. Why was mixed methods used in China?
2. How do Chinese scholars use mixed methods?
3. What qualitative and quantitative approaches were used in mixed methods research?
4. What is the current status of the use of mixed methods in China?

Answering these questions will provide several important outcomes. This study can benefit both Chinese scholars and mixed methods methodologists in the world. It may help Chinese scholars who are interested in mixed methods obtain a better understanding of the core characteristics of mixed methods research, specific mixed methods designs, and the advantages of using mixed methods in various disciplines. Also, for the mixed methods field at large, methodologists can gain the knowledge of the diffusion of mixed methods in an Asian country. For those developing training in mixed methods, senior methodologists can generate targeted guidance for beginning mixed methods scholars in East Asian culture and facilitate these scholars to design and conduct effective mixed methods research.

WORLDVIEW AND THEORETICAL FRAMEWORK

The senior investigator of this study is a Chinese national who is pursuing her doctorate in mixed methods research in the US. She has the rich knowledge of both Chinese culture and mixed methods research. She brought in a constructivist worldview to explore the use of mixed methods in China in terms of accepting multiple perspectives from participants and documents. The second author is a leading mixed methods writer who has adopted many worldview and theoretical frameworks to investigate the diffusion and adoption of mixed methods approaches throughout the world.

To investigate the use of mixed methods in East China, the authors used the framework of mixed methods research in collecting and analyzing data. The framework is consisted of three components: the definition of mixed methods research, the design of mixed methods research, and the rationale for using mixed method.

First, mixed methods was defined as a third methodology, which combined both qualitative and quantitative approaches in all phases of a research study, including design, data collection, data analysis, and data interpretation (Hesse-Biber, 2010; Teddlie & Tashakkori, 2009; Thomas, 2003). The core assumption of mixed methods research is that the combination of both qualitative and quantitative data provides a better

understanding of a research problem than either qualitative or quantitative research alone. This assumption guided how data were identified and collected in this study. For instance, as long as the authors used both qualitative and quantitative approaches in their study, we identified it as mixed methods research, regardless of whether the authors used the language of mixed methods or not.

Second, to analyze how researchers use mixed methods, we referred to the six common designs of mixed methods research provided by Creswell and Plano Clark (2011): (1) the convergent parallel design in which two forms of data were concurrently integrated; (2) the explanatory sequential design in which qualitative data was built on quantitative data; (3) the exploratory sequential design in which quantitative data was built on qualitative data; (4) the embedded design, in which one form of data was embedded within the other; (5) the transformative design, in which the whole research process was framed in a transformative lens; and (6) the multiphase design, in which both of the two forms of data were combined in multiple phases of a program of study. This typology of mixed methods designs helped us understand and analyze the data.

Third, in a high-quality mixed methods study, the researchers always highly value and appropriately justify the use of mixed methods. According to Greene (2007), the major purposes of researchers using mixed methods usually included five aspects: triangulation, complementarity, development, initiation, and expansion. Bryman (2006) generated 16 rationales for conducting mixed methods, which extend Greene's (2007) five purposes. According to Bryman (2006), major rationales for using mixed methods included completeness, offsetting weakness and providing stronger inferences, answering different questions, and illustrating data. These perspectives could help us to deepen exploration and better explain why Chinese scholars adopted mixed methods.

Based on this framework, mixed methods were found to have been used in a large number of countries, including the US, the UK, Germany,

The Netherlands, South Africa, and some Asian countries, such as Australia, Indonesia, and Sri Lanka (Burton-Smith, McVilly, Yazbeck, Parmenter, & Tsutsui, 2009; Camfield et al., 2010; Creswell & Plano Clark, 2011; Lansford, Antonucci, Akiyama, & Takahashi, 2005; Ngulube, 2010; Tashakkori & Teddlie, 2010). Moreover, previous literature revealed that scholars from different countries have collaborated with each other in conducting mixed methods research across countries (Chandler et al., 2009; Harding et al., 2010). For example, a mixed methods project on happiness was conducted across seven countries, including five European countries, Australia, and South Africa (Fave et al., 2011). Such large-scale research across countries not only implied the viability of using mixed methods in different culture contexts but also revealed scholars' acceptance of mixed methods in those countries. However, very limited literature has indicated how mixed methods has been accepted and used by Chinese scholars in China. Therefore, this study aimed to investigate Chinese scholars' use and views of mixed methods in research.

METHOD

A single case study was designed to understand in depth the issue of how mixed methods was used by Chinese scholars in the case of East China. According to Stake (1995), this study is an instrumental case study because the research interest is the issue of the use of mixed methods and the bounded case is East China.

The case was bounded by the geographical area of East China, which covers 6 of 23 provinces and one of four municipality cities in China. This area was chosen as a representative case because: (a) it is one of the six major executive areas in China; and (b) it has adequate data available and accessible for investigation.

Data collection

The Institute Review Board (IRB) approval was obtained before data collection. Consistent with good case study research, multiple types of data were collected, including both a literature review and individual interviews (See Appendix A:

Table A1). The 6 published mixed methods articles and 18 commentary papers were retrieved from the database of EBSCO and a Chinese academic database, *zhongguoqikanquanwenshujuku* (CNKI). Thirty-six theses and dissertations were obtained from an academic database of theses and dissertations in China, the *Wanfang Dataset*. The search terms included 'mixed methods', 'qualitative and quantitative' for English-written papers, '*hunheyangjiufa*' (mixed methods in Chinese), and '*dingxingdingliangyanjiu*' (qualitative and quantitative research in Chinese) for Chinese-written papers. Only the mixed methods articles written by Chinese scholars in China were selected for this study to specify how Chinese researchers have accepted and used mixed methods in China.

As a result, four mixed methods articles that were published in English and two articles in Chinese were retrieved from EBSCO and CNKI. Eighteen commentary papers in Chinese were identified in the database of CNKI. In terms of mixed methods theses and dissertations, 97 studies that used both qualitative and quantitative approaches were identified in the *Wanfang Dataset*. Inspecting the abstracts of these papers, only 36 of them fit the definition of mixed methods research that was used in this study. These 36 theses and dissertations were completed from year 2000 to year 2010 (See Appendix B: Table A2 and Appendix C: Figure A1).

The interview protocol for individual interviews was designed to fit the case study procedures, and it was translated into Chinese. Typical case sampling strategy was used to select the interviewees for this study. At first, the investigators did the literature review and identified four most well-known Chinese scholars who were using mixed methods in China. These scholars published a number of mixed methods studies, which were highly cited by other Chinese researchers. These four scholars were then emailed an invitation to participate in the study along with the informed consent. Three of them accepted the invitation to participate in this study and emailed us their signed consent forms. There was no specific benefit for the three participants. However, they could better understand the use of mixed

methods in practice by reading the findings of this study. Due to the IRB confidentiality concerns, participants' names and their academics were not identified in this study to protect these participants' privacy.

The first interviewee was one of the directors in an Academy of Educational Sciences in East China. She has cooperated with many other Chinese scholars in mixed methods projects on early childhood education. Another participant was one of the professors in the Department of Sociology at a top university in East China. He graduated from a Hong Kong university with a doctoral degree. He has used mixed methods in his dissertation and many research projects. He also teaches multiple methodology courses in his department. The other participant was a professor in the academic area of education. He published a quite number of commentary papers on the use of mixed methods, which were cited by Chinese scholars who used mixed methods.

Long-distance interviewing was a challenge because the investigators and the three interviewees were located at different places across two countries. Thus, the telephone interview approach was chosen for this study. A digital recorder and a telephone coupler were used. All interviews were conducted in Chinese. The Chinese version of the interview protocol and the informed consent were approved by the IRB of the US institution of the investigators. The average duration of interviews was approximately 45–60 minutes. All audio-files were deleted because of confidentiality concerns after transcripts were completed. The transcripts were destroyed after the study was done.

Interview questions were designed to explore the use of mixed methods in China. Four questions were asked: (a) What does the term of mixed methods mean to you?; (b) Why did you choose mixed methods for your research?; (c) What are your experiences with using mixed methods in your discipline?; and (d) What issues have you experienced in using mixed methods? Additionally, two questions related to East China: (a) What do you know about the use of mixed methods in East China?; and (b) What

suggestions would you offer to Chinese scholars who consider using mixed methods? The final two questions are closing questions for exploring more information about participants' use of mixed methods. They were: (a) What documents are you willing to share with me for me to better understand your experiences in using mixed methods?; and (b) What else you want to add to help me understand your use of mixed methods?

Data analysis

An inductive coding procedure for all sources of data was conducted according to the instructions of Miles and Huberman (1994) and Thomas (2003). Codes were first assigned followed by aggregating the codes into broader themes, and reexamining the database for useful quotes to provide evidence for the themes. Interview data were transcribed immediately after each interview. Reflections on the interview were written both before and after the transcribing process. Transcripts were analyzed in Chinese in order to keep the original meanings of participants' perspectives. Multiple types of data were triangulated for the emerged themes. Results were reported in English.

Several validation strategies were used in data analysis. First, member checking was conducted with the three interviewees to ensure the validity of data results as well as the accuracy of translation. The summary of results was written in both Chinese and English and sent to the three participants for member checking. No misunderstanding about the content or translation was found. Second, multiple sources of data including interview reflections, published articles, and relevant documents were triangulated with the interview results to improve the validity of data analysis and interpretation. Moreover, the computer software, MAXQDA version 10, was used in the inductive coding procedure. Third, peer debriefing was conducted to confirm the emerged themes. Two faculty members and five doctoral students in the area of qualitative and mixed methods research reviewed and confirmed the results of the data analysis of this study. Fourth, the reflection of the senior investigator was reported in this study. Accordingly,

her cultural background in China and academic knowledge of mixed methods increased the validity of her data analysis and data interpretation in this study.

RESULTS AND DISCUSSION

Based on the data analysis of the multiple sources of data, a detailed case description was developed. In addition, five themes about the issue were emerged on the basis of the inductive coding.

Case description

East China is one of the six major geographical districts in China. The urbanization of this area is medium to high. East China has approximately 30 of the 76 urban cities in the whole of China (Xingzheng, n.d.). Containing six provinces and one municipality city, East China has the population of approximately 367,610,000, occupying 29% of the whole population in China (Huadongdiqu, n.d.).

As to the education in this area, according to the China Education and Research Network (n.d.), East China has 232 out of the 792 full-time comprehensive universities in whole China. Moreover, 30 of the 232 universities rank in the top 100 universities of China according to the information on the official China Education Website (Zhongguojiaoyuwang, n.d.). Hundreds of professors who have overseas academic experiences are working in these 30 top universities in East China (Renwuku, n.d.). For example, one of the three interviewees in this study graduated from an overseas university and now is working at one of the top universities. He said, 'There are many people like me. They learned about mixed methods from overseas institutions and work back in China, training Chinese students mixed methods in different disciplines'. Accordingly, these professors play a crucial role in expanding mixed methods in China.

In 2008 the China central government started the 'Thousand Expert Plan' that aims to recruit 1000 outstanding experts with overseas scholarly experiences back to China within 5 years. East China universities have spent millions of dollars in this plan (Difang, n.d.). For

example, Zhejiang University in East China has recruited 294 professors from overseas in the recent years (Jiaqiang, n.d.). These professors have not only brought back the advanced knowledge in their disciplines and research projects but also greatly improved the quality of social and scientific research in East China (Zhongguojiaoyuwang, n.d.). In short, East China is well developed in higher education and academic research.

In terms of research institutes, two of the three major Academies of Educational Sciences in China are located in East China (China Education and Research Network, n.d.). Traditionally, academic areas adopt different types of research approaches according to their discipline characteristics. Generally, qualitative approaches were dominant in the arts, such as education and sociology (Liu, 2009; Tian, 2007). Quantitative approaches were dominant in sciences disciplines, such as psychology, engineering, health science, and information research (Daolun, n.d.; Qi, 2010; Renlei, 2010; Xinlixue, 2011; Zhang & Liu, 2009).

Inspecting the commentary papers that were published by Chinese scholars, we found that most commonly used qualitative research approaches across disciplines were observation, interview, documentation, narrative, and qualitative case study designs; whereas the most common quantitative approaches included survey, observation, and experiment (Liu, 2009; Tian, 2007). For example, Liu (2009) in East China reviewed the top journal in education and found that besides using observations and interviews in qualitative studies, Chinese researchers also adopted narrative, qualitative case study, action research, and phenomenology designs. In terms of quantitative studies, survey has been used most frequently (48.89%), followed by experiments, observations, and quantitative case studies (Liu, 2009). As a result of the use of multiple methods, more and more Chinese scholars have now combined both quantitative and qualitative approaches in their research and adopted mixed methods in different disciplines, including psychology, health science, and education (Tian, 2007; Qi, 2010; Zhou & Zhang, 2008).

However, the use of mixed methods in China has been slow in the past decades due to the following two barriers. First, conducting a mixed methods research project usually requires more cost and personnel in the investigation than a pure quantitative or qualitative research project (Liu, Feng, & Li, 2007; Tian, 2007; Zhang & Wang, 2001). The amount of research funding for Chinese scholars is usually limited, which is not enough for mixed methods research. Even in East China, a highly urbanized and economically developed district, the financial support for research is restricted (Tian, 2007).

Second, there is also another realistic issue that has hindered the use of mixed methods in China. According to Tian (2007) as well as interviewees in this study, senior investigators in China have greater opportunities to obtain the financial support than young scholars. But senior scholars are more likely to be conservative to the use of any new methodology, including mixed methods. Although there are a number of young scholars who accept mixed methods, they barely have chances to get their mixed methods research projects funded. Accordingly, few mixed methods research studies have been funded and conducted in the past decade in China (Tian, 2007).

However, the situation has become more positive in the last recent 3 years. For instance, East China governments have advocated that any funding application should be open to all scholars – new or experienced in research (Difang, n.d.). The governments have also actively sought a wide range of funding resources from the local agents and businesses. Up to 2010, with the governments' support and encouragement a number of mixed methods research projects have been conducted and published by Chinese scholars in East China (Defang, n.d.; Jiaqing, n.d.).

Themes of issue

From a review of the documents and the interviews, five themes emerged about the use of mixed methods in China: the need for using mixed methods, the designs of mixed methods research being used, the current status of the use, the ways in which mixed methods use might be improved, and the context for using mixed methods in China.

Theme 1: *The need for using mixed methods*

The results indicated two major reasons that Chinese scholars choose mixed methods in their research. First, use of multiple data implied that the Chinese scholars have generally realized the weakness of applying only two traditional types of research methods to explain complex research phenomena (Huang & Xiang, 2008; Liu et al., 2007; Liu & Liu, 2010; Tian, 2007). Thus, to get a comprehensive understanding, investigators felt it was necessary to combine both qualitative and quantitative approaches in the same study to let the two types of data complete each other. For example, the commentary papers on the use of mixed methods mentioned (translation), '(the) qualitative approach could provide thick description about the quantitative numbers' (Hou, 2007; Qi, 2010; You, 2010; Zhou & Zhang, 2008).

Second, the complexity of the research phenomena in social science and education usually required multiple research methods to examine the issue (Hardy, Yang, & Wang, 2008; Liu & Liu, 2010; Jiang, 2008; You, 2010). For example, one education specialist in the interview said (translation), 'The issues in education are various in different contexts with different participants at different schools. The situations are so diverse and complicated so that a single research approach for the investigation is far away not enough'.

These two rationales of using mixed methods were supported by Creswell and Plano Clark (2011) who claimed that the combination of qualitative and quantitative data could provide a more complete understanding than either approach by itself. Moreover, these two rationales also fit the pragmatic worldview of mixed methods. The focus of pragmatism was on the consequences of research, on the primary importance of the research problem rather than the methods, and on the use of multiple methods of data collection to inform the problem under study. It was pluralistic and oriented toward what works in practice (Tashakkori & Teddlie, 1998). In short, both the literature and use of a worldview supported the needs of Chinese scholars' using mixed methods.

Theme 2: *The designs of mixed methods research being used*

In terms of how Chinese scholars used mixed methods in their projects, we reported the results in a way of answers to four questions: (1) What qualitative approaches did they use? (2) What quantitative approaches did they use? (3) What mixed methods designs did they use? and (4) What mixing strategies did they use in their mixed methods projects?

Qualitative approaches

Inspecting the 36 mixed methods dissertations and the six published journal articles of mixed methods research (See Appendix B, Table A2), we found the most used qualitative approaches by Chinese researchers included observations, individual interviews, focus group discussions, document analyses, comparative studies, field studies, and the qualitative case study designs (Kim et al., 2010; Long et al., 2008).

Quantitative approaches

In terms of the used quantitative approaches by Chinese scholars, the results indicated that surveys, experiments, the development of instruments, and quantitative case study designs were most popular (Kim et al., 2010; Li, Lin, Wu, Lord, & Wu, 2007; Long et al., 2008; Luo, Hu, & Sun, 2010; Yang, Lam, & Wong, 2010; See Appendix B, Table A2). In data analysis, Chinese scholars used EXCEL, SPSS, and SAS for statistical analysis. Their analysis included both descriptive statistics, such as percentages, and inferential statistics, such as regressions, *t*-tests, and chi-square tests (Kim et al., 2010; Li et al., 2007; Long et al., 2008; Luo et al., 2010; Yang et al., 2010; Zhou & Zhang, 2008).

Mixed methods designs

Most of the mixed methods theses and dissertations used convergent parallel designs (See Appendix B, Table A2). Few of these studies were sequential or embedded mixed methods designs. None of these studies adopted more complicated mixed methods designs, such as hybrid designs or multiple phase designs. By contrast, the six published journal articles revealed that the most

popular mixed methods designs were not only convergent parallel designs but also diverse sequential mixed methods designs (Kim et al., 2010; Li et al., 2007; Long et al., 2008; Luo et al., 2010; Yang et al., 2010; Zhou & Zhang, 2008). From the interviews, it was implied that experienced scholars were more likely to use advanced mixed methods designs than graduate students.

Specifically, three of the six published journal articles used convergent parallel mixed methods designs (See Appendix B, Table A2). Long et al. (2008) designed a convergent parallel mixed methods study to understand the factors influencing the delays for migrants in receiving a TB diagnosis in urban China. They integrated survey and focus group data. Li et al. (2007) used a convergent mixed methods design to understand service providers' attitudes and practices regarding the HIV notification process in China. Luo et al. (2010) used mixed methods to investigate the teacher-student relationship in undergraduate education through combining the results of a survey and individual interviews.

The other three published mixed methods articles adopted sequential mixed methods designs. Yang et al. (2010) used the exploratory sequential design to develop an instrument for investigating Chinese teachers' beliefs of education. Kim et al. (2010) explored the relationship between gender and income inequality in the urban China through converging the results of a survey and the follow-up interviews. Zhou and Zhang (2008) gave an example of the exploratory sequential design in psychology to examine teachers' characteristics. The researchers first analyzed the qualitative interview data and then transformed the qualitative data to quantitative numbers and integrated the two databases in quantitative analysis in the second phase.

Mixing strategies

In a convergent parallel mixed methods study, Chinese scholars compared the qualitative and quantitative results from the two different strands and provided a more comprehensive understanding of the research phenomenon, such as gender

and income (Li et al., 2007). In the exploratory sequential design (Yang et al., 2010; Zhou & Zhang, 2008) and the explanatory sequential design (Luo et al. 2010), Chinese scholars built from one type of data to the other.

The convergent parallel designs and exploratory sequential designs were most common mixed methods designs used by Chinese scholars. As we found in theme 1, one of the major reasons for Chinese scholars using mixed methods was for a complete understanding of research phenomena. Accordingly, we were reasonably able to conclude that Chinese scholars were likely to choose convergent parallel designs for a comprehensive understanding of a complex research problem.

Besides the convergent designs, a number of Chinese scholars also liked exploratory sequential designs for particular research purposes, such as instrument construction (See Appendix B, Table A2). According to Creswell and Plano Clark (2011), the instrument development design was a common variant of exploratory sequential designs because the emphasis was on the second phase, a quantitative phase. Chinese scholars usually chose this design from a pragmatic view because there was no existing instrument that they needed (Jiang, 2008). Thus, their studies typically aimed at developing an instrument based on the qualitative interview results in the first phase of research and then tested the instrument in the second quantitative phase.

Very few Chinese researchers used complicated mixed methods designs, such as embedded designs or hybrid mixed methods designs (See Appendix B, Table A2). This was probably because not many Chinese scholars have the adequate knowledge and skills to use these complicated mixed methods designs at this stage. Multistage designs are often dependent on available large-scale, multi-year funding, aspects of research not typically available in China.

Theme 3: *The current status of use*

The use of mixed methods is still at an early stage in China. According to the interviewees in this study, Chinese scholars seemed too enthusiastic

about the advantages of using mixed methods to consider the potential challenges and practical issues of conducting this form of inquiry. Many Chinese investigators were not proficient at using the traditional research approaches, namely quantitative research and qualitative research. For instance, one interviewee said that many scholars in education where qualitative approaches were dominant in research methodology were short of the knowledge of qualitative coding and the skills of using computer software for data analysis. Moreover, based on the literature review, we found that very few scholars have a comprehensive understanding of the effective mixed methods research designs in terms of timing, mixing, and integration. For instance, few researchers discussed the strategies of how they mixed the two different types of data and designed the two strands in a systematic way in their studies (Kim et al., 2010; Li et al., 2007; Long et al., 2008; Luo et al., 2010; Yang et al., 2010; Zhou & Zhang, 2008). In short, many Chinese scholars were neither proficient at both of the two traditional types of research methods nor had sufficient understanding of mixed methods designs. Therefore, it was hard for them to effectively integrate quantitative and qualitative approaches and conduct a high-quality mixed methods research study.

Moreover, there are some logistical issues that hindered the use of mixed methods in China. Mixed methods research usually requires extensive time, resources, cost, and demands. Few Chinese universities and research institutes could provide for projects (Liu et al., 2007; Tian, 2007; Zhang & Wang, 2001). Although Chinese governments will put more funding on higher education in the future, the focus will likely be aimed at developing facilities, such as facilities for educational technology (Report of Chinese Education Development, 2011). Publication is another issue. Not many publishers and editors have accepted the new methodology of mixed methods and agreed to publish mixed methods papers. As one interviewee in this study said, 'we (Chinese scholars) are still questioning about the philosophical foundation of mixed methods research, such as paradigm

incompatibility'. He explained, 'We need more understanding and reflections on the philosophical foundations of mixed methods research before we use it. We have to persuade others to believe the viability and the value of using mixed methods in research'.

Theme 4: *The ways in which mixed methods use might be improved*

Course learning and practical work were the two major ways to develop scholars' experiences of using mixed methods. Methodology courses were available in many universities to the students who want to obtain some basic knowledge and skills in doing quantitative and qualitative research (Liu et al., 2007; Tian, 2007; Zhang & Wang, 2001). In the last 10 years, many scholars with overseas experiences in academics have returned to China with knowledge of multiple methods (Jiaqiang, n.d.; Zhongguojiaoyuwang, n.d.). These scholars, in turn, helped to improve the use of research methodology in China. For example, one interviewee of this study opened a course on mixed methods research at his university. He used Creswell's (2009) *Research Design* as the textbook and his own research experiences of using mixed methods to teach class. This interviewee said there were many other Chinese scholars who also have the experiences in studying overseas and then teaching back in China. These scholars generally advocated the use of mixed methods in various disciplines in China. According to this interviewee, these Chinese researchers contributed to the expansion of mixed methods in China through offering courses of mixed methods to students, conducting and publishing mixed methods research, and encouraging their graduate students to use multiple methods in thesis and dissertation writing.

Practical work was another way to improve Chinese scholars' expertise in using mixed methods. Scholars with different expertise cooperated in mixed methods projects and learned from each other (Huang & Xiang, 2008; Tian, 2007). Through working in a research team, they improved the understanding of mixed methods and gained the empirical experiences in doing mixed methods research. One interviewee

mentioned 'Chinese scholars paid more attention to this newly emergent methodology and actively sought cooperation with other scholars with a different expertise since the appearances of the *Handbook of Mixed Methods Social and Behavioral Research* in 2003 and the *Journal of Mixed Methods Research* (JMMR) in 2007'. This statement not only indicated how cooperation influenced Chinese scholars' use of mixed methods, but also implied the impacts of publications on the use of mixed methods by Chinese scholars.

According to the public media documents, a number of libraries of Chinese universities subscribed and translated famous mixed methods books and journals, such as the *Journal of Mixed Methods Research* (JMMR). For example, Fudan University and Zhejiang University in East China subscribed the JMMR since 2007 (Dianzi, n.d.). Furthermore, in order to make more Chinese scholars improve the knowledge and skills of research methodology, Chongqing University Press has published a series of methodology books and has translated several popular mixed methods books into Chinese in the recent 10 years, including Tashakkori and Teddlie (1998), Creswell and Plano Clark (2007), and others (Wanjuan, n.d.). In short, many Chinese scholars encourage and support the use of mixed methods in China. They have opened mixed methods courses, cooperated with each other in doing mixed methods research projects, and subscribed and translated mixed methods books and journals for other Chinese scholars to learn mixed methods.

Theme 5: *The context for using mixed methods in China*

The cultural context of using mixed methods in China was obtained about three topics, including: what disciplines have adopted mixed methods, what journals accepted mixed methods in publication, and the authors of publications.

Disciplines

Inspecting the commentary papers on mixed methods research, we found mixed methods has

been used in management, higher education, educational technology, long-distance education, sociology, and nursing since 2001 (Huang & Xiang, 2008; Liu & Liu, 2010; Jiang, 2008; Jiao, Zhan, & He, 2010; Qi, 2010; Tian, 2007). The six published mixed methods articles also indicated that many researchers in the disciplines of public health, psychology, and social sciences have conducted mixed methods studies (Kim et al., 2010; Li et al., 2007; Long et al., 2008; Luo et al., 2010; Yang et al., 2010; Zhou & Zhang, 2008). Specifically, one interviewee discussed the use of mixed methods in the discipline of early childhood. She said:

Traditionally, early childhood education research largely depended on quantitative approaches, but nowadays, more and more scholars in this area combined qualitative approaches in research to understand children's behaviors and psychological well-being.

Journals

The journals that published mixed methods papers were mostly related to the disciplines of education and psychology, including *Studies in Preschool Education*, *Higher Education Research*, *Modern Educational Technology*, *Education for Chinese After-school*, *Modern Education Management (translation)*, and *Advances in Psychological Science* (See Appendix B). Chinese scholars also published their mixed methods studies in overseas journals, such as the *BMC Health Services Research* (Long et al., 2008). The six identified journal articles in this study were published during the period of 2007–2010, which implied that mixed methods has been gradually accepted in recent years in China.

Authors

All the commentary articles and published journal articles had Chinese scholars as the first authors, except only one published article had two Chinese authors as the second and third authors (See Appendix B). In inspecting all these papers, we found that most of the Chinese authors were from Chinese universities and academic research institutes. In short, at this stage in China, mixed methods was mainly accepted

and largely used by Chinese scholars from higher education institutes.

In summary, findings revealed that Chinese scholars were using both qualitative and quantitative data in their mixed methods research projects. Generally, Chinese scholars preferred convergent parallel designs and sequential mixed methods designs to more advanced designs such as embedded, transformative, or multiphase designs. Moreover, due to insufficient advanced knowledge and skills of methodology, many Chinese scholars did not report how they integrated the two types of data in an effective way. For instance, few articles showed the qualitative themes and quotes in the qualitative strand of their mixed methods projects (Kim et al., 2010; Li et al., 2007; Long et al., 2008; Luo et al., 2010; Yang et al., 2010; Zhou & Zhang, 2008). Even fewer studies reported how researchers compared and converged the qualitative data with the quantitative results in a study. Thus, it was hard to evaluate the persuasiveness and rigor of these mixed methods research projects. As one of the participants in this study said, there was still a need for education for Chinese scholars to understand how to design and conduct high-quality mixed methods research.

CONCLUSION

Generally speaking, Chinese scholars have been open to accepting newly emergent mixed methods and to starting to use this methodology, especially in various disciplines such as education and sociology. However, lacking advanced knowledge in methodology and adequate research experiences in mixed methods, Chinese scholars have been struggling with the quality of their mixed methods research projects. We learned these lessons from our case study. In addition, as we began developing this paper, three recommendations for Chinese scholars took shape that we would like to advance.

First, Chinese scholars need to actively collaborate with each other in conducting mixed methods research. Moreover, they should consider working with some experienced mixed methods researchers in China or overseas. In this case, Chinese scholars could learn different forms

of expertise from each other, and gain a better understanding of both quantitative and qualitative research. Second, it is highly recommended that Chinese scholars take training courses in data analysis, especially qualitative coding procedures and advanced quantitative analysis. They may improve their techniques in data analysis through reading and practice. Third, Chinese scholars need to update their knowledge of methodology through communicating with the scholars from other countries which have a well-developed program in research methodology. Chinese scholars should be more active in attending annual international conferences to improve academic communication and exchange. In the case of mixed methods, Chinese scholars could catch up with the development of research methodology in the world and improve their knowledge and skills of doing research.

To sum up, China is at an early stage of using mixed methods. Chinese scholars have been used mixed methods through combining both quantitative and qualitative approaches in research. Experienced scholars in mixed methods have also helped new scholars to understand and use mixed methods through opening courses, translating mixed methods books, and publishing mixed methods papers. However, although more and more Chinese scholars have used mixed methods in China, only a small number of academic disciplines have adopted this methodology, such as health science, social science, and education. Not many disciplines have yet engaged in the use of mixed methods in research, probably due to researchers' inadequate skills and limited funding support for mixed methods research in their disciplines. Accordingly, it may take a relative long process for scholars to use mixed methods in more disciplines in China. In short, this study examined the use of mixed methods in China in terms of why mixed methods has been used, how mixed methods has been used, and how mixed methods has been viewed in China. As such, it is a beginning point in understanding the diffusion of mixed methods in China. Future research is needed to continue to examine the use of mixed methods in different disciplines fields in China.

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APPENDIX A

Table of data source

TABLE A1: MULTIPLE SOURCES OF DATA

Sources of data	Number
Interviews with well-known mixed methods scholars from East China	3
Interviewees' professional backgrounds	3
Commentary paper on the use of mixed methods in specific disciplines	18
Published mixed methods articles	6
Theses and dissertations that used mixed methods	36
Documents from media: news clips, public governmental reports, etc.	22

APPENDIX B
Examples of data

TABLE A2: EXAMPLES OF MIXED METHODS RESEARCH IN CHINA

Six published mixed methods articles						Journal
Discipline	MM Design	Quan	Qua	First Author	Time	
Public health (TB diagnosis for migrants)	Convergent parallel	Survey	Focus group	Chongqing Medical University	2008	<i>BMC Health Sciences Research</i>
Education (teachers' beliefs)	Exploratory sequential	Instrument construction	Interview	Beijing, Capital Normal University	2010	<i>The Journal of Environment Education</i>
Social science (gender and income)	Convergent parallel	Survey	Case study, interview	Third author Participants-Nanjing	2010	<i>The China Quarterly</i>
Health science (HIV disclosure)	Convergent parallel	Survey	Interview	Chinese authors in the US Participants-Yunnan	2007	<i>Developing World Bioethics</i>
Psychology (teachers' characteristic)	Exploratory sequential	Data transformation	Interview	Beijing, China Academy of Science	2007	<i>Advances in Psychological Science</i>
Education (Teacher-student)	Explanatory sequential	Questionnaire	Interview	Beijing, Capital Normal University	2010	<i>Education for Chinese After-school</i>

Examples of mixed methods theses and dissertations

Discipline	MM design	Quan	Qual	Institute	Time
Language (English learning)	Embedded concurrent	Experiment	Diary	Chongqing	2009
Education (vocabulary learning)	Sequential	Survey, experiment	Interview	Hubei	2008
Language (English learning)	Convergent parallel	Survey, experiment	Interview	Hunan	2007
Education (vocabulary learning)	Convergent parallel	Survey, experiment	Interview	Hebei	2007
Education (vocabulary learning)	Convergent parallel	Survey, experiment	Interview	Nanjing	2005
Language (English learning)	Convergent parallel	Survey	Interview	Nanjing	2004

Information about the data is available on request.

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APPENDIX C

Prisma flowchart

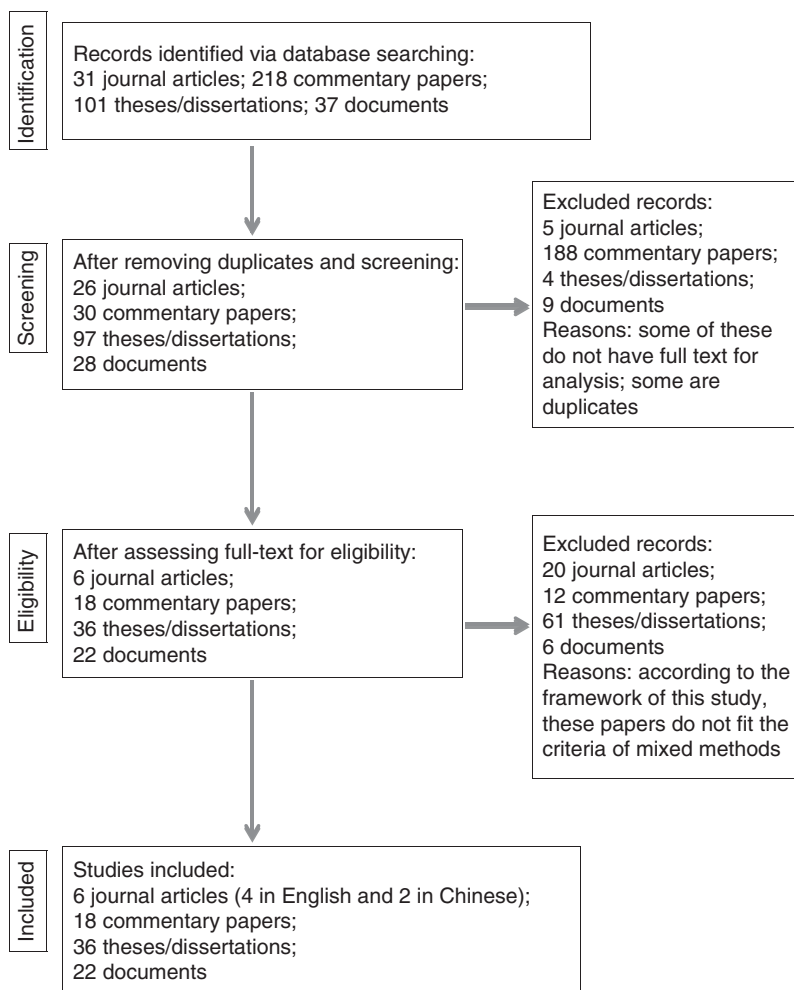


FIGURE A1: PRISMA FLOWCHART OF DATA FROM LITERATURE REVIEW

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Conclusion: Lessons learned for teaching mixed research: A framework for novice researchers – *Anthony J Onwuegbuzie and Nancy L Leech***Book Review:** A very short, fairly interesting and reasonably cheap book about Qualitative Research – *David Silverman* – Reviewed by *Phil Francis Carspecken*<http://mra.e-contentmanagement.com/archives/vol/3/issue/1/marketing/>www.e-contentmanagement.com

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