LEARNING TO MAKE CHANGE HAPPEN IN CHINESE SCHOOLS:

ADAPTING A PROBLEM-BASED COMPUTER SIMULATION FOR TRAINING SCHOOL LEADERS

TANG SHAOBING

EdD

THE HONG KONG INSTITUTE OF EDUCATION

2015

Learning to Make Change Happen in Chinese Schools:

Adapting a Problem-Based Computer Simulation for Training School Leaders

by

TANG SHAOBING

A Thesis Submitted to

The Hong Kong Institute of Education

in Partial Fulfillment of the Requirement for

the Degree of Doctor of Education

February, 2015

STATEMENT OF ORIGINALITY

I, TANG, Shaobing, hereby declare that I am the sole author of the thesis and the material presented in this thesis in my original work except those indicated in the acknowledgement. I further declare that I have followed the Institute's policies and regulations on Academic Honesty, Copy Right and Plagiarism in writing the thesis and no material in this thesis has been published or submitted for a degree in this or other universities.

February 2015

THESIS EXAMINATION PANEL APPROVAL

Members of the Thesis Examination Panel approved the thesis of TANG, Shaobing defended on [02/02/2015].

Principal Supervisor

Prof. WALKER, Allan
Professor
Faculty of Education and Human Development, HKIEd

External Examiner

Prof. DIMMOCK, Clive
Professor
Professional Learning and Leadership, University of Glasgow, UK

Associate Supervisor

Dr. LU, Jiafang
Associate Professor
Department of Education Policy and Leadership, HKIEd

Internal Examiner

Prof. LIM, Cher Ping
Professor
Department of Curriculum and Instruction, HKIEd

Associate Supervisor
Prof. HALLINGER, Philip
Professor of Education Management
Chulalongkorn University

Approved on behalf on the Thesis Examination Panel:

Chair, Thesis Examination Panel
Prof. LAM, Lawrence Tak Ming
Programme Director
Graduate School
The Hong Kong Institute of Education

ABSTRACT

Learning to Make Change Happen in Chinese Schools:

Adapting a Problem-Based Computer Simulation for Training School Leaders

by TANG, Shaobing

for the degree of Doctor of Education

The Hong Kong Institute of Education

School leaders are considered crucial figures in schools' success and failure. Hence, school leader training has become a critical strategy to lead to the success of educational reform. However, in China, there still exists a big gap in terms of how to transfer that knowledge into practice. Thus, products or tools which can integrate formal knowledge into practice are called for urgently in school leader training. A computer simulation titled *Making Change Happen* (The NETWORK Inc., 1997), which was created by the first co-investigator Professor Philip Hallinger for a Western context, will be adopted in this study as the core instructional medium. In *Making Change Happen*™ simulation, learners work in teams and act as a "change committee" responsible for implementing a major technology innovation in an organization. This study will employ a research and development (R&D) approach (Borg & Gall, 1989) by involving a cycle of research activities and computer programming that includes the following: 1) research and information collection; 2) planning of objectives, learning activities, small-scale testing; 3) developing a

preliminary form of the product; 4) preliminary field testing; 5) main product revision; 6) main field testing; 7) final product revision; 8) dissemination and implementation. Findings from the literature review and small-scale qualitative study showed that Chinese school leaders have different contextual constraints, such as China's social structure, government policy, cultural norms, educational theories and teaching principles. However, the descriptions and the strategies reported among successful school leadership for change in China bore a clear resemblance to best practice recommendations that appear in the Western literature on leading change in schools. Results from the two field tests indicated that the Chinese school version of MCH™ was successfully adapted to be culturally appropriate for Chinese schools for the purpose of school leader training and development. The training mode with the Chinese school version of MCH™ as the core instructional medium was warmly welcome by most of the participants and was considered unprecedented, creative, effective and timely needed for school leader training in China. The purpose of this study is to use knowledge of educational change and improvement in China to develop a Chinese version of a computer-based simulation for school leader training. The objective of the study is to look for a more effective approach to primary and secondary school leader training, which would help school leaders learn to lead change and enable educational change to really happen in China.

ACKNOWLEGEMENTS

I would like to express the deepest appreciation to my principle supervisor, Professor Philip Hallinger, who has led me to the research area of leading school change and leadership development. In the past four years of study and work, I have fortunately gained his treasured advice, encouragement and patient instruction. His wisdom and rigor in academic research and profound knowledge in the area of leadership and change management has deeply impressed me and will influence me forever in my future life and work. I also want to show my gratitude to Dr. Lu Jiafang, my associate supervisor, who has given me generous and considerable help and support throughout the process of this project. I'd also like to express my hearty thanks to Professor Allan Walker and Professor Adamson Bob, who have been always encouraging and guided me in the past five years. Without their supervision and constant help, the completion of this dissertation would not have been possible. Meanwhile, I'd like to express my sincere thanks to all the participants who had helped me as study participants in the small-scaled qualitative study and the two field tests.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

APCLC Joseph Lau Luen Hung Charitable Trust Asia Pacific Centre for Leadership and Change

BSS Best School System

CBT Computer-Based Training

GDP Gross Domestic Product

IMF International Money Fund

IT 2020 A new learning technology system

MCH™ Making Change Happen™ Simulation

MOE Ministry of Education

PBL Problem Based Learning

R & D Research and Development

SME Subject Matter Experts

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

> Crisis leads to reform, reform to confusion -
> this is the universal rule of development in
> many countries. (Zhong, 2006, p. 370)

In this chapter, I provide an introduction to the Chinese context for educational change and school leadership training from a macro perspective. Following this introduction, I briefly discuss issues of educational change in China and the challenges brought on by globalization. Next I discuss an approach Chinese school principals can use to lead successful school change. Finally, I describe the problem investigated in this research and present the research goals and significance of the study.

1.1 Globalization and Education Reform in China

In the past two decades, the globalization of the world economy has been exerting a strong impact on all nations, both specifically on their economic growth and on all aspects of life. As Carnoy (2000) stated:

> Globalization together with new information technology and innovative process they

> foment are driving a revolution of the organization of work, the production of goods and services, relations among nations, and even local culture. No community is immune from the effect of this revolution. It is changing the very fundamentals of human relations and social life. (p.14)

The influence of globalization is mainly reflected in three domains: economic, educational and cultural (Kuma & Parveen, 2013). Carnoy (2000) listed five ways in which globalization is having a major impact on education:

1. Rapid growth in demand for products with high-level skill content;
2. Increasing investment on education to produce a more educated labor force;
3. Pressure to develop the quality of national education systems internationally;
4. Information technology is expanding the amount of education implemented through distance education and the Internet;
5. Globalized information networks means transformation of world culture. (p. 45-46)

In confronting the challenges emerging from globalization, education frequently is regarded as an indispensable asset and critical approach to socio-economic development (Delors et al., 1996; Lauder, 2006; Hallinger & Kantamara, 2000c). In the UNESCO report, *Learning: The Treasure Within*, Delors et al. (1996) asserted:

> Education undoubtedly has an important role to play in any attempt to deal with the booming, intertwining communication networks which, by allowing the world to listen in on itself, truly make all people neighbors. (p. 43)

Three kinds of reforms in education have been driven by globalization:

1. Competitiveness-driven reform, responding to the increasing demands for high talent and creativity;
2. Finance-driven reform, investing more funds in education and training;
3. Equity-driven reform, attempting to improve education's political role as a source of social mobility and social equalization (Carnoy, 2000. pp. 49-50).

Under the context of more and more severe competition from nationally integrated capacity and talents, the knowledge system, talents exchange and global economy communication, the whole world is being confronted with a new technological revolution, information society and knowledge market (Zhou, 2009). In some leaders and scholars' words, the competition in the world in the 21st Century is the competition of talents.

China's accession into the WTO in 2001 offered it full access to economic globalization. At the same time, this has created pressure on Chinese society to shift from domestic to international competition. Thus, China's education system has been challenged to educate a more qualified workforce to

meet economic competition, as well as social development. According to Zhou (2009), China's fundamental approach is to make education a priority and to develop the country into a strong nation in terms of human resources.

In the past three decades, education has always been prioritized with strategic importance in China's development. The principle that education should serve socialist modernization and serve the people has been formulated to promote continuous educational reforms and development (Liu & Fang, 2009; Zhou, 2009). Since the 1980s, basic education in China has been reformed continuously focusing on the goal, content and method for education. Especially since the 1990s, the focus of educational reform has shifted from "examination-oriented education" to "quality-oriented education". This has caused nationwide discussions among researchers and scholars as well as considerable confusion in schools and society.

Although China's educational reform has produced improvements, many problems still exist (Zhong, 2006). For example, teachers still dominate classroom teaching in most schools, schools lack distinct personalities, and education management remains highly centralized (Ye, 2002a). According to Zhong (2006), various "bottlenecks" continue to need to be resolved as soon as possible. These include: "the lack of a national-level college entrance examination system, the lack of education legislation, the lack of research on teachers, and the lack of an effective assessment system, accountability system, and independent superintending system" (Zhong, 2006, p. 372). In response to these perceived problems, in 2010, a new round of educational reform symbolized by the release of "The National Outline for Medium and Long-Term

Education Reform and Development (2010-2020)" was launched. The focus of this round of educational reform has shifted to "quality improvement, balanced development and system innovation" (MOE, 2010).

However, both international and domestic experience and empirical evidence have come to the consensus that the success of educational reform largely relies on the success of school change (Cui, 2010; Fei, 2006; Fullan, 2007; Hallinger & Heck, 2003; Leithwood, Harris & Hopkins, 2008; Mao, 2010; Sebastian & Allensworth, 2012). Without school-level change, real system-wide educational change never happens (Cui, 2006; Fullan, 2007; Hallinger & Heck, 2003). Moreover, international evidence has shown that school principals play a prominent role in improving teachers' professional development and they play the main role in leading school change. Thus, the issue of how to improve school principals' capacity in leading school change has drawn more and more attention both in Asian and Western countries (Hallinger, 2010).

1.2 Managing Educational Change in the Chinese Context

In order to understand how to manage change in Chinese schools, several issues must be taken into account. These include government-school relationships, the culture of Confucianism and examinations and the increasing challenges from globalization and national transition.

1.2.1 Government-School Relationships

Since the founding of the People's Republic of China, the country has had a highly centralized educational system. The government has assumed responsibility for planning, administration and funding the national education system (Hawkins, 2000; Li, 2007). From the 1980s to the 1990s, government interventions in education were increasingly aimed at achieving the goal of "educational reform". However, in general, these reforms failed to reach their goals due to problems such as vague change goals, limited change plans, and conflicts during the change process, weak supervision and reform fatigue (Li, 2007). An "overly centralized system" has been criticized as stifling the initiative and enthusiasm of local government and schools (Hawkins, 2000). As a result, decentralization was first promulgated and reemphasized by the Chinese government in 1985 and again in 1993. The strategy of the Chinese government in developing education has gradually shifted from control to guidance.

Since the new curriculum reform in China in 2001, municipalities and schools in mainland China have been given greater autonomy in making educational decisions on curriculum and teaching methods. However, at the same time, teachers and school principals have greater accountability for educational results. This means they are entrusted with greater responsibility for school improvement.

Although recent efforts at decentralization in China have given impetus to Chinese school development, problems have also resulted during decentralization (Hawkins, 2000; Ngok, 2007). For example, education departments at each level of the bureaucracy have been reluctant to give up their

administrative power over schools. Thus, the traditional top-down administrative mode (e.g., documents, policy interpretation, funding controls) has continued, thereby limiting the actual discretion of decisions made in schools. In sum, despite efforts at decentralization, the relationship between the government and schools in China can still be described as top-down, with a command and control orientation.

1.2.2 Cultural Factors

Educational change is a complex process whereby success is largely decided by features of the context, which may be a bridge or barrier for the change (Hallinger, 2011). The impact of context on school improvement is increasingly studied as a factor that moderates success. For example, numerous empirical studies have proved that teachers and students are strongly influenced by the social culture, its norms, and conventions (Bolman & Deal, 1992; Boyd, 1992; Divaharan & Lim, 2010; Lin, Deng, Chai & Tsai, 2013; Wong, 2006). Therefore, understanding the cultural factors that impact educational change is necessary (Cheng, 1995; Hallinger, 1995).

In the Chinese context, Confucianism is regarded as a main cultural influence on the process of change in schools (Dimmock & Walker, 2000). Underlying values and norms of behavior of Confucianism can be seen in the emphasis on moral education, a patriarchal system, and harmony in social relations. The philosophy of Confucianism has been passed down from generation to generation over thousands of years in China (Hofstede, 1980a).

For example, leaders are usually considered as highly respectful figures with paternalistic authority (Gu, 2004; Ling, 2006).

This is also observable in the daily life of Chinese schools. Group work, responsibility and rigor are highly valued by the Chinese as the key features of traditional Chinese culture (Yuan, 2009). Hierarchical procedures are deeply rooted in decision-making in the school systems. Juniors obey seniors and their superiors. Authoritarian supervision practices and control over task performance are seen as natural. Decision-making is a top down, centralized process in most cases (Gu, 2004; Tang, 1991; Zeng, 2001). In sum, a traditional bureaucratic and hierarchical work style is still popular in most Chinese schools. This traditional way of managing school change has, however, received much criticism and is now encountering challenges from the external environment, especially due to globalization (Hawkins, 2000; Li, 2007).

1.3 School Leadership Training and Development

Numerous studies in both Western and Eastern countries have indicated that schools which demonstrate the capacity to improve are led by proactive principals with the capacity to lead staff towards the achievement of new goals for teaching, learning, and school quality (Fullan, 2003; Hallinger, 2003b; MacBeath & Cheng, 2008; Robinson, Lloyd & Rowe, 2008). Principal competency in this management domain is viewed as increasingly important to achieve successful long-term implementation of China's education reforms. In

Fullan's (2007) words, there is "no improving school that doesn't have a principal who is good at leading improvement" (p. 160). Nonetheless, in spite of high pressure and the urgent need for change in Chinese schools, there is still hesitation and doubt from Chinese school principals regarding how to change. Moreover, they remain uncertain how to *lead change* in this new context. The knowledge and skill base of change management among school managers remains at a primitive stage in China (Li, 2009; Li & Ma, 2006).

Given the fact that the school principal's capacity to lead change is one of the main factors in determining school improvement, school leadership training has become an increasingly prominent topic in educational reform over the past two decades (Fullan, 2007; Hallinger, 2003b). The preparation of principals to assume responsibilities for educational leadership are being rethought for 21st-century schools (Brooks & Normore, 2010; Halllinger & Heck, 2003).

These trends are also apparent in China where there have been greater investments to improve the levels of school leadership. For example, every year, China's school principals are required to participate in local, provincial, national and international training programs. New training modes adopted from Western countries are also being used (e.g., shadowing and online long-distance training). However, as a general trend, there have been few examples of these Western approaches of instruction being blended with culturally adapted curriculum content. Thus, Chinese school leadership training programs still lag behind in terms of training targets, scope of content and instructional methods. For example, current training programs in China continue to rely heavily on

traditional methods of leadership preparation. In addition, they continue to emphasize policy implementation more than skill development in leadership and management domains. Training typically fails to develop skills and perspectives that will equip Chinese school leaders to meet the requirements of basic educational reform in China.

Moreover, learning to lead change has never featured in the training curriculum of Chinese school leaders. Scholars (Fullan, 2006; Hallinger, 2003b; Walker, Hu & Qian, 2012) tend to agree that leading change in schools must incorporate strategies that are appropriate to the culture of the relevant society and institutional system. To date, however, there have been relatively few attempts to blend understandings of Chinese schools and their 'unique features' that derive from the local institutional and cultural context with knowledge with those of Western nations. Too frequently, Western methods are imported without adaptation, or practitioners simply continue to use traditional methods. Therefore, there is a need for developing an effective training tool for Chinese school principals in learning to lead change in their own cultural-institutional environment.

1.4 Statement of the Problem

Globalization and information technology are accelerating the pace of societal change and development throughout the world. Consequently, education has been given greater responsibility for enhancing social change and development than ever before. In Asian countries, where the economy, technology and

education lag behind Western countries, the pressures for change seem even more obvious and stronger than in more economically developed parts of the world (Carnoy, 2002; Hallinger, 2011).

Policy makers in countries such as China have strongly sensed that it is urgent to change their traditional education concepts and methods to meet the demands of the rapidly changing world. This has also resulted in a wake-up call for Chinese school leaders to respond to a series of national educational reforms. Yet simply 'telling' school administrators to change is unlikely to yield the desired results (Fullan, 2007). Indeed, the expectation that change results from clearly articulated orders reflects features of the institutional and cultural system that are at the heart of the 'problem of change' in China (Hallinger, 2011).

Thus, the multi-faceted problem that this project seeks to address is based on several inter-related features of the current educational context in China:

- Although rapid change in Chinese society has produced a continuing series of education reforms aimed at enhancing school innovation, implementation of the reforms has not met the expectations of policymakers;
- Institutional and cultural norms within China's education system continue a tradition of top-down decision-making at all levels;
- As in other countries, China's principals are viewed as key agents for successful change implementation;
- However, in the face of uncertain results of past and present education reforms, there is increasing pressure on China's school

principals to ‘show results’ with respect to their implementation of education reforms;

- There are limited examples within China of training school leaders in knowledge and skills for leadership in domains such as managing change;
- Educators responsible for principal training in China lack experience in using active learning methods and developing empirically grounded tools for training school leaders to solve practical problems.

The main features of this ‘problem’ are not unique to China. Indeed, other nations in East Asia (e.g., Thailand, Malaysia, Vietnam) face quite similar challenges in bringing education reforms to reality (Hallinger, 2010, 2011). They also face a similar problem in changing the culture of school administration and developing the capacity to ‘lead’ among school administrators who have traditionally focused on ‘system management’ (Dimmock & Walker, 1998; Hallinger, 2010, 2011; Ko, Hallinger & Walker, 2012; Hallinger & Kantamara, 2002). Nonetheless, in China, this problem takes on special characteristics due to the nation’s size, economic importance, and unique combination of institutional and cultural traditions. Thus, management solutions that will achieve success must be developed with a clear understanding of this context. This indicates a need for new research-based tools and curricula for school leadership development that are based on the Chinese context.

1.5 Purpose of the Study

In order to address this problem, this project aims to adapt and implement an existing computer-based training simulation, Making Change Happen (MCH™), for use with school leaders in China. The MCH™ simulation was originally developed for use in training school leaders in change management in the USA, Canada and Europe (Hallinger, Crandall, & Ng, 2001). Subsequently, however, adapted versions were developed for use in Thailand, Singapore, Hong Kong and Malaysia (Hallinger, 2007; Hallinger & Kantamara, 2002; Hallinger & Lu, 2011b; Hallinger, Lu & Showanasai, 2010). These adaptations have not only involved language translation but also adaptation to the socio-cultural and institutional contexts in which school leaders worked in these nations. That is, it was not assumed that the knowledge and skills required for managing change are 'culturally neutral'. Instead, successful change management must respond to the institutional structures and cultural norms of the particular setting.

With these complexities in mind, the current project employed a research and development (R & D) methodology to guide the researcher in systematically adapting the existing MCH™ computer simulation for use in China. As noted, a similar research and development methodology had previously been used to develop culturally adapted, translated versions of the USA version of the MCH™ simulation in doctoral studies conducted in Thailand (Hallinger & Kantamara, 2000a) and Korea (Park, 2002). These projects yielded training tools that have subsequently been used with thousands of school and business leaders in learning to manage change (Hallinger, 2007). The use of

these simulations in Southeast Asia has also been studied, yielding a strong perception of successful learning (Hallinger & Kantamara, 2002; Hallinger & Lu, 2011; Hallinger, Lu & Showanasai, 2010).

With this broad purpose of developing a Chinese version of MCH™, this project sought to address three more specific goals:

1. To construct an empirically informed understanding of successful change management in schools in the current Chinese education context;
2. To develop and test the use of a culturally-adapted and translated Chinese version of the MCH™ with school leaders in China;
3. To demonstrate and gain feedback on the use of an active learning approach to leader learning that contrasts with the predominant lecture-based training offered to Chinese school leaders.

In this Doctor of Education project, the researcher was intent upon using tools of research to inform the systematic development of a knowledge-based product that could be employed in practice with Chinese school leaders. The ultimate success of this project must be evaluated on the basis of several criteria:

- Were the methods applied towards development of the product credible and employed at the desired standard?
- Did the researcher's examination and articulation of the knowledge base underlying successful change management in China achieve the necessary level of face validity in the eyes of both practitioners and knowledgeable scholars?

- Did the training tool that resulted from this research and development project (i.e., the Chinese version of the MCH™ simulation) achieve a reasonable level of face validity in the eyes of the school principals who represent its target audience?
- Did the implementation of this project yield useful information concerning the use of active learning methods, such as computer simulation, with Chinese school principals?

1.6 Methodology: Research and Development Process

This project sought to bridge the gap between research and practice in education by developing and validating an approach to training Chinese school leaders in change management. This involved designing a Chinese version of a fully-developed product, the computer simulation Making Change Happen™ (The Network Inc., 1997). Therefore, a research and development (R & D) approach was deemed to be well suited to this goal.

According to Borg and Gall (1989), the R & D process consists of a series of iterative, systematic steps referred to as the "R & D cycle". R & D is a methodology in which the research process uses systematic steps to develop 'knowledge-based' products or tools. Knowledge-based tools are first distinguished by the systematic nature of their development. That is, an explicit set of steps is used in product design. These steps are intended to enhance the validity of the tool as well as its feasibility in real settings. By using a systematic approach to design, evaluation, feedback and product revision, the

developer increases the likelihood that the tool will achieve its goals.

Knowledge-based tools are also distinguished by their incorporation of 'best evidence information' into their design. In contrast, for example, to a designer relying solely on personal experience and beliefs, R & D requires the developer to access a formal knowledge base. In the case of training tools and curricula, for example, the R & D process would involve the developer in conducting a systematic review of research on the underlying knowledge and skills targeted in the educational product. If needed, small-scale research could also be employed to fill in gaps in the knowledge in specific areas.

Thus, in this project, the R & D process was employed to aid in the 'cultural adaptation' of the Western version of Making Change Happen™ computer simulation. In brief, application of the R & D cycle in this doctoral project entailed the following steps:

1. Collecting information on successful educational change in the Chinese school change context based upon a literature review;
2. Conducting a small-scale qualitative study with a sample of Chinese principals who had demonstrated success in bringing about change in their schools against which to compare the results of the literature review;
3. Using information gathered from the above steps in order to identify those components of the simulation (e.g., context description, role descriptions, and decision rules) that would require adaptation;

4. Translating and implementing the specific revisions to the create a Chinese version of the MCH™ simulation that would be perceived to be 'valid' for use in the Chinese context;
5. Using the adapted Chinese version of the MCH™ simulation with Chinese school leaders in formal field tests in order to gain formative feedback that could be used to further refine the simulation;
6. Making final revisions to the simulation and preparing the simulation for dissemination.

Following these steps would yield a product comprised of a translated and culturally adapted version of the MCH™ simulation. This simulation would reflect the context of Chinese schools as well as the best information available about how successful principals manage educational change in Chinese schools. This 'knowledge base' would be embedded in revised algorithms that would, in turn, be embedded in the simulation. The methodology of the present project is presented in greater detail in Chapter 4.

1.7 Significance of the Study

Chinese society is now in a transitional stage, especially in the field of education. In confronting issues emerging from economic transition, education reform is imperative for the social and economic growth of the nation. In order for the basic education reform in China to be effective at a deep level, school-level change is essential for the success of the reform. Thus, effective

leadership in leading school change has become a timely topic for Chinese schools. However, research in this area of study in China is still lacking, which makes this study very valuable for both the present and future of school leadership development in China. The present study will be an initial and beneficial contribution to the area of school leadership development with regards to school change in China in several dimensions:

Firstly, this study provides an opportunity to reinforce the importance of Chinese school leadership development to educational reform. Given a large number of Chinese school principals in a country with the largest population in the world, Chinese school principals' quality and professional development is quite uneven. There is a great disparity between the competence of urban and rural principals. This has seriously hindered the effective implementation of curriculum reform across China. There is a great need to prepare more qualified school principals with both good theoretical knowledge and strong abilities in leading school change. Moreover, though school principals' professionalization has been proposed recently in the academy, it has not been established as a system in China. It is, therefore, hoped that this study will demonstrate one approach to enhancing the present program for school leaders' training in China.

Secondly, though there have been many articles reporting successful experiences in school improvement in Chinese journals, these articles have mainly been reflections based on an individual's experience. This study's literature review and small-scale qualitative examination of successful change strategies of Chinese school leaders will enrich the current knowledge base for school change. This will help school principals to reflect on their approaches to

leading change in mainland China.

In addition, as several scholars have recently observed (e.g., Hallinger & Bryant, 2013a, 2013b; Walker et al., 2012), the international literature on principalship in China remains very limited. Since the results of this project will be reported in both Chinese and in English, the project will also contribute to making this literature accessible in English for an international audience.

Thirdly, compared to more economically developed countries, the professional preparation of Chinese school leaders is still backward in terms of both concepts and approaches (Feng, 2003; Hallinger, 2003b). Lecture-based training programs still dominate, and there is relatively little use of active learning techniques. Neither problem-based learning nor computer simulation are widely known, accepted or used in China (Feng, 2003, 2006). A unique feature of this study is the cultural adaptation of a problem-based computer simulation. Use of a systematic approach to the design should help improve the effectiveness of training (see also Hallinger & Lu, 2012). Therefore, this study will play a frontier role by introducing problem-based learning to Chinese school leadership training and education in China.

Moreover, the use of computer technology in this study also helps reinforce the importance of computer technology in disseminating and developing cognitive knowledge and knowledge transfer. With the assistance of the computer-based simulation MCH, participants learn to implement school change processes and strategies in a simulated setting with problems, scenarios and people which are similar to the real context. This study will contribute to understanding the needs and processes of training, school change, and

technology diffusion in China. This will also prepare school leaders to respond actively and lead continuous educational reform by applying and transferring rationales grounded in the MCH™ simulation with appropriate strategies for their own school context in an environment of calls for constant change efforts.

In addition, from a practical perspective, computer-based training (CBT) has advantages in terms of training time and costs (Rothfeder, 1998; Zahed, 1996). Participants, even those with little time available, can conveniently access the knowledge base of this computer-based simulation which is comprised of comprehensive knowledge of theory and principles and effective strategies for leading school change in practice. This is a significant advantage when it is being used with busy school leaders, especially in a very large country like China.

According to Rothfeder (1998), the time required for training by computer averages about 50 percent of that of instructor-led training. Although computers have been popular in China for a long time, the advantage of CBT has not been utilized to improve the effectiveness of school leaders' training. The use of CBT, especially computer-based simulations for school leadership training, is still at a beginning stage in China. This study will provide insights into the response of Chinese school leaders to the use of computer simulation in their training programs and make it convenient for learners to engage in multiple opportunities for practice.

1.8 Definition of Terms

1.8.1 Computer Simulation

A computer simulation is a simulation, run on a single computer or a network of computers, to reproduce the behavior of a system. With the advantages of being cost-effective, reliable, practical, safe, flexible and able to be used repeatedly, computer simulations have been widely used in almost all areas of science and have become a powerful tool for the analysis of complex systems and means. A simulation which incorporates a mix of multidisciplinary resources drawn from theory, empirical research and practice (Hallinger & Bridges, 1993, 1995) is considered a means of exposing learners to a complex, reality-based situation similar to one they might face in their own schools. Through playing the simulation, leaders learn how to confront challenges they have encountered or will encounter in a real school situation.

1.8.2 Problem-Based Learning

Problem-Based Learning (PBL) is an instructional strategy in which a problem is provided for students as the starting point for learning (Albanese & Mitchell, 1993; Bridges & Hallinger, 1995; Dochy, Segers, Van den Bossche & Gijbels, 2003). In order to solve the problem, learners employ their knowledge of theory, previous work experience and cooperation. A key facet of PBL posits that knowledge and skill transfer will be enhanced if the content is learned in the context of a realistic problem (Bridges & Hallinger). Team work, self-study and reflection are involved in the learning process.

1.8.3 Research and Development

Research and Development (R & D) is "a process used to develop and validate educational products" (Borg & Gall, 1989, p. 782), which combines knowledge from theory, empirical research and informed professional practice with practical educational products, tools and processes. R & D takes findings generated from basic and applied research and uses them to develop and validate educational products that can be employed in school practice (Borg & Gall).

1.8.4 Culture

According to Hofstede (1980a), culture is defined as "the collective mental programming of the mind which distinguishes the members of one human group from another…Culture, in this sense, includes systems of values; and values are among the building blocks of culture "(p.25). The core of culture is the traditional ideas of a group of people and especially their ingrained values (Luthans, 2005). In Hofstede's (1994) Cross-Cultural Matrix, there are five dimensions for cross-culture analyzes. They are: Power Distance, Collectivism and Individualism, Uncertainty Avoidance, Femininity and Masculinity**,** and Confucian Dynamism **(**long-term versus short-term orientation).

CHAPTER 2

LITERATURE REVIEW

This chapter presents a literature review emphasizing school change in the context of educational reform and the implications of the cultural differences between China and the West for the modification of a problem-based simulation program. The literature review consists of five main sections. The first section describes the methodology of the review. The second section describes the literature on school leadership and change in Western countries. The third section describes the literature on school leadership and change in China. The fourth section discusses approaches to school leadership preparation and development in Western nations as well as in China. The fifth section presents the MCH™ simulation and discusses how change theories are embedded in its design.

2.1 Method of the Review

The researcher employed an 'exhaustive search' (Hallinger & Bryant, 2013a, 2013b) of the published literature drawn from both international and Chinese language journals. An exhaustive search strategy is deemed appropriate when the knowledge domain is considered limited in scope. Based upon prior reviews reported in the international literature (Hallinger & Bryant, 2013a; Walker, Hu & Qian, 2012), the researcher knew that the international literature would be

limited. However, as Walker and his colleagues noted a diverse literature exists in Chinese language sources. Therefore, the present search strategy sought to uncover as many relevant sources as possible in both the international and Chinese language literatures.

For the English language international literature, the researcher used the keyword "China" combined with a second keyword of either "education reform" or "school change", and a third keyword of either "school principal" or "educational leadership". I searched Google Scholar, EBSCOhost Research Databases, Springer Online Journals, JSTOR, and Proquest Education Journals for journal articles, monographs, and postgraduate theses.

The international search did not generate many sources. Another recent review of the Asian literature (Hallinger & Bryant, 2013a, 2013b) identified a total of less than 20 journal articles either from or about school leadership in China published in core educational leadership and management journals over the past two decades. Although the search of the international literature was less constrained in terms of the scope of journals, the topic was also much narrower (i.e. leading change in schools). Thus, the relatively small number of international sources came as no surprise.

For the Chinese literature, the review covered journal articles, monographs, and postgraduate theses published in both English and Chinese since 2000. For the Chinese literature search, the researcher used the keyword "*jiao gai* (education reform)" or "*xue xiao gai ge* (school change) combined with a second keyword of either "*xiao zhang* (school principal)" or "*xue xiao ling dao* (educational leadership)". The researcher searched the China Academic

Journal Full-Text Database, the Chinese Electronic Periodicals Service, the China Master's Theses Full-Text Database, and the China Doctoral Dissertations Full-Text Database. The reference lists of full journal articles were also carefully checked for relevant literature.

Although the search for Chinese language sources yielded more titles, this literature on school leadership is quite different in composition from the Western literature. The Chinese literature consists primarily of 'prescriptive advice' and 'policy commentaries' rather than empirical studies using social science research methods (Walker, Hu & Qian. 2012). The Chinese papers usually consist of in-depth analysis of an issue or a case study. Walker and his colleagues elaborated on this point in a recent review of the Chinese language literature on principalship:

> Interestingly, because the empirical studies are seen to produce little more than ''commonsense'' findings (what people already know), their influence in the Chinese educational community remains marginal. As a result, non-empirical research still dominates the Chinese literature and commonly accepted research norms. (p. 390)

With this limitation in mind, the literature review was aimed at surfacing trends, identifying potential issues and generating propositions, rather than drawing firm conclusions. Thus, it is an *exploratory* rather than an *explanatory* review that was intended to inform our curriculum development effort (Hallinger & Bryant, 2013a). As noted by Hallinger and Bryant, exploratory reviews are suitable when a knowledge domain is still at a relatively immature

stage of development.

2.2 Educational Change in Western Societies

2.2.1 Overview of Educational Change in the West

According to Fullan (2005), the educational reform in the West has proceeded through at least four broad phases over the last third of the 20th century: The first stage is characterized by 'large scale aspirations for reform which failed to bear fruit' in the 1960s. The second stage is known as 'a period of downturn and recession with limited attention to fundamental reform' and a 'growing dissatisfaction with the role and performance of public schools' in the 1970s. The third stage is featured as a period with 'stronger central intervention and more demands and mechanisms for accountability' in the 1980s. The fourth stage refers to the 1990s, 'in which there is a growing realization that accountability per se is not the answer, and that the "capacity" of the school system and its communities is the key to reform'. This is also regarded as the early stage of the educational reform that led into the 21st century.

With the process of globalization in the 21st century, the interests of Western countries and those around the world have been getting more and more similar. In Fullan's (2005) words, it is a time for the transformation of societies - individually and interdependently. This statement further proves that, in order to gain the initiative in the increasingly severe competition in the world of information and technology, educational reform is the critical strategic

intervention that can win the game.

In the last decade, the focus of educational change has shifted from large-scale curriculum innovation to school-based curriculum development and school-based staff development. Now, in the new century, the focus of the existing knowledge-based of educational change has shifted to the standards of school performance or, in other words, the teaching standards are serving as the foundation of the reform. However, it has been noted that the approaches and methods for assessing school performance and students' multiple intelligences, with summative assessment or formative assessment, are indefinite and controversial (Fullan, 2005).

In sum, nowadays, educational change is not only complex due to external factors, the characteristics of the local context and the characteristics of innovation, but it is also deeply influenced and 'shaped and altered by different and competing interest groups in an ideological battle for the minds of the young' (Fullan, 2005). As a result, many of the educational changes are very different from before in both their substance and form. In this 'downright chaotic' state, it seems that the school principal has been deputized with greater accountability to choose the direction and the approach to reaching the destination of the reform (Fullan). It can be also concluded that, whether the game is successful or not, to a certain extent, depends on the school principal's capacity in leading school change.

2.2.2 School Leadership and Change in the West

School leadership has been a hot topic in the process of educational reform. As for the definition of leadership, there is no agreed definition (Leithwood & Jantzi, 2000). However, some key words or central elements can be captured in this complex concept, such as influence, value, vision, communication, etc. For example, according to Bush and Glover (2003),

> Leadership is a process of influence leading to the achievement of desired purposes. Successful leaders develop a vision for their schools based on their personal and professional values. They articulate this vision at every opportunity and influence their staff and other stakeholders to share the vision. The philosophy, structures and activities of the school are geared towards the achievement of this shared vision. (p. 8)

In Spillane, Halverson and Diamond's (2001) words, a school leader is a person who can influence and empower others with the purpose of bringing about a 'major change in school'. Results from empirical evidence on educational leadership over the past twenty years have highlighted the important role school leaders play in school effectiveness, school improvement, teacher development, and student learning (Cheng, 1994; Griffith, 2004; Hallinger & Heck, 2010; Leithwood, Seashore Louis, Anderson & Wahlstrom, 2004; Marks & Printy, 2003; Marzano, Waters & McNulty, 2005; Robinson, 2007; Robinson, Lloyd & Rowe, 2008; Sebastian & Allensworth, 2012). Even twenty years ago, studies (e.g. Cheng, 1994; Heck, 1992) had found that

leadership had a strong relationship with organizational effectiveness, strong school culture, teacher satisfaction and professional development, and student performance.

Given the fact that the school principals' role is critical and prominent in school improvement and student achievement, the issue of effective strategies used by successful principals has attracted increasing interest in recent years from researchers in educational leadership and educational administrators.

Drawing from numerous empirical studies, researchers have determined some of the features and functions of successful leadership in the school change process. For example, in the book *Successful Principal Leadership in Times of Change: An International Perspective* (Day & Leithwood, 2007), five key strategies were identified from the practices in successful elementary and high schools in different cultural, geographical and socio-economic contexts:

1. sustaining passionate commitment and personal accountability;
2. maintaining moral purpose and managing tensions and dilemmas;
3. being other-centered and focusing on learning and development;
4. making emotional and rational investment;
5. emphasizing the personal and the functional.

Overall, some leader features are more emphasized than others in describing successful school leaders. These include qualities like passion, commitment and morality, which are mainly related to school leaders' personalities. Later, based on an international literature review concerning successful school leadership, Leithwood, Harris and Hopkins (2008) delineated school leaders' roles and their functions in school improvement and summed up

'seven strong claims about successful school leadership' as follows:

1. School leadership is second only to classroom teaching as an influence on pupil learning;
2. Almost all successful leaders draw on the same repertoire of basic leadership practices;
3. The ways in which leaders apply these basic leadership practices, not the practices themselves, demonstrate responsiveness to, rather than dictation by, the contexts in which they work;
4. School leaders improve teaching and learning indirectly and most powerfully through their influence on staff motivation, commitment and working conditions;
5. School leadership has a greater influence on schools and students when it is widely distributed;
6. Some patterns of distribution are more effective than others;
7. A small handful of personal traits explain a high proportion of the variation in leadership effectiveness.

These seven claims about successful school leadership can be also considered as valuable guidelines and effective strategies for school leaders to manage schools effectively. From the above strategies, three core leadership features can be identified: setting directions, developing people, and re-design of the organization (Leithwood, 1994). However, as Day and Leithwood (2007) remarked, these core leadership functions are necessary but insufficient conditions for school success regardless of context. Beyond these core features, they found four other key features that successful school leadership should

have:

1. a focus on both social and academic goals;
2. changing structures and cultures in order to open schools to their local communities;
3. understanding and working with the tensions and dilemmas inherent in personal, social and policy contexts; and
4. the ability to respond to these but not be dependent upon them.

Based on the above descriptions of the strategies exercised by successful school leaders, it is not difficult to note that many of the features and functions of those successful strategies, such as "setting directions", "empowering people" and "changing the context", have a strong link to the models of transformational leadership. The strategies used by successful leaders in schools, including "defining the school's mission, managing the instructional program, and promoting a positive school-learning climate" can also be easily found in the instructional leadership model. Some findings from the latest empirical studies, such as Klar and Brewer (2013), have further proved that core transformational and instructional leadership practices can be adapted to suit various school contexts and institutionalized school-wide reform efforts to enhance student learning.

In sum, the above strategies are not used by all successful school leaders at the same time and are not suitable for all principals in all school contexts. However, they can provide valuable implications for in-service principals in leading school change, especially for those who have less experience as school leaders. They can also provide great implications for the preparation of

professional development programs to develop and train strong school leaders.

Unlike the effective strategies mentioned above, which can be practiced wtih different consequence by different successful school leaders, the order of the stages in the process of change would be quite fixed with its own rules and regulations. In his groundbreaking book *Leading Change*, Kotter (1996) outlined an eight–stage process for managing change. These eight stages are:

1. Establishing a sense of urgency;
2. Creating the guiding coalition;
3. Developing a vision and strategy;
4. Communicating the change vision;
5. Empowering employees for broad-based action;
6. Generating short-term wins;
7. Consolidating gains and producing more change;
8. Anchoring new approaches in the culture.

The eight stages in the process have an inherent correlation with each other. The order of each stage in the process has been validated with positive results (Kotter, 2012). In other words, there is no short-cut to leading change. Each stage of the process is the foundation and preparation of the next stage. You cannot jump over any of the stages in the process. If you want to achieve transformational goals, what you should do is to go through the process step by step. For nearly two decades, the eight stage process has been the foundation for leaders and organizations across the globe to lead change with positive results.

2.3 Educational Change in China

2.3.1 Overview of Educational Change in China

For China, the last 30 years of educational development has been a process of continuous exploration, opening up and innovation. In particular, basic education has undergone a historical transition. In Ye's (2004) words, during the third stage, in which subject construction was enhanced, there tended to be multiple academic points of view, the horizon of academia expanded more and more and international exchange increased as well. In sum, this period is regarded as the stage which began with the resuming of subject construction in Chinese education and led to prosperity and steps towards independence, as well as a period of leapfrog development for Chinese educational development. In this period of time, the social nature of education reform became more prominent; the path of educational reform became more diverse; and the value of educational reform became more people-oriented.

Although basic education in China has undergone many reform initiatives and improvements in the past decades, the outcomes of these reforms have been criticized for increasing students' heavy workload and a lack of focus on creativity and critical thinking ability (MOE, 2010; Zhou, 2009). As elsewhere in the world, the reform in basic education in China is, of course, the object of heated debate in the local press, research literature, public and political forums. Despite a proliferation of discourses on change and innovation amongst education researchers, teachers, principals and administrators in China, the

reform has been criticized as being overtly driven by Western theories. In addition, centralization in educational management has resulted in policies that are oriented towards the elite and that are too far removed from actual schools and classroom practices (Liu & Fang, 2009). In the words of Liu (2010), the principal of the middle school affiliated with the China Renmin University (one of the most famous schools in China), "As far as education reform is concerned, it is easier said than done. The drafting of the Plan itself is a top-down education reform in which all social sectors are involved. "

Thus, both primary and secondary schools have encountered greater challenges than ever before. In recent years, it has become clearer for China's policymakers that national education reform goals will not be met unless individual schools can develop a more robust capacity to change (Chen, 2004; Chen, 2005; Cui, 2006; Dong, 2006). Thus, school principals are regarded as key factors influencing the success of educational reform. This can be proved by a series of policies and documents focusing on school leadership development and training (e.g. Hu, 2008; Huang, 2004; Zhu, 2009).

2.3.2 School Leadership and Change in China

As noted above, since the turn of the 21st century, Chinese policymakers have engaged in a series of attempts at major education policy reforms (Gao, 2002; Hannum & Park, 2002; Wu & Pang, 2011). These have included the Basic Education Reform in 2001 (MOE, 2001a), the New Curriculum Reform (MOE, 2001b), and most recently a National Plan for Medium and Long-Term

Education Reform and Development (MOE, 2010). These reforms, as a group, have aimed at transforming a top-down, hierarchical education system whose development during the mid-20th century had been heavily influenced by the Soviet Union. Policies embedded in China's 21st century education reforms have sought to stimulate transformations in curriculum, teaching methods, and system management.

Today, more than a decade since the launch of the New Curriculum Reform, results have not met the expectations of policymakers or the public (EOE, 2010). As the Chinese authorities recently concluded, "[A]chievement is great, but there are also numerous problems" (EOE, 2010, p. 3). More specifically, there is a widespread perception that schools are failing to prepare students with the knowledge, skills and attitudes needed to succeed personally or professionally in a rapidly changing society (EOE, 2010; Feng, 2006).

These reforms have represented a significant change in the direction of education for China's schools and the educators working in them. New educational goals, policies, programs, and practices have created new challenges for China's school leaders (Chen, 2005; Dong & Geng, 2008; Feng, 2006; Ye, 2009; Zhong, 2005).,However, though schools leaders are adept at announcing visions and displaying blueprints for change, implementing these changes in reality is another matter (Cui, 2006; Lau, Tse & Zhou, 2002). Ke (2007) also referred to a continuing emphasis on schools to produce the "appearance of results" that meet the expectations of system leaders as the "new institutional system" (p. 43). In another study examining the responses of Shanghai secondary school principals to the curriculum reform implemented

over the past decade, Walker, Qian & Zhang (2011) found that, "enduring cultural norms which continue to underpin societal expectations and accountability represent one of the main reasons why curriculum reform has so far not been able to bring about deep change at the secondary school level" (p. 401). Pepper concluded:

> In reality, the complexity of the context seems to result in a disconnection between principal practice and the leadership approaches promoted in both policy and the literature. Thus, despite policymakers and academics advocating curriculum and distributed leadership, the continuing emphasis on high-stake exams by educators across the educational spectrum (education officials, principals and even teachers) means that principals tend to pay lip service to these ideals while continuing to do things 'the same way as they have always been done'. (Pepper, 1996, pp. 104-111, cited in Walker, Qian & Zhang., p. 388)

These observations highlight the disconnect between the norms of empowerment and decentralization sought in China's education reforms and the traditional norms of the broader Chinese society that continue to persist today. Thus, Ke (2007) has asserted that despite formal adoption of a series of grand national-level plans for education policy change, China's schools have remained remarkably stable over the past half century. This 'obstacle to change' is not unique to China. Indeed, scholars have noted a similar impact of socio-cultural values and norms on the implementation of education reforms in other East

Asian societies (Cheng & Walker, 2008; Fry & Bi, 2013; Hallinger & Lee, 2011; Lam, 2003; Ng, 2004; Mounier & Tangchuang, 2009).

Yet, within this broad landscape of stability, cases of successful change have been reported in the Chinese literature (e.g. Chen, 2004; Cui, 2006; Dong, 2006; Ma, Wang, & Xie, 2008; Su, 2009; Qian, 2008; Wei, 2006). Our review of this literature on successful change in Chinese schools revealed a number of common themes. Successful change leaders were found to:

1. Rely more heavily on influence and moral persuasion than position power to engage staff in change efforts (Dong, 2006; Li, 2005; Lin, 2000; Qian, 2008; Su, 2009; Xu, 2005);
2. Articulate a clear, firm set of beliefs about education as well as an inspiring vision of change (Dong, 2006; Li, 2005; Ma, Wang & Xie, 2008; Ma, Wang & Yan, 2005 ; Su, 2009);
3. Work to create a united and proactive leadership team (Chen, 2005, Chen, 2004; Cui, 2006; Hu, 2005; Li, 2005);
4. Gain support from external stakeholders (Cui, 2006; Zhang & Zeng, 2006);
5. Cultivate school cultures that are capable of supporting innovation and change in social norms as well as educational content and practices (Dong, 2006; Li, 2005; Li & Ma, 2006; Ma, Wang & Xie, 2008; Ma, Wang & Yan, 2005; Wei, 2006);
6. Model just and democratic behavior rather than solely position-oriented, hierarchical behavior in their relationships with staff (Hu, 2005; Li, 2005);

7. Provide diverse opportunities for teachers' continuous professional development (Dong, 2006; Jia, 2007; Wei, 2006; Wu & Pang, 2011);
8. Model professional growth through engaging in their own personal learning (Chu & Cravens, 2012; Cui, 2006; Dong, 2006; Li, 2005; Qian, 2008).

These themes are surprising in two respects. First, they reflect an approach to school leadership that is more 'transformational' (as opposed to 'transactional') (Leithwood & Sun, 2012) than might be expected in China's hierarchically-oriented, high power distance culture (see Gao, 2005; Hofstede, 1983; Li, 2005; Lin, 2008). More specifically, these propositions emphasize empowerment, the use of expertise and influence, and capacity building as opposed to direction, coercion, and the use of rewards and sanctions. Second, these findings, on the whole, could have been derived from a handbook on leading educational change in Western societies (Drucker, 1995; Fullan, 2007; Hall & Hord, 2002; Hallinger, 2003b; Kotter, 1996; O'Toole, 1995).

The researcher does wish, however, to remind the reader that these 'propositions' came from an immature literature that is heavily weighted towards opinion and prescription drawn from experience rather than 'scientific' empirical examination (Walker, Hu & Qian, 2012; Ye, 2009). Thus, it is difficult to assess the extent to which they reflect broadly applied practices of successful change leaders, or whether they reflect an emergent normative ideology in China describing how principals *should lead change*. Given the rather surprising nature of these findings, the researcher decided that first-hand reports from principals could provide a useful complementary perspective on change

leadership in Chinese schools.

2.3.3 Cultural Influences on School Leadership and Change in China

In recent years, the issue of culture has attracted much attention in educational administration and leadership research internationally . More and more scholars (Allinson, 1989; Bolman & Deal 1992; Duke 1996; Hofstede, 1983; Hallinger, 1995; Hallinger & Leithwood ,1996; Walker, Qian, & Zhang, 2011; Wong, 2007) agree that "societal culture exerts a hidden but demonstrable influence on its organizations and their capacity to change" (Hallinger & Kantamara's, 2001, p. 388). Reflecting on the process of curriculum reform in China, Wang (2006) argued that only those reforms conforming to the national situation were successful.

Given the importance of cultural application to educational change and management, a good training tool and its effectiveness should be reflected in its cultural characteristics. A program successful in one country may not yield the same results if it is simply translated into another language. Therefore, the original version of the simulation might have been insufficient and inappropriate to use in the Chinese context without modification according to cultural differences. In this study, the revision of the MCH simulation emphasized cultural transformation into the context of Chinese culture and organizational systems, in addition to language translation.

A cross-cultural framework developed by Hofstede (1983) was used in analyzing Chinese culture and its impact on educational change. In his

cross-national research, Hofstede outlined four cultural dimensions on which national cultures differ: power distance, individualism-collectivism, uncertainty avoidance, and masculinity-femininity. Later, as a complement, he added 'Confucian dynamism' (also known 'long-term orientation' – LTO) as a fifth dimension of national culture variance (Hofstede, 1991). The definition of these five cultural dimensions was presented in Chapter One.

However, we must keep in mind that, though Hofstede's Cross-Cultural Matrix has been widely utilized in cross-cultural management, his study was conducted about half a century ago and the results may be too outdated. There may be some potential limitations to applying all his results to a modern society since many changes in value systems and cultures have occurred. Some studies in the cross-cultural field have indicated more specific and different cultural patterns from those of Hofstede (e.g. Triandis, 1995; Turner & Trompenaars, 2000). Especially in the past few decades, with the fast social change in economy, technology, network and globalization, a culture may be shifting from one pole to another.

For example, the culture of collectivism, which was identified by Hofstede (1983) as being adopted by most Asian countries, has shifted towards individualism by the force of these changes. At the same time, changes in ecology and movement from rural to urban settings have also contributed to changes from collectivism to individualism (Triandis 1995). Some scholars (Triandis, 1995; Triandis, Chen & Chan, 1998) had predicted twenty years ago that Asian countries would move from collectivism towards the individualism in the 21st century. Another example of cultural shift can be seen in Hofstede's

(1991) fifth dimension of short-term and long-term orientation. Owing to the increasing ease of social and geographic mobility, people's behavior has become more focused on short-term rather than long-term factors (Triandis).

In spite of the above potential limitations, Hofstede's (1983) culture model has been widely applied to cross-cultural studies and still holds a certain consistency today. In addition, a national culture is deeply rooted and learned throughout an entire society; it is assumed that this cultural change is slow and it does affect the rate of organizational change. Therefore, Hofstede's typology was used in this study as the primary theory for revising the simulation but other recent study findings were also incorporated into this study.

In the following sections, Chinese cultural influences on school leadership and change are discussed using the framework of Hofstede's (1991, 1997) five cultural dimensions. Since the original simulation was developed in an American context, a cultural comparison between the USA and China and the impact of these cultural differences on educational change in the two countries is given as a reference for the adaption of the simulation as well.

2.3.3.1 Large power distance

According to Hofstede (1997, p. 28), power distance scores indicate dependence relationships between bosses and subordinates. In Hofstede (1983)'s findings, we can note that China scored high on the power distance index (67). It was even higher than Thailand (64) and much higher than the United States (40). The large power distance indicates a cultural tendency of the Chinese to accept

differences in authority and power among people in the society as natural.

In China, the patriarchal clan system based on blood relationships is the most important social foundation of Chinese traditional culture. It determines the social and political structure of China and its ideology to a large extent (Luo, Kai & Yang, 1995; Zhang & Fang, 1994). Therefore, family life is the most important aspect of social life in China and the second most important is the relationship between relatives, neighbours and friends. This has dictated social requirements, constrained the scope of activities of the Chinese people and fixed the social moral conditions and the political law system in China (Liang, 2003). Thus, Chinese culture has also been called a culture of "relationship" (*guanxi* in Chinese) and "filial piety", (*xiaoxun* in Chinese). Under these isomorphic patriarchal ideas, individuals are surrounded and embedded in the group. That is also the core spirit of Confucianism, which emphasizes that subordinates must be absolutely obedient to their parents in their social life and their superiors at work.

In this cultural context, common people traditionally were used to obeying and following authority and young people were required be polite to their superiors or elders. They would hardly question authority or professional experts. If someone dared to disobey leader or superiors, they would be regarded as rebellious and impolite, which would lead to the end of their official career.

This "top-down" management style still dominates in Chinese schools. For example, in recent years, although every school has a teachers' union and consultative processes have been used to involve teachers in major decisions,

involvement has typically been a response to the initiative of the principals. Once decisions are made, deputy principals and teachers in middle management are charged with implementing them. This is known in China as position responsibility. This is consistent with the state of the 'high power distance' organizations described by Hofstede (1980, 1991).

Also, compared with the typical American's "straight forward" personality, the Chinese are more "modest" and tend towards "neutralization". Chinese seldom openly express their disagreement or argue different ideas. Instead, they often keep silent even when they are reluctant to accept an idea. This is considered to be conducive to family stability and social harmony and helpful for establishing harmonious interpersonal relationships. The belief in the value of harmonious human relationships with nature and other people and behaviors that arise from this belief play an important role in Chinese culture and are also the outstanding characteristics of the Chinese nation (Zhang, 1989; Zhang & Fang, 1994). These Chinese cultural features differ from those in the West and their impact on educational change is displayed in Table 1.

Table 1: Chinese cultural features different from the West and their impacts on educational change--Power Distance

The U.S.	China	Effects on Chinese Workplace	Implications for Leading Change in China

Small. Fairly decentralized, flat hierarchical pyramid. Equality between superiors and subordinates. (Interdependence between superiors and subordinate). Small emotional distance, subordinates readily approach and contradict superiors. Younger superiors are more appreciated than older ones.	Large. Highly centralized, hierarchical and bureaucratic society. Legitimated top-down. Inequality between superiors and subordinates (Dependence of subordinates on superiors). Deference to authority and to seniors in age and rank. Unfailing belief in authority and experts. Older superiors are more appreciated than younger ones.	People accept hierarchy and inequality. Pressure and support from the top are necessary to foster change. Centralized power; autocratic, paternalistic bosses. More interventions from bureaucracy. Reluctance to question, make own decisions and hold own opinions (esp. for young & female employees). Employees tend to be passive and to follow the work procedures.	Articulate moral purpose behind change more than institutional purpose. Leadership roles for superiors are important in change initiation and implementation (funding & personnel). Gain support of employees with referent power, informer leader, or senior employees for change. Listen to people more; use effective communication both in formal/informal settings. Ensure balance of participation by people at various levels.

2.3.3.2 Individualism—Collectivism

According to Hofstede (1983), China ranked among developing and Asian countries as a culture of high collectivism thirty years ago. In contrast, nations such as the United States, England, and Australia were regarded as highly individualistic. In these societies, personal freedom and individual achievement

are emphasized. And competitions between staff and rewards to individual performance are encouraged as the effective policy.. However, as Cheng (2001) stated, the traditional culture of collectivism in China has been gradually eroded since the reform two decades ago. Chinese are more and more caring for their individual development and aspire to be successful and gain others' respect. This makes good the assumption that Asian countries would move from collectivism towards individualism in the 21st century (Triandis 1995; Chen &chan,1998).

However, this kind of "individualism" is different from that in the West. Under isomorphic patriarchal ideas such as, "The world comes from the country, the country from the home" and "The world is as a family and China as a person" (in the words of Mencius, one of greatest thinkers in ancient China), individuals are surrounded and embedded in the group (Luo, Kai & Yang, 1995; Zhang & Fang, 1994).

For example, though most Chinese teachers expect to have a good reputation in society and want to be successful and even outstanding in the group, this can be attributed to the Chinese traditional cultural norm of "mianzi", a consciousness about one's "face" or "grace" in the public eye (Huang, 2004; Zhang, 2007). These teachers are afraid of being unsuccessful. So, from another angle, this is a false individualism. Behind it there lies a deep sense of collectivism; Chinese people care very much about others' views of and attitudes towards them. When they do succeed, they often attribute their success to the help of their leaders, community and society.

Table 2 presents the differences in terms of individualism and

collectivism between Chinese and the West and their impacts on educational change.

Table 2: Chinese cultural features differing from the West and their impact on educational change--Individualism—Collectivism

The U.S.	China	Effect on Chinese Workplace	Implications for Leading Change in China
High level of individualism. Self-interest- and achievement-oriented. Emphasis on individual interests. Emphasis on creativity and performance. Stresses personality differences, personal freed om. Everyone is expected to have a private opinion. "I" mentality.	Tendency of individualism in collectivism. Efforts and results are based on the group (country, society or family). Group spirit is a fundamental prerequisite to individual confidence. Adherence to superiors and the group norms, imitation. Fear of being famous and causing conflicts in groups. Individual opinions are seldom boldly exposed in public. Peace is always honored. Opinions are predetermined by group membership.	Both group and individual activities are organized. Promotion of individuals to develop and perform in groups. Less creativity. Loose organization without leaders. No active leaders in group work if no one assigned the position.	Focus change activities on both the group and individual. Promote group commitment to change, movement at the group/organizational level. Respect each other. Build a democratic atmosphere for individuals to express their opinions. Encourage key person to take responsibility for leading group work. Group adoption of change, group decision to implement activities. Synergistic activities, peer encouragement for change ("when you go, I go"); peer pressure to be in the group or at the same levels of performance.

"We" mentality.

2.3.3.3 Uncertainty Avoidance

Any change brings about uncertainty and discomfort (Fullan, 2007). In China, people pursue a harmonious and stable society. These are regarded as the outstanding characteristics of the Chinese nation (Zhang & Fang, 1994). This cultural feature leads to complacency, easy satisfaction, scholasticism, lack of ambition and conventional behavior. It is natural that the Chinese tend to reject change.

Although there have been about 30 years of innovation in China, most Chinese people are not used to the state of innovation. Some people are still skeptical and negative. Even if more and more people are saying they accept the idea of innovation, there may be little reflection of this in their behavior. As a result, due to fear of the unknown and the danger of failure of reforms, most teachers, as well as administrators, wanted to see instant benefits from a new change. When school principals dare to try a change, they tend to implement it in small steps in as a safety measure.

In Kotter's (1996) terms, this could be interpreted as an example of "creating quick wins". For example, Tang, Hallinger and Lu (2014) found that two principals initially implemented new teaching methods in a small number of classes, and subsequently built on the success of those teachers. The principals also sought to create a safe environment for teachers to take risks in trying out new methods of teaching and learning. The primary school principals all selected lower grade classes for the initial implementation since teachers

(and students) in those grades face less pressure for examination results.

According Hofstede (1983), Chinese culture is identified as having a high degree of uncertainty avoidance. The differences in Uncertainty Avoidance between China and the United States are shown in Table 3:

Table 3: Chinese cultural features differing from the West and their impacts on educational change--Uncertainty Avoidance

The U.S.	China	Effect on the Chinese Workplace	Implications for Leading Change in China
Low. Feeling of security with high technology and law. More tolerance and insistence on pluralism. Low anxiety. Flexibility to change rules.	High. Rules foster stability more than in low UA cultures. Less tolerance. Organization-wide, expensive, high risk activities. High anxiety, emotional need for laws and rules. Working hard to save for the future. Based on human relationships rather than law.	Strong functional control in planning. Reluctance of workers to make decisions on their own. Reluctance to change. Fear of failure. Fear of blame and punishment. Discomfort with uncertainty and innovation. Charitable leadership is more effective.	Follow authority. Demonstrate clarity and seriousness of change purpose. Need clear direction on change: written policies, commitment to change. Approval is essential for an activity. Build good relationship with staff. Provide more comfort and care for employees.

2.3.3.4 Femininity and Masculinity

According to Hofstede (1983), China's score on the masculinity index (59) is

nearly as high as that of the USA, which is close to the centre of the diagram. Its score is higher than that of Thailand (47) and much higher than that of Korea (40). Therefore, China is identified as a culture with a masculine tendency. This indicates that social gender roles are clearly distinct and performance outcomes and productivity represent the top priorities (Hofstede, 1991).

With several thousand years of history of feudal society, in the cultural context of patriarchy, the male still dominates society in China (Chen, 2010; Shi, 2003). Females in China were traditionally looked down upon and had little status in society. Although this state has changed a lot since 1949, Chinese is more masculine at heart. In addition, Chinese people expect to achieve and perform well. Success is usually recognized by material wealth, power and social status in China. Personality cults are popular (Li, 2006). With above culture features, the Chinese are more masculine than feminine.

In this dimension, there are more cultural similarities than differences between China and the USA. A cultural comparison between the USA and China of masculinity and femininity and their impact on educational change is shown in Table 4.

Table 4: Chinese culture features differing from the West and their impact on educational change--Masculinity and Femininity

The U.S.	China	Effect on the Chinese Workplace	Implications for Leading Change in China
Masculinity. Material success and progress are	Masculinity. Heroic personality is popular and	Decisions and rules are made by the leader alone. It is easy to take action and be effective	Need to be more democratic. Careful response to resistance and

important. Assertiveness and competition are common. Decisive and assertive managers.	envied. To possess wealth and power means success. Charming and patriarchal managers.	if the decision is right. Women are regarded as weak and of low capacity and are looked down upon. Details are neglected. It is not easy for leaders to accept others' opinions. Not tolerant of those with different opinions.	assertion of the need for change (non-offensiveness). More respect for women and maximization of their functions in school change. Listen to others' concerns and fears. Skill in dealing with resistors is necessary.

2.3.3.5 Confucian dynamism (long-term versus short-term orientation)

After creating the previous four dimensions, Hofstede (1991) added a fifth dimension, Confucian dynamism (long-term versus short-term orientation), based on research in the Far East – Chinese Culture Connection in 1987. According to Hostede, the fifth dimension deals with 'time orientation' and consists of two contrasting poles: 'long-term orientation' versus 'short-term orientation' as presented in Table 5.

Table 5: Long-term orientation (Confucian dynamism)

Long-term orientation	Short-term orientation
1. Persistence (perseverance)	1. Personal steadiness and stability
2. Ordering relationships by status and observing this order	2. Saving face 3. Respect for tradition
3. Thrift	4. Reciprocation of greetings, favors, and gifts
4. Having a sense of shame	

*S*ource: Based on Hofstede (pp. 165–6, 1991; pp. 354-5, 2001)

The findings of Hofstede's (1991) study showed that China's long-term orientation index and factor scores ranked the first among 23 countries and regions and was identified as more future- and long-term oriented than some other Asian countries such as Pakistan, the Philippines and other Western countries, such as Canada, the UK, the USA, New Zealand, Australia and Germany, which is ranked as more past- and short-term oriented cultures.

Confucianism is considered to be at the core of Chinese culture. Its influence on Chinese society, particularly on education, is significant (Qi, 2007; Ribbins & Zhang, 2006; Wang, 2007). A core Confucian value is moderation as an attitude for living—to be willing to compromise in all things, stand apart from the worldly success and be harmonious with the rest of the world (Luo, Kai & Yang, 1995; Zhang, 1989; Zhang & Fang, 1994). This traditional culture can be easily found at the starting stage of change in China, in such attitudes as 'waiting and seeing' and being afraid of being 'too outstanding'. In addition, the Chinese are known for their virtues of persistence and thrift. Yang (2004) has suggested these values as reasons behind China's impressive progress in the past years.

However, the findings from many robust studies have been quite different from what Hofstede (1991) found for this dimension (Fang, 2003). For example, some researchers found that the Chinese are more past-oriented than other countries and especially in terms of their respect for tradition (Chan, 1998; Fan, 2000; Ouyang, 1995). Also, it is well known that the Chinese care about face-saving (Huang, 2004; Zhang, 2007).

Moreover, recently, owing to the increasing ease of social and

geographic mobility, people's behavior has become more influenced by short-term rather than long-term factors (Triandis, 1995). In certain settings, Chinese culture is observed to pursue short-term interests without a long-term vision in both business and education (Walker, Qian &Zhang,2011； Ye, 2009; Zhang & Wong, 2001). For example, in an "examination-oriented" culture, the Chinese are becoming more and more impatient to see quick results and want to have quick gains in student academic achievement. Cultural comparison of Confucian Dynamism and its impact on educational change between USA and China is shown in Table 6.

Table 6: Chinese culture features differing from the West and their impact on educational change--Confucianism Dynamism

The U.S.	China	Effect on Chinese Workplace	Implications for Leading Change in China
Short-term orientation. Respect for modernity. Quick results expected. Saving one's face. Practicality. Extraversion and lively personality.	Both long-term and short-term orientation. Pursuit of harmonious society and "happy medium or moderation". Emphasis on past history as well as on present. Concern about face. Focus more on resolving human inward spirit. Expands internally	Perseverance toward quicker than slower results. Coexistence of tradition and modernity. Stress on keeping one's commitments, hard work, diligence. Once change is initiated, people work hard toward goals.	Combination of traditional and modern methods for change. Emphasize change as commitment as well as order. Need for patience for slow movement, tenacity in the pursuit of goals of change. Connect change

	rather than outwards. Emphasizes internal cultivation. People notaccustomed To expressing their ideas directly, but using euphemisms or roundabout ways of expression. Modest, introverted and conservative.	Appreciation of change as a learning opportunity, high motivation for self-development. Sensitivity to social contacts. High enthusiasm for Education.	to personal internal cultivation. Use more modeling and teacher training on moral nurturing.

2.4 Professional Preparation for School Leaders: Trends in the West and China

Given that school leadership quality has a deep impact on school improvement, the approaches and programs for school principals' training have received more attention than ever before in the past 10 years (Hallinger, 2003b, 2007; Huber, 2004). Programs in leadership preparation were first popularized in the USA, and have gradually spread to other parts of the world since the 1990s. Training programs offered for school leaders in Asia have traditionally emphasized policy implementation, rather than knowledge and skills in leadership and management. Moreover, they have tended to replicate familiar classroom instructional methods such as lecture, discussion and case study. This section discusses some main trends in the 21st century and their relevance for the current project aimed at developing innovative training for school leaders in China.

2.4.1 Global Trends in School Leadership Preparation and Development

Based on the implications generated from the globalization and the importance of school leadership to school improvement, some trends can be identified in the area of school leadership preparation and development, including: the corporatization among school networks and partnerships (Spring, 2014), greater emphasis on equity and social justice (Jean-Marie, Normore & Brooks, 2009; Surface, & Smith,2012), and the use of computer technology in teaching (Townsend,2011), etc. These trends have changed the roles of school principals and the assessment of the quality of education (Magno, 2014) in the following dimensions:

1) A change of emphasis away from just improving student outcomes and school performance to equity and social justice by closing the achievement gap between high and low achievers;

2) A change in policy direction away from central top-down reform to school-school partnerships and networks;

3) The promotion of system leadership, with principals taking reform initiatives in schools other than their own;

4) Learning while governing for executive principals.

There is no double that all these changes have had profound influence on and as well as a big challenge for school leadership preparation and development in the 21st century.

In 2004, Huber surveyed the development models for school leaders in 15

countries in Europe, Asia, Australia/New Zealand, and North America. He concluded that there are various school leadership development approaches and models, and some of them are similar despite differences in cultural and context. The results revealed the common tendencies and trends both in Asia and West (Huber, 2004, pp. 676-677):

1. Central quality assurance and decentralized provision;
2. New forms of cooperation and partnership;
3. Dovetailing theory and practice;
4. Multi-phase designs and modularization;
5. Personal development instead of training for a role;
6. The communicative and cooperative shift;
7. From administration and maintenance to leadership, change and continuous improvement;
8. Qualifying teams and developing the leadership capacity of schools;
9. From knowledge acquisition to creation and development of knowledge;
10. Experience and application orientation;
11. New ways of learning; workshops and the workplace;
12. Adjusting the program to explicit aims and objectives;
13. New paradigms of leadership; and
14. Orientation towards the school's core purpose.

In the past two decades, in Western countries, innovative instructional strategies such as problem-based learning (Bridges & Hallinger, 1993, 1995),

simulations and games (Forsyth & Willower, 1999), computer simulations (Hallinger & McCary, 1990), design studios (Hart, 1993), and reflective coaching (Dana & Pitts, 1993; Short & Rinehart, 1993) have emerged as alternatives to traditional lectures and case studies. Since the 1990s, problem-based learning has received increasing attention as a learner-centered approach to training leaders in how to solve typical problems that they face in their work (Bridges & Hallinger, 1995; Hallinger, 2007). Since the computer simulation on which this project focuses employs a problem-based learning methodology, the researcher will elaborate on the key features of this approach.

Problem-Based Learning (PBL) is an instructional strategy in which a problem is provided for students as the starting point for learning (Albanese & Mitchell, 1993; Bridges & Hallinger, 1991, 1995, 1997; Dochy, Segers, Van den Bossche & Gijbels, 2003). Originally it was developed for practical use in the medical education field (Vernon & Blake, 1993). Over the past two decades, PBL has also been broadly applied to school leadership development (see Bridges & Hallinger 1991, 1997; Hallinger, 2007).

A key facet of PBL posits that knowledge and skill transfer will be enhanced if the content is learned in the context of a realistic problem (Bridges & Hallinger, 1995). PBL assumes that students are more likely to learn when "their prior knowledge is activated to incorporate new knowledge, they are given numerous opportunities to apply new learning, and when they encode the new knowledge in a context resembling that in which it subsequently will be used" (Bridges & Hallinger, 1992, p. 5).

In PBL, a problem, which usually comes from real life and would have a

significant impact on school or organization development, is proposed as the starting point to stimulate the students' learning. The problem, being familiar, would stimulate the learners to activate prior knowledge and experience. In Davis, Darling-Hammond, LaPointe and Meyerson's (2005) words, PBL can:

> simulate complex real-world problems and dilemmas, promote the blending of theoretical and practical knowledge, improve problem-solving capacity, and help to enhance candidates' self-concepts as future school leaders. ... also provide opportunities for candidates to test newly acquired leadership skills and receive feedback through authentic demonstrations and assessments. (p.10-11).

Team work and self-study and reflection are involved in the learning process. In order to solve the problem, learners employ their knowledge of theory, previous work experience and cooperation. In traditional instructional processes, students usually learn new knowledge, then practice skills and finally learn to solve problems. In contrast, in PBL, students encounter the problem first, then learn to solve the problem in constructive ways by identifying learning needs and previous knowledge and skills, then applying newly-gained knowledge to the problem in an interactive process or through individual study (Albanese & Mitchell, 1993; Bridges & Hallinger, 1995).

In the PBL model, students' creativity and active participation can be more fully stimulated and maximized. At the same time, students' skills in communication and collaboration can be also enhanced (Albanese & Mitchell,

1993; Bridges & Hallinger, 1993; Strobel & van Barneveld, 2009). Given that key characteristics of PBL are consistent with those of adult learning, PBL is regarded as a potentially more effective means of school leadership training which is typically conducted with experienced educators either in pre-service or in-service education settings.

Research on PBL initially affirmed its effectiveness in medical education (see Albanese & Mitchell, 1993; Dochy, Segers, Van den Bossche & Gijbels, 2003; Major & Palmer, 2001; Strobel & van Barneveld, 2009). This stimulated its adaptation for use in training school leaders as well as private sector managers (see Bridges & Hallinger, 1992, 1995; Hallinger & Bridges, 2007). Over the past two decades this approach has spread to many countries. These include the United States (Bridges & Hallinger, 1992, 1993; Hallinger & McCary, 1990; Prestine, 1993), Australia (Dimmock & Edwards, 1996; Grady, MacPherson, & Mulford, 1995), Canada (Leithwood & Steinbach, 1992), Thailand (Hallinger & Kantamara, 2000c, 2001a), and Hong Kong (Walker, Bridges, & Chan, 1996). Studies conducted in Asia also suggest that PBL can be employed to stimulate effective learning among management students (Hallinger, 2003a, 2007; Hallinger & Kantamara, 2000c; Hallinger & Lu, 2011b, 2012). This suggests that PBL is a promising approach for assisting school principals in developing the knowledge and skills needed for solving practical problems.

With the rapid development of technology in the 21st century, training methods for school leaders have changed a lot. The advantages of technology have been noticed and are being utilized currently to develop effective

preparation training programs for educational administrators. These technologies include online programs (Treacy, Kleiman & Peterson, 2002) and simulation (Hallinger & Kantamara, 2001b; Showanasai, 2014; Showanasai et al., 2013). The use of simulation as a training approach will be delineated in detail in the following section.

Observation of the above approaches commonly used in preparation training programs for educational administrators has identified four characteristics of effective programs: (1) Interaction, (2) Authenticity, (3) Collaboration, and (4) Self-direction. In sum, what all of these instructional strategies have in common is their emphasis on creating a more active instructional environment that reduces the gap between leadership preparation and the realities of the workplace. Among these strategies, problem-based computer simulations, which can integrate formal knowledge into practice, have attracted more attention in both practice and research. However, in the words of Davis, Darling-Hammond, LaPointe and Meyerson (2005), knowledge on the effective ways to prepare and develop highly qualified principals is sparse.

As the training for educational administrators plays a critical role in improving school leadership quality, how to measure the value of training must be taken into account. This is because these measures will provide answers as to whether the training that is being provided is valuable to the organization and the people within it (Reay, 1994).

2.4.2 Professional Preparation of Principals in China

According to studies of existing principals' training programs, there are four main issues affecting the effectiveness of training: the content, the methods, the trainers' quality and training assessment. Many Chinese training programs for principals adopt an approach based on the use of informed professional judgment. This involves practitioners sharing practical guidelines for action based on their experience, sometimes with theoretical insights. However, principals often report that the content of these training programs is too theoretical and often irrelevant to their work roles. The training tends to focus on what "should" rather than "what happens actually and how to deal with it in context". Theory and research appear unrelated to the problems principals face in practice (Bai, 2006; Lin, 2011; Wang, 2005; Yuan, 2010; Zhang, 2009; Zhu, 2010). As Fullan, Cuttress & Kilcher (1999) concluded, the development of school leaders "do[es] not involve just identifying and memorizing the knowledge base. Knowing is insufficient; only knowing-by-doing, reflecting and redoing will move us forward" (p.16).

Consequently, despite obtaining a professional certificate, principals may still not know how to lead school change, especially when they confront problems in the real school context (Feng, 2003; Zhang, 2009; Zhu, 2010). In addition, the saying that "success can be copied" is still widely perceived in China to be a fundamental approach to school improvement. As a result, experience exchanges given by successful school principals are popular and often an obligatory part of the content in training programs. Curriculum designers somehow assume that after students know what other successful principles has done, they can successfully copy the strategies of these leaders

when they go back to their own schools.

However, as Walker, Qian & Zhang (2011) has argued, even if you can clone the shape or 'picture or pattern' of a successful school leader, you can't clone a soul. It seems obvious that knowledge gained in professional education cannot be translated automatically into skills for dealing with problems in the workplace, nor can solutions used in one school be automatically copied and used in the same way in other schools.

The efficacy of this approach to leadership training has been criticized inside and outside the field of educational administration (Bridges, 1977; Bridges & Hallinger, 1995; Murphy, 2006). Chinese principals complain that these programs often expose them to decontextualized educational management and leadership imported from Western countries (Bai, 2006; Wang, 2005; Zhang, 2009; Zhu, 2010). Sometimes the programs provide a model of the perfect leader for emulation, without taking into account differences in the local context.

In addition, although principal training in China emphasizes more theoretical learning, research on the basic theory of Chinese principals' training is rather weak (Li, 2009). The past training mode for principals in China was generally based on the training aims of the educational administration department. There is still no pertinent basic theory for training school principals, a special group of people as both managers and leaders in schools (Feng, 2003; Li, 2009; Mao, 2010).

In addition to content, training methods and technology are also key factors that influence the effectiveness of principals' training. In China, most

principal trainers still adopt the ‘chalk and talk’ lecture model (Feng, 2003; Yuan, 2010; Zheng, 2009; Zhu, 2010). There is infrequent use of active learning methods in principal training. Cases, simulations, problem-based learning, project-based learning, reflective journals and team-based learning are seldom incorporated into the main training programs offered to or required of principals. These settings typically emphasize one-way communication between the teacher and students (Bai, 2006; Feng, 2003; Lin, 2011; Wang, 2005; Wang, 2008; Zhang, 2009; Zhu, 2010).

Students are seldom challenged to think critically or participate in activities that require them to solve problems or apply their knowledge. In these settings, participants often feel bored because they are only passive knowledge receivers and there is little attempt to 'situate' the knowledge in their own context. As a result, principals in the change context tend to regard themselves more as the people “to be reformed” rather than as “innovators”. There is little chance they will become successful, critically thinking ethical leaders (Walker, Qian Zhang, 2011).

This again limits the capacity of principal training in China to do more than communicate policies and teach 'about' the work of leaders. These factors continue to limit the potential effectiveness and impact of principal training in China. Based on the above criticisms, there has been a growing recognition that the present approach to principal training needs to be reformed and urgently requires a vehicle for closing the gap between the nation's aspirations for principals and the capacity of principals to lead successfully in an era of change.

Other constraints also shape the context for principal training and

education in China (Bai, 2006; Feng, 2002, 2003; Zhang, 2009; Zhu, 2010). The use of video, video cases, or computer simulations remain rare events in the Chinese school leadership development context. Thus, the training of principals fails to take advantage of the same technology that is being supported for use in the schools that the present and future principals lead (Feng, 2002; Li, 2009; Lin, 2011).

In China, some researchers have also proposed alternative strategies to improve the quality of school principals' training. These include school improvement-based training mode (Feng, 2003; Zheng, 2009), the model of situation training (Tang, 2007), an experience and skills-based training mode (Fang & Chen, 2009) and problem-based learning (Zhao, 2005). These instructional strategies are clearly more skills-oriented and performance-based compared to traditional methods. What all of these instructional strategies have in common is their emphasis on creating a more active instructional environment that reduces the gap between leadership preparation and the realities of the workplace.

Among these strategies, some have proved to be promising in their effectiveness for principal training. For example, the findings from Zhao's study on principal training modes proved that the PBL training mode was "the best learning approach for adults", full of vitality and a broad and potentially developing space for principal training in China. However, the effectiveness of this kind of training mode is constrained by some requirements. For example, they may require a proper question or task which can stimulate learners' learning enthusiasm, a clear learning destination and a strong sense of role play,

funds and instruments, and a good learning environment (Zhao, 2005). How to integrate formal knowledge into practice with more effective methods and technology has attracted more and more attention in both practice and research.

The quality of principals training cannot be guaranteed without a high quality of trainers. The Provision on Primary-Middle School Principals Training released by the Ministry of Education of the People's Republic of China clearly stated that principals' training institutes should be equipped with full-time and high quality trainers to meet the needs of the training work (MOE, 1999). However, at present, most of the trainers are from colleges and work as part-time teachers in the training program; their professional training ability is often insufficient and their knowledge and ideas outdated (Li, 2009).

There are also many problems with the criteria for evaluating the effectiveness of the principals' training. According to Fan's (2011) investigation, the evaluation of Chinese principals' training programs emphasizes standardization, forms of implementation and results rather than individuality, effectiveness and the progress and development of training. In Li's (2009) words, the effectiveness of training lies in two aspects: (1) content-- what learners have learned that can improve their knowledge, skills and ideas, (2) competence--how learners can employ the knowledge in school management. Up until now, the assessment of principals' training has lacked scientific and effective standards and techniques.

2.4.3 Discussion

These developments in principal training have led to substantial critical discussion about goals and methods of leadership training and development (Bridges & Hallinger, 1995; Hallinger, 2011; Hallinger & Bridges, 2007; Walker, Qian & Zhang, 2011). For example, Hallinger pointed out that "despite the convergence of theory and empirical data, limited though it may have been, policymakers ignored the impact of context when framing new policies, programs and curricula for school leadership". These observations highlight the fact that understanding how context impacts the exercise of leadership is a high priority for leadership in school improvement and educational reform. This further implies that training programs are unlikely to achieve their goals of effectively impacting practice in schools without relating to context.

However, leadership theory and empirical research indicate that there is no single correct way either to structure or lead an organization (Belchetz & Leithwood, 2007; Goldring, Huff, May & Camburn, 2008; Hallinger, 2003b). Leaders, followers and the organization itself have distinctive, even unique, characteristics and invariably operate in a turbulent environment that compounds the already unpredictable nature of their work (Bolam, 2003). These characteristics imply the need to develop leaders who are able to think critically and flexibly and who possess the capacity to adapt their knowledge to different contexts. There is little evidence that leadership training and education in China meets these ambitious but important requirements (Zhang, 2009; Zheng, 2009; Zhu, 2010). Thus, it seems that there is still a big gap between leadership preparation and the realities of the workplace in China.

2.5 Overview of the MCH™ Computer Simulation

This project focuses on the cultural adaptation of the MCH™ computer simulation for use in training school leaders to manage successful change in the context of China's education system. Before considering what features require adaptation, it is necessary to introduce its conceptual foundations and relevant applications in leadership development.

2.5.1 Conceptual Foundations of the MCH™ Simulation

MCH™ (The NETWORK Inc., 1997) was originally developed in the USA as a means of training school leaders to apply theory and research to the problem of implementing changes in schools and has been used with thousands of leaders (in the education and business sectors) throughout the world. The knowledge base of the simulation was grounded in the abundant theoretical framework of change studied and developed in Western societies, such as the concerns-based adoption model (Hall and Hord, 1987, 2002), change adopter types (Rogers, 2003), knowledge diffusion and dissemination (Crandall, Eiseman, & Louis, 1986) and some more general knowledge of the implementation of change and leadership in change (Evans, 1996; Fullan, 2007, 2009; Kotter, 1996; Sarason, 1982, 1990).

According to Hallinger & Kantamara (2001b), there are several assumptions underlying this computer-based simulation:

1. The goal of training about change in organizations should be to develop knowledge that leaders can apply in the workplace (Bershad & Mundry, 1997);
2. A problem-based approach (PBL) to learning new concepts yields greater results given the goal of developing usable knowledge (Bridges & Hallinger, 1993, 1995; Hallinger & McCary, 1990);
3. A key facet of PBL posits that knowledge and skills transfer will be enhanced if the content is learned in the context of a realistic problem (Bridges & Hallinger, 1995);
4. An interactive simulation in which learners can develop, apply and see the results of different strategies for making change is effective at developing capacities for higher order thinking about leading change (Bransford, 1993; Hallinger & McCary, 1990);
5. Since the process of transforming organizations requires school leaders to lead in a team-based environment, the learning process should model a team-learning format (Bridges & Hallinger, 1993, 1995; Heath, Larrick & Klayman, 1998);
6. Given the scarcity of time for formal staff development outside the workplace, the design of the simulation should incorporate substantial "cognitive scaffolding" so users can learn at their own pace inside and outside of formal training (Bershad, Mundry, & Hallinger, 1999; Bransford, 1993);
7. Since learning to apply any sophisticated conceptual framework takes time, it would be advantageous if the simulation design made it

convenient for learners to engage in multiple opportunities for practice (Bershad, Mundry, & Hallinger, 1999);

8. A simulation that mirrors the complexity of implementing change in the real world should foster open-ended thinking about change and model the assumption that there is no one best change strategy that will work in all organizations (Fullan, 1993; Kotter, 1996);
9. The simulation should incorporate a mix of multidisciplinary resources drawn from theory, empirical research and practice (Bridges & Hallinger, 1993, 1995).

In other words, the simulation is considered to be a means of exposing learners to a complex, reality-based situation similar to one they might face in their own schools. Through playing the simulation, leaders learn how to confront challenges they have encountered or will encounter in a real school situation. The following section will provide a brief introduction to the simulation, such as its characteristics, implementation and effectiveness in practice, as well as its limitations. The descriptions of the MCH™ game board and how to play can be referred to in Chapter 4.

Several characteristics are highlighted in the simulation: problem-based learning, team learning, interactivity, situated knowledge application, and feedback. The prominent characteristic of this simulation is that it uses a problem-based learning approach, which can provide learners with a challenging and active learning environment to think systematically and critically about school change. It can also enable learners to refine their understanding of school change and to adjust their strategies for solving

problems in leading school change and improvement when they come back to their own working context (Hallinger, & Kantamara, 2000c). This is helpful for school leaders in developing their competence in overcoming predictable obstacles to change implementation in reality (Bransford, 1993; Hallinger & McCary, 1990). For example, the simulation begins by presenting the learners with a problem rather than with theoretical content. Immediately upon starting the simulation, the teams of learners confront their challenge: how to implement new information technology in the organization.

Although popular culture often portrays an individual leading a change effort, a team is often more effective. The simulation reinforces this point in two ways. First, the experience of playing the simulation with a partner models a team approach. In most instances, the learners experience the advantage of working with a colleague as opposed to playing alone. In addition, as the simulation unfolds, they observe change in the behavior of a broad group of individuals who belong to various social networks. One key to success lies in accessing these social networks. This reinforces the importance of having a team of people who can give and get information to guide the change effort.

Therefore, the simulation is usually played in teams of two or three people per computer, even when there are sufficient computers for everyone. This is consistent with the fact that most organizational improvement efforts in the future will be led by teams rather than individuals (Drucker, 1995; Senge, 1990). In addition, cooperative learning accelerates the learning of individuals in a problem-based environment (Bridges & Hallinger, 1993; Hallinger & McCary, 1990). Working with a partner in this problem-based exercise

stimulates each learner to surface his/her assumptions about change. The process of discussion, resolving conflicts among ideas, and mutual reflection visibly raises the quality of thinking in the learning environment. In fact, the development of teamwork skills represents an instructional goal of the simulation (Hallinger, & Kantamara, 2001b).

In Hattie & Timperley's (2007) words, feedback is one of the most powerful influences on learning and achievement. Results from their study showed that the effect size is twice that of formative assessment and schooling. The simulation provides feedback in different stages and channels. Each time that learners implement an activity in the simulation, they receive feedback describing what happened and why. The simulation also provides feedback on learning outcomes. For example, when certain activities are effective, some productivity benefits are generated automatically.

Other feedback, such as Bennies and the staff movement through the stages of change, are also timely reflections as the learner benefits in the simulation. At the end of the three years the team can also get feedback in the form of the results of its change strategy. In this simulation, success is based on two criteria: (1) moving people through the stages of change (i.e., how many of the 24 people in the system reached the Early and Routine Use Stages), and (2) improving productivity (i.e., how many learner benefits did the team achieve).

Feedback from the simulation is computer-assisted assessment. In the training program with large classes, it is impossible for trainers to provide feedback to individual students. This computer-based self-assessment can complement this deficiency. It can enable learners to test their strategies'

effectiveness at any time without the need to seek face-to-face assistance and feedback from trainers. It is particularly useful for school leaders because it can provide feedback immediately after the performance. It can also be accessed at any time or place, which is particularly welcomed by school leaders.

It is noted that only good feedback can ensure the effect size of learning. According to Nicol and Macfarlane-Dick (2006), there are seven principles of good feedback practice, including:

1. Helps clarify what good performance is (goals, criteria, expected standards);
2. Facilitates the development of self-assessment (reflection) in learning;
3. Delivers high quality information to students about their learning;
4. Encourages teacher and peer dialogue around learning;
5. Encourages positive motivational beliefs and self-esteem;
6. Provides opportunities to close the gap between current and desired performance;
7. Provides information to teachers that can help in shaping the teaching.

It seems that this simulation can fulfill all these principles.

Situational learning is also called role-play learning. This simulation combines features of traditional role playing and simulation methods, as it provides situations with simulated roles and work tasks for implementation. During the course of play, each learner is assigned to a unique role which guides their behavior within a group context to address the issue provided at the

beginning of the play (DeNeve & Heppner, 1997). The objectives of the role-play are:

1. to arouse student interest in a particular field of study;
2. to help students apply material learned in class;
3. to help students develop insight into the group dynamics of problem solving situations;
4. to give students a chance to develop leadership skills; and
5. to provide students with a working grasp of the scientific method (p. 234).

For example, in the simulation, players are supposed to have been selected for a special assignment to the team responsible for managing a trial implementation of IT 2020 in the Central Region of the school system. The team is working with people holding different roles in the Central Region. The roles include manager, the Regional Director, members of the school system's Board of Trustees and other staff similar to those in school organizations. In order to play the simulation successfully, learners must cooperate to apply their knowledge and skills combined with theory and practice to solve the problem in the simulation. In this way, the simulation can effectively motivate learners to understand the operation rules of school management, and their role function, responsibilities, rights and obligations as soon as possible in the simulation and then transfer these leadership abilities to the real work situation.

2.5.2 Studies on the outcomes of the MCH™ Simulation

The effectiveness of the PBL computer simulation has been identified by numerous studies in the area of nurse education and health training in the following three aspects: 1) participants' highly engagement in learning activities (Spinello & Fischbach, 2004), 2) higher academic performance than traditional methods (Koray, 2011; Spinello & Fischbach, 2008) and 3) more effective in acquiring critical assessment and management skills (Steadman, el., 2006).

Because of the prominent features of the simulation for school leadership training and professional development, the simulation has been translated, adapted and used by thousands of leaders (Hallinger, 2007; Hallinger, Lu & Showanasai, 2010) in a variety of Asian contexts including Thailand (Kantamara, 2000), Malaysia (Ng, 2004), and Korea (Song, 2003). Its advantages for school leadership training and professional development are undoubted. For example, as the problem-based simulation provides a challenging and active learning environment for learning how to think systemically about educational change and how to implement change in schools, research with this particular simulation has found that students were highly engaged and perceived the simulation as enabling them to solve and apply knowledge to practical problems of change in organizations (Hallinger, Lu & Showanasai, 2010). The results from sizeable empirical studies have also proved that school leader training with the help of the simulation is more effective in improving learners' knowledge and skills in school leadership than other training approaches (Bridges & Hallinger, 1993, 1995; Hallinger & McCary, 1990; Hallinger, Lu & Showanasai , 2010; Lu, Hallinger & Showanasai, 2012; Salas, Wildman & Piccolo, 2009).

In sum, learners who have used this simulation around the world often praise the interactive and engaging nature of the simulation and its effectiveness in challenging them to inquire, reflect, and discover relevant knowledge (Hallinger & Kantamara, 2001b; Hallinger, Lu & Showanasai, 2010). The simulation, both in the eyes of the designers and learners, seems to fulfill the goals of developing the cognitive and skill capacities of principals (Bridges & Hallinger, 1995).

2.5.3 Limitations of the MCH™ Simulation

However, there is no best change strategy that will work in all contexts (Fullan, 1993; Kotter, 1996). Although the simulation incorporates a rich knowledge base of theories and empirical practice on educational change, most of the knowledge is grounded in North America and Europe. Even if some Asian countries, such as Thailand, Malaysia and Korea, have applied the adapted simulation in their own contexts, it might not yield the desired results in China, another Asian country. Although the processes involved in leading change in Chinese schools bear some similarities to the West and some other Asian countries, the simulation is not well-suited to the Chinese organizational culture and structure.

For example, contrast the typical organization chart within the Chinese school system in Figure 1 with the organizational chart of an American school system shown in Figure 3. These structural differences between Chinese schools and American (as well as other Asian) school systems would impact the

implementation of a change. Similarly, cultural differences have been found to impact approaches to management in organizations as well (Hofstede, 1983, 1994, 2003; House, Hanges, Javidan, Dorfman & Gupta, 2004). These cultural differences (e.g., Hofstede, 1994, 2003) have been analyzed for use in other studies that adapted this simulation for Thailand (e.g., Hallinger & Kantamara, 2001b) and Korea (Park, 2002).

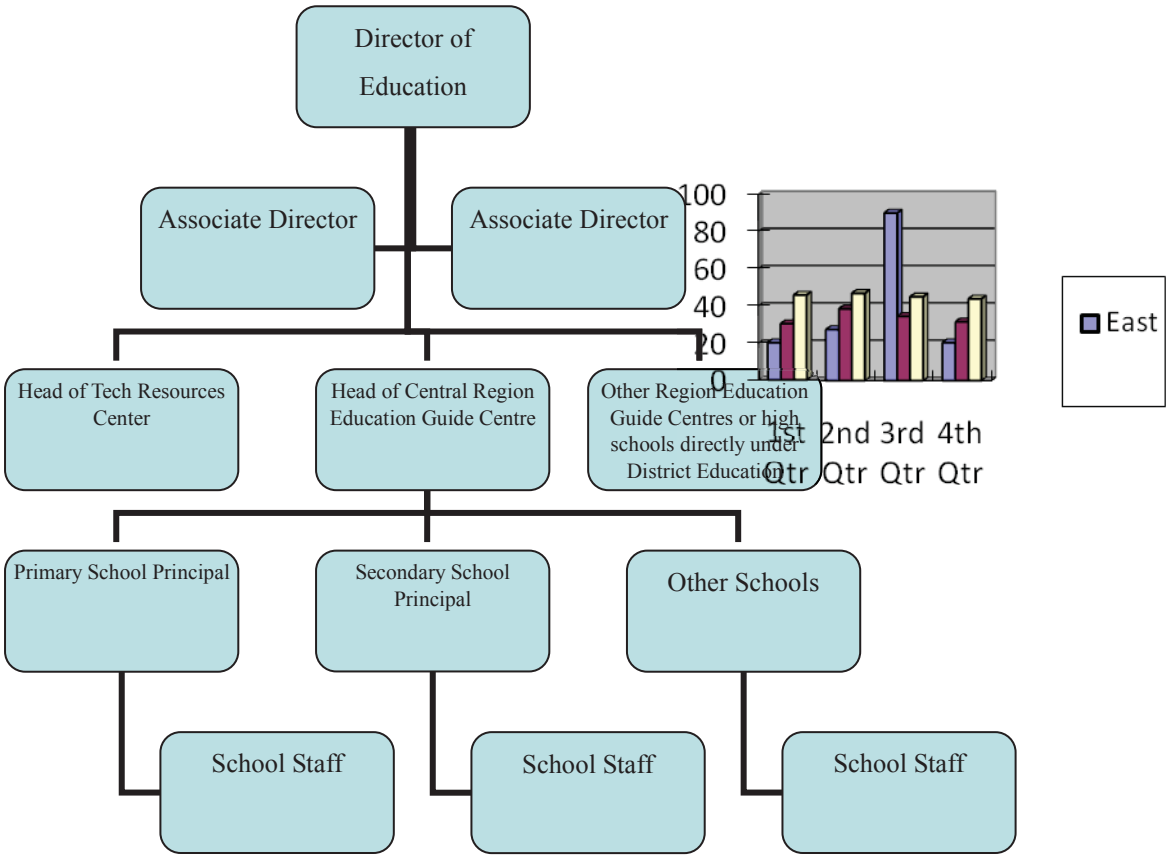

Figure 1. Organizational Chart for Chinese Education System

In fact, the problem of language can be solved more easily than the

intrinsic matters, such as the culture and the structural system of the school organization. Therefore, the limitation of promoting the simulation is not merely one of the language. Bearing this in mind, the project followed a similar strategy to the one previously used to adapt the contextual information and decision sequences of the simulation to the Chinese context. This involved developing a clear picture of the organizational and socio-cultural context of Chinese schools and 'translating' this understanding into the practical design characteristics of the Chinese version computer simulation. In sum, what works in one context may not be suitable in another context. One goal of this project was to use a research and development process to make a cultural adaptation of the simulation for use with Chinese school leaders.

CHAPTER 3

METHODOLOGY

This chapter introduces the research and development process which the present study employs to develop the Chinese version of the MCH™ simulation. The process of research and development will be addressed respectively in two main sections. In the first section, each step of the research and development cycle and the process of how the present study was conducted accordingly will be described. In the second section, the design and evaluation of the problem-based simulation for school leadership training will be explained.

3.1 Research and Development Method

According to Borg and Gall (1989), the process of R & D consists of a series of systematic steps referred to as the R & D cycle. These typically include: collecting information pertinent to the product to be developed from research findings, developing the preliminary form of the product based on these findings, field testing it in the setting where it will be used eventually, and revising it according to the feedback generated from the field-testing stage (p. 784). These four broad steps are further delineated into seven specific steps to guide the research and development process.

Following the R & D cycle, in this project, the researcher's first task was to identify the needs and the knowledge base that would underlie the Chinese

version by collecting information from research findings and a small-case qualitative study. Next, she planned and developed a preliminary form of the Chinese version of the Making Change Happen™ simulation. Then she finished with a cycle of field tests and revisions of the product. In the following section, she describe each of these steps respectively.

3.1.1 Research and Information Collecting

Research and information collecting includes needs assessment, review of literature, small-scale research studies and preparation of reports on the state of the art. This step will present how the researcher collected information for this research, which included a needs assessment, a literature review, a small-scale qualitative study, a Chinese culture synthesis and an evaluation of its impact on educational change, and informal meetings. The objectives in this section were to explore how successful school leaders respond to the demands of educational change both in mainland China and the West by answering the following questions:

1. What are the effective strategies for overcoming predictable obstacles to change implementation in schools?
2. What are the cultural differences between China and the West influencing school leadership in leading school change?

Borg and Gall (1989) explained that the most important criterion in selecting a product for development is its need. As introduced in Chapters One and Two, there is a discrepancy between the capacity of school leadership to

lead school change and the requirements of the development of education, between the theory and the practice of school leadership in China. These gaps have caused a pressing need for effective ways to adapt the present training strategies and ways to improve the quality of school leadership training. Another reason to push the need for the current study is globalization, and the influx of advanced training strategies and technology from the West (Hallinger & Kantamara, 2000c). More appropriate training programs and tools are necessary for school leaders to improve the present quality of school principal training in China.

Based on need for improving the present school leadership training program in leading school change, the problem-based computer simulation MCH™ could be a useful and timely tool for connecting theory with practice and providing school leaders with a broad knowledge base to develop strategies for leading school change. Considering the differences in culture and organization systems, etc. between Western and Chinese schools, the simulation needed to be adapted for use in school principals' training in China.

After identifying the needs and the goals of the present research project, the researcher began to collect information pertinent to the planned product from research findings and case studies. The purpose of this was to have a broader and deeper understanding about the present situation of school principals in leading school change in China, and to generate more information available for adapting the product. Therefore, in this stage, information collection proceeded in the form of a literature review and a small-scale study of change leadership in the Chinese context.

3.1.1.1 Literature Review

First, in order to construct a knowledge base of leading school change for adapting the present simulation, a literature review was conducted to examine the features of successful school leaders for change in China and to compare these finding with those from the West. The method of the review was conducted as presented in Chapter 2. The findings from the literature review were used to guide the formulation and modification of the simulation. These findings were reported in Chapter Two and are extended in Chapter Four.

3.1.1.2 Small-Scale Research Investigation

Considering the fact that research on school leadership in China published in international journals remains limited both in breadth and depth (Walker, Hu & Qian, 2012), and given the relative scarcity of empirical analytical research in China as well, this literature review yielded propositions but few conclusions. Yet, the R & D process requires the developer to obtain the best possible information for designing the learning tools. The researcher determined there was a need to conduct a small-scale investigation that could complement the findings from the literature review.

Thus, with themes and questions in hand from the literature review, the researcher proceeded to the next stage in this research and development project. She designed a small-scale research study that would allow exploration of the

propositions generated from the literature review. The investigation would involve qualitative interviews with Chinese principals who had demonstrated success in implementing education reforms in their schools. Although the results of the qualitative study would still be tentative, the researcher would gain a first-hand understanding of change leadership in this complex and important education context. This would allow her to assess the 'face validity' of the emergent findings from the literature (Tang, Lu & Hallinger, 2014).

The researcher built upon the work of others noted in the previous chapter to develop an operational definition of successful change leadership. This was defined as 'principals capable of leading staff in implementing educational reforms that could be observed in school results'. Reputational ratings have long been used in the studies of 'effective leadership' (Bossert, Dwyer, Rowan, and Lee, 1982). Thus, she decided to use a method of identifying effective change leaders based on achievements that had been recognized through reputational judgments made by senior level school executives and peers.

Bearing this mind, the researcher targeted school principals from the lists of two famous awards for school principals: 'Star Principals' and 'Outstanding Principals'. These widely recognized awards represent institutionalized reputational judgments made by administrative executives and principals from outside of specific schools. In China, provincial, municipal, and regional assessment exercises aimed at school principals are conducted periodically. This entails an extensive process of examination of school performance under the leadership of the principals.

The selection process is rigorous, competitive, and employs a sophisticated "bottom-up" nomination and recommendation process. At each level of educational department, screening panels are set up to review the applications and recommend a shortlist to the upper levels of the educational department. At the provincial level, where the actual number of principals may be in the tens of thousands, in each exercise, only about 30 principals can become final winners. This number includes principals from both primary and secondary schools.

The selection criteria, also known as eligibility criteria, are made clear and open to all principals. Take the case of Guangdong province as an example. Besides some threshold requirements such as age, education degrees, professional rank, and years of school administration experience, the criteria cover four core domains: 1) Moral domain. Nominees should be patriotic, abide by state policy, be actively engaged in cultivating people, be a role model for others, and demonstrate a high standard of professional ethics; 2) Competences domain. Nominees should possess abundant knowledge of education science and modern educational management, competencies in educational research and management, and keep an updated understanding of educational policy. 3) Commitment domain. Nominees should work hard and be devoted to the cause of education. 4) Achievements. School achievements are visible to and recognized by peer schools in the region (Department of Education of Guangdong Province, 2004, 2010). Detailed criteria may vary by province, municipality, or region, but in general there are more similarities than differences. In the end of the process, the designation of "Star Principal" or

"Outstanding Principal" is a widely accepted form of recognition of principal excellence based on achievements in school leadership and management.

Based on the goals of the present study, the researcher narrowed the reputation and achievement areas of potential participants to principals who had demonstrated success in leading school change in the new curriculum reform. In the present study, the participants (shown in Table 7) in this study were all chosen from the pool of provincial-level or municipal-level award winners. For example, Principal 5 (P5) was awarded as a provincial-level Star Principal and was the winner of the Guangdong Provincial Educational Science Management and Research award. P1 was both a Guangdong Outstanding principal and a Municipal Star Principal. Both P2 and P3 were awarded as National Outstanding Principals. P4 was a district level Star Principal.

It should further be noted that the achievements of these principals in leading change were so prominent that their schools have become 'hot spots' for school visits. Their schools attract thousands of visits from principals and teachers every year from all over China. Therefore, the practices and strategies demonstrated by this group of participants meet a reasonable standard of face validity for the purpose of developing initial descriptions of successful change leadership in Chinese schools.

In addition to consensual recognition by government officials and peers, the researcher considered additional factors in selecting participants for the study. She sought variation in school size, level, sponsorship (i.e. public and private), geographic location (urban, rural), and principal gender. Among the five school principals, four principals came from government schools, and one

from a private school. Two principals came from primary (i.e. grades 1-6) schools, two from middle schools (i.e. grades 7 to 9), and one from a nine-year school (grades 1-9). Three schools were located in a city, one in a town, and one in the rural countryside. School size varied from 803 to 1,600 students. The number of teachers working at the schools varied from 67 to 110. The duration of employment of these principals in their present schools ranged from two to 14 years.

A summary of these participants' basic information is shown in Table 7. Even though this was only a small-scale qualitative study, the researcher felt this would contribute to a richer understanding of how the propositions derived from the literature review might be applied in the context of schools in South China.

Open-ended interviews were employed as the means for data collection (see Appendix A). The interview questions addressed the three research foci guiding this inquiry: the context of change, obstacles to change and change strategies. The interviews were conducted in Chinese. Each interview lasted between two and three hours. With the consent of participants, the interviews were tape-recorded and later transcribed verbatim. After transcription, participants were invited to check the transcript to confirm its accuracy.

Then the transcripts were translated into English to assist the researcher with collaboration in data analysis. Before the data analysis, a second, native Chinese speaker with English as an official working language checked both the original transcripts and the English translation to ensure that the meaning of the translated transcripts was equivalent to that of the original ones.

Table 7: Characteristics of the Participants

Identifier	School Category	Gender	Principal experience	School location	No. of Students	No. of Teachers
P1	Private Secondary	Male	22 yrs	City	1.300	110
P2	School State-Run	Male	6 yrs	Rural	1.350	87
P3	Middle School State-Run 9-year	Male	16 yrs	Town	803	67
P4	School State-Run	Female	17 yrs	City	1.360	87
P5	Primary School State-Run Primary School	Female	9 yrs	City	1600	92

The interview data were content coded based on the core research foci noted above. Double coding and triangulation were employed to reduce subjective judgment and increase the internal validity of our findings (Miles & Huberman, 1984). Two researchers separately coded data from the first interview. Based on the three foci for this study, open categories were developed through a process of reading and checking the transcripts to identify salient and distinct themes within each interview. Inconsistencies that emerged were discussed until the other research supervisors reached agreement. Sequentially, the two researchers moved on to the second interview. When the two researchers achieved consistent agreement on identified themes within the second interview, the researcher coded the data from the remaining interviews.

To the extent possible the researcher also triangulated data from multiple sources of evidence for each case. She spent two days observing at each school.

She also collected relevant school documents (school plans, curriculum documents, school evaluation reports). These data were used both to complement and check statements made by the principals during the interviews. Therefore, although the data reported in this study consisted of the perceptions of the principals obtained through the interviews, other data drawn from the observations and school documents were used to affirm the trend of these perceptions.

Findings from the qualitative small-scale study were used in conjunction with the findings from the literature review. Together these yielded a set of descriptive propositions about successful change management in the Chinese context. These are described in Chapter Four.

3.1.1.3 Informal Meetings with Principals and Teachers

In order to collect more information for the modification of the simulation and to guarantee issues of the face validity of the simulation, besides the above literature review and the small-scale qualitative study, informal meetings with several principals and teachers were conducted by the researcher. The purpose of the meetings was to obtain more practical input and advice from managerial and practitioners perspectives for verifying the context of the revised simulation. These meetings allowed me to validate change assumptions embedded in the game, check language translation, and modify the work terminology being used for real operations in the context of various Chinese schools. In order to make the Chinese version of MCH™ as realistic as possible to Chinese culture and

work context, the content and context of the scenario in the simulation were modified.

Selected samples for meetings varied from ordinary teachers to school leaders (2 principals, 2 vice-principals, 2 deans, and 2 teachers) in different types of Chinese schools who had rich school managerial and teaching practice experience in school change.

The meetings were conducted individually with each participant. At the beginning of the meeting, the participants were given a brief scenario of the problem statement in the simulation, such as the background, design and operation of the problem-based simulation. After reading the problem scenario, the participants were invited to give their ideas and input based on their past experiences of change in schools. The researcher also asked additional questions regarding the initial process of simulation modification to validate the scenario content and change principles embedded in the simulation.

The results of the literature review, the small-scale study, synthesis of Chinese culture and its impact on educational change and the informal meetings were used to inform the revision of the contextual descriptions in the computer simulation, as well as the decision rules that govern peoples' responses and the effective change strategies that underlie the simulation.

Besides these sources, the researcher also drew upon several other sources to inform the adaptation of the original simulation: her own working experience and observations as a teacher in schools and a teaching supervisor in the district education bureau, suggestions from practitioners, field-tests and evaluations.

3.1.1.4 Limitations of the Method

Three key limitations should be noted with respect to research and development method as applied to this study. First, as noted above, this project was not oriented to answering a set of research questions in the traditional sense. Rather research results and the research process were systematically incorporated into the development of a product. Therefore, 'the product' represents the key result of this project. Corollary information is, of course reported in the findings of the literature review and small-scale study. However, that information is a by-product rather than the key goal of the project.

Second, although the project undertook a small-scale qualitative interview study, the results are explicitly limited due to the small sample size. This limitation takes on even greater meaning in the case of China, given its huge size both in geography and population. Therefore, even if the researcher had conducted a larger study in Guangzhou or even Southern China, the findings would still be limited. Schools in urban and rural areas, or in the coastal vs. inland cities and towns represent quite different contexts. Thus, this represents a real constraint with respect to the knowledge base in general, the small-scale study and the resulting simulation.

Third, the researcher has already referred to the limitations of the formal literature on school leadership in China. The international literature is quite limited in scope (Hallinger & Bryant, 2013a, 2013b; Walker, Hu & Qian, 2012). The literature published in Chinese language sources (e.g., Chinese journals and

graduate theses) tends to be more descriptive and prescriptive rather than analytical. Therefore, it has limitations when a researcher seeks to become informed by 'empirically informed evidence'.

3.1.2 Planning

Planning included defining skills to be learned, stating and sequencing objectives, identifying learning activities, and small-scale feasibility testing. After the literature review and collection of other pertinent information were completed in the first phase of the R & D process, the next step was to make a plan for the product, which included (1) the statement of the objectives to be achieved by using the simulation, (2) identifying learning activities and (3) small-scale feasibility testing. These would be elaborated upon in the next step. Meanwhile, new text and decision rules were also drawn up to inform the Chinese version. In addition, the text of the simulation was translated and revised to reflect the different assumptions that appear to underlie effective change in the Chinese context. This resulted in a clear description of the changes to be made in various features of the simulation.

As described in the literature review in Chapter Two, the differences in culture and organizations between China and Western countries would be the most significant elements imbedded in the simulation. Therefore, in the initial stage of revision of the simulation, the differences in the institutional and cultural contexts of education in China, such as the titles of positions and the problem description, were taken into account. Compared to the revisions

generated by the social culture in Chinese schools, these revisions were much easier but far less significant. Cultural comparison and its impact on educational change between USA and China were displayed from Table 1 to Table4 and Table 6, which underlies the revisions to the change simulation. After these revisions, the simulation contained the prominent features of the institutional and cultural contexts of education in China. This would make it seem more realistic to Chinese school leaders and accurately model the process of change in the Chinese context.

Therefore, based on the findings from the first step of information collection, the simulation was modified in the following ways:

1. *Contextual revision:* the descriptions of text and activity feedback; the change activities; the decision rules underlying player movement through the stages of the change process and in the student benefits accruing from activities, etc.
2. *Technical revision:* text changes in each stage that were composed of numerous cases, changes in behavior codes for people movement, and partial graphic refinement, etc. However, the core of the simulation, such as the theoretical integrity and internal coherence, was maintained.

After completing the initial planning, the researcher built a preliminary form of the simulation.

3.1.3 Development of a Preliminary Form of the Product

This next step of the R & D process included both actually building a

preliminary form of the product as well as the preparation of accompanying materials. In this step, the researcher built a preliminary form of the revised Chinese version simulation that could be field tested, which included preparation of instructional materials, procedures, and evaluation instruments.

According to the plan, the modifications to the original simulation to create a Chinese version of MCH™ mainly included the following parts:

1. a problem scenario based on the current significant educational issues ongoing in the nation;
2. a task reflecting the current common urgent task for school change in China;
3. the organizational structure (the organizational chart, the names of the people, and the divisions and positions recorded in an organizational tree);
4. designing activities according to the cultural preferences in Chinese schools;
5. changing the rules of the activities (see the detailed description in Chapter Four);.

The above modifications were written into the scripts for the instructional sequence. Besides the revision of the content, the entire translation into Chinese of the simulation and facilitation materials was also conducted in this phase. However, as mentioned above, compared to the translation work, the revisions generated from the social culture of Chinese schools were much more significant. Therefore, the differences in culture and organization between China and Western countries were the most significant elements which were

elaborately incorporated into the simulation revision process.

At this stage, the researcher also developed several questionnaires and interview questions to gain feedback from the product's users in the preliminary field test. The questionnaires are displayed in Appendix G and H. According to Bridge & Hallinger (1995), there are "eight major components in each problem-stimulated project: introduction, problem, learning objectives, resources, product specifications, guiding questions, assessment exercises, and time constraints" (p. 25). In the following section, each component will be discussed with a brief explanation of its role in the creation of a Chinese version of the simulation.

3.1. 3.1 An Introduction

This component provides a focal problem and its rationale for the simulation. It states how and why the project is relevant to the work of the administrator and connects the problem and the learning objectives to the reality of the workplace (Bridge & Hallinger, 1995). The purpose of this component is to stimulate and motivate participants at the beginning of a learning project. It also provides participants with a rationale for the project and a clear vision of what they are striving for and a direction in which they are going. It is very important for the developer to set the context for the project. He or she must clearly articulate the learning objectives and how to help participants meet those objectives during the procedure in the instructions.

The researcher wanted to make the introduction very intriguing and

therefore motivate participants to explore, in the scenario, a problem for which they could feel real urgency for change. Therefore, in the Chinese version of the simulation, she revised the context of the introduction to show a warning of the urgency for change in the school and emphasized the great need for updating the school for survival. In this way, the participants' awareness of the situation would be accelerated and the serious atmosphere for change would be built up. The revised introduction to the simulation is displayed in Appendix B.

3.1.3.2 The Problem

Each PBL project is structured around "a high-impact problem that the administrator is apt to face in the future" (Bridges & Hallinger, 1995, p. 26). Therefore, the problem is considered a pivotal part in a problem-based learning project as it can stimulate students' learning and their problem-solving process. A high-impact problem is one that has the potential to affect large numbers of people for a period of time (Bridges & Hallinger, 1995).

The original MCH™ simulation begins with a problem rather than with theoretical content for the learners. Immediately upon starting the simulation, the teams of learners confront their challenge: how to implement new information technology in the organization (Hallinger, Crandall & Ng Foo Seong, 2001). The players are delegated to be a change agent in the change committee in order to develop effective strategies to lead the change successfully within a designated period of time.

Based on the information collected from the literature review, the

small-scale qualitative study and the informal meetings, it was noted that classroom teaching innovation is a very hot topic in China. Some principals and teachers also reflected that if the implementation problem was related to the current change trends in Chinese schools, it would help participants feel a sense of familiarity and increase their sense of the reality of the situations in the simulation. Therefore, in the Chinese version simulation (in Appendix C), though the original implementation problem of the new technology IT2020 in the system remains the same, there is an emphasis on its function as a new teaching method facilitating classroom teaching. Some partial revisions were also added. For example, in the scenario more specific vocabularies pertinent to school teaching (teaching approach, teaching research office, subject teacher) were used, which could help participants feel more familiarity and increase their sense of reality in the situations in the simulation.

3.1.3.3 Learning Objectives

Learning objectives are the knowledge and skills the learners are expected to acquire during the project, which emphasizes higher order thinking skills as well as knowledge acquisition (Bridges and Hallinger, 1995). These objectives provide a guideline for the design of the simulation and evaluation instruments. Therefore, each of the learning objectives was specifically defined in order for participants to meet them. The learning objectives in this project are:

1. To learn how to develop effective strategies for overcoming predictable obstacles to change implementation in schools;

2. To learn how to bring about change when working with different types of people in organizations;
3. To learn how to lead change efforts in ways that create a positive impact on teachers' classroom behavior and student learning;
4. To learn how to work as a team in bringing about change.

3.1.3.4 Resources

The specific nature of the resources depends upon the learning objectives, the problem, and the culminating product or performance (Bridges and Hallinger, 1995). In this learning project, sufficient resources were provided for participants to get a good understanding of the simulation and develop their own strategies. Those resources were embedded in various formats in the simulation.

For example, in a tutorial, the participants can obtain specific instructional information on the task, organization chart, people's background, kinds of activities, and change phases. The simulation also provides a list of references on organizational change based on the simulation but this is accessible out of the play mode. In the Chinese version of the simulation, the resources remained in the same formats but their contents were all partially revised to fit into the Chinese culture and different organizational structures.

3.1.3.5 Product Specification

"Each project culminates with some type of product….These products provide a focus for the team's efforts, an incentive for learning, and a means by which the leader and team members can judge the effectiveness of their efforts" (Bridges & Hallinger, 1996, p. 33-34). In the scenario of the MCH™ simulation, participants are supposed to develop strategies to foster new technology in a fictional situation of the many problems of an organization. They work with individuals of different characteristics and with various kinds of activities throughout certain phases. The result of each play is indicated by the number of people in early and routine use on the game board, accumulated bennies, and strategies recorded along the change process.

The Chinese version of the simulation followed the main structure of the original simulation with partial changes in decision rules, people's characteristics, and kinds of activities based on differences in national and Chinese school culture, organizational structure and work systems, and other areas. Chapter Four presents more specific elements of the final product as well as the procedure for its revision.

3.1.3.6 Guiding Questions

Several guiding questions were provided to direct learners to key concepts in the simulation and assist their thought processes throughout play (Bridges & Hallinger, 1996). In this project, these questions helped learners to develop

more effective strategies as well as obtain important lessons embedded in the simulation as they played.

These guiding questions were formed as straightforward questions, guiding tips, or suggested comments. They were presented in Feedback cards as a prompt response when learners chose an activity, or Final Notes at the end of play. Feedback cards were designed to show prompt responses to the decisions the learners made in implementing activities and to allow learners to receive feedback on their decision to choose certain activities in certain situations. The simulation also provided summative feedback at the conclusion of the play by asking some questions and stating important key lessons on school change based on the strategy the learners developed during play.

Several examples of the guiding questions that participants receive in the simulation are:

1. What activities work to increase people's awareness and interest.
2. What conditions are necessary in order to conduct change activities in the school?
3. Once you have started the change, what additional change activities must be implemented before people benefit from it?
4. The people become bored because they do not have more advanced knowledge and practice to apply at this point. What activities can you provide to build a ground for their continuous learning and application?

These guiding questions are open-ended questions because there are no "correct" strategies that will work in all contexts (Fullan, 1993; Bridges &

Hallinger, 1995; Hallinger, Crandall & Ng, 2001). The primary intent of these questions is to help learners consider alternative perspectives other than those used in their own strategies. Learners may elect to discuss any of the questions that seem important to them or to ignore the questions completely (Bridges & Hallinger, 1995). In this way, the guiding questions in the simulation were designed to help the participants try different approaches to developing change strategies that they could apply to real situations in their schools after the training.

3.1.3.7 Assessment

Assessment in PBL serves learning, promotes personal growth and improves performance (Bridges & Hallinger, 1995). In the MCH ™ simulation, assessment is used to accomplish several purposes:

1. to revise projects to make them more productive and meaningful learning experiences for students;
2. to promote retention, transfer, and application;
3. to foster introspection and reflection;
4. to cultivate the appropriate use of knowledge and skills ((Bridges & Hallinger, 1995, p. 36).

For example, participants could get prompt assessment on their decision-making on activities from instant feedback in the simulation. Feedback cards provided information to assess if learners chose a suitable activity with the right people in an appropriate phase. With the help of the assessment

information in the feedback cards, participants had opportunities to reflect on their strategies for implementing change.

3.1.3.8 Preliminary Product Revision

After the preliminary form of the product was developed, the researcher proceeded with the translation of materials as needed and supplied the revised decision rules to a programmer who proceeded to produce a prototype. Programming for change and revision of the simulation needed professional technology and experts do things such as updating codes, clearing bugs, and solving the incompatibility of Chinese fonts with the program. It proved to require a great deal of time and effort in order to revise the simulation by change in programming and designing of the software. Without the assistance of the researcher's supervisors and programming experts in the Joseph Lau Luen Hung Charitable Trust Asia Pacific Centre for Leadership and Change (APCLC) at the Hong Kong Institute of Education, it would have been impossible for the researcher to finish this task.

3.1.4 Preliminary Field Testing

When a preliminary form of the MCH™–Chinese School Version was completed, the researcher engaged in initial testing to see if the programming was consistent with the desired specifications and the specific modifications to the simulation outlined in step 2. However, it is not sufficient for a researcher

alone to test whether a product is effective or not. Feedback from the product's users is essential for the improvement of the product. Therefore, at this stage, she also developed several questionnaires (See Appendix G-H) and interview guides to use in the preliminary field testing as assessment instruments.

The objectives of the preliminary test were to obtain an initial qualitative evaluation of the new version simulation for the main product revision by retesting technical functions of the simulation, assessing the face validity of the revised content and examining its usability in a real small scope of Chinese principals.

3.1.4.1 Participants

According to Borg & Gall (1989), preliminary field tests are usually conducted in a limited scope with a few users. In order to reach the aims of the initiative field test, the participants were Subject Matter Experts. Subject Matter Experts are a group of people who can complement the instructional designers' insufficient content knowledge in an area and assist the designer in improving the quality of multimedia learning materials (Keppell, 2000). In this project, the preliminary field tests were implemented in two small groups of Subject Matter Experts: one group of six research experts and another group of six successful Chinese school principals who were experts in successful change practices.

Research experts. The participants in the research experts group were selected based on two criteria: first, their research area was in the field of leadership for school change or a related area; second, they were familiar with

the knowledge points and change strategies in the original English version of the school simulation. Thus they were able to judge the face and content validity of the simulation scenario, problem, and scoring strategies. Based on these two criteria, one associate professor and 5 doctoral students in the Department of Educational Policy and Leadership at the Hong Kong Institute of Education were invited to be the SME participants.

In this research expert SME group, as all participants were familiar with the simulation, there was no need to gather them together to introduce the simulation and how to play it. Each of them was given a link to the new Chinese version of the simulation and asked to provide answers to the assessment questionnaire within a suggested time period after playing the simulation about ten times.

The preliminary field test for this group was conducted online individually and was followed by a survey (see Appendix G) on the quality of the new version of the simulation in three aspects: (1) technical functions; (2) validity of the simulation contents; (3) suggestions. The results of the questionnaire were analyzed and employed to improve the simulation for further revision.

Successful Chinese School Principals Group. For the second, successful change practitioner SME group, the purpose was to evaluate the usability and face and content validity of the simulation for further improvement. The sample in this group focused on two primary school principals and four secondary school principals in Mainland China who had demonstrated successful change leadership in schools and have been identified as “Outstanding Principals” or

"Start Principals" in the district-level or above. Four of them were from state-run schools and two were from a private school. They varied in terms of school size, location, gender, category and years of work as principals. However, they knew little about the simulation beforehand.

3.1.4.2 Research Design for data collection

In order to assess the face validity of the revised content and examining its usability in a real small scope of Chinese principals, Data were collected triangularly from interviews, observational, and questionnaires.

In terms of the research design of the data collection, it is necessary to explain that the survey used in both of the field tests in the present research method is a little different from those applied in other research context. In this study, the researcher followed R & D Cycle, a complex set of linear procedures to test face validity of the simulation. So the survey scales and interview questions are particularly developed for this training product. While developing the survey and questionnaire, the researcher referred to the scale used by the prior doctoral students (Showanasai, 2014; Song, 2003), who worked on the same simulation, and the sequence of questions is also consistent with the standard procedure used by professional software developer in testing and revising software. The survey scales with scale names, description of items and number of items are displayed in Appendix G and H.

3.1.4.3 One-day Training Workshop

A one- or two-day management education workshop is one of the typical settings in which the simulation would be employed (Hallinger, 2007). Thus this kind of workshop would offer a useful opportunity for the researcher to obtain real-time user feedback on the functionality and usability of the simulation in a face-to-face learning environment. This step of the preliminary field test was made up of a one-day training workshop and a follow-up online assessment for the second successful change practitioner SME group.

The workshop took place at a meeting room in the office building of an Education Bureau in Guangzhou, Guangdong Province in South China on July 9, 2014. A detailed schedule of the one-day workshop is displayed in Table 8.

Table 8: One-day PBL workshop schedule in the preliminary field test

Time (min)	Activity Description	Materials
	The first half	1. Offline Making Change Happen! installed in each team computer. 2. Overhead screen (Power Point materials); 3. Simulation handouts (people, activity). 4. Online survey on the Survey Monkey website.
30min (9:00-9:30)	Introduction of the topic.	
40min (9:30-10:10)	Introduction of the simulation (Explain how to play simulation).	
40min (10:10-10:50)	Simulation: Phase I (start over) and Phase II and team sharing -1	
10min (10:50-11:00)	Break	
30min (11:00-11:30)	Instructor-led short debriefing	
60min (11:30-12:30)	Simulation: Phase III	

	The second half	
60min (14:30-15:30)	Second instructor-led short debriefing	
10min (15:30-15:40)	Break	
60min (15:40-16:40)	Simulation: Phase I – III and team sharing -2	
30min (16:40-17:20)	Complete debriefing of the entire simulation and lessons	

The six participants were divided into three teams. Each team was composed of one primary school principal and one secondary or middle school principal. In order to ensure that the preliminary field test ran smoothly and worked effectively, the researcher prepared simulation handouts, Power Point materials, an overhead screen, and a printer beforehand. As it was not convenient to connect to wifi in the meeting room of the office building, the offline simulation of MCH™ was installed on three computers beforehand. Moreover, the browser Firefox was used to open the simulation was installed on each of the computers because Firefox is not commonly used in China.

Based on previous experience, the researcher knew that there would not be sufficient time for interviews at the end of the workshop. Therefore, an online survey on the Survey Monkey website was set up for this group of school principals to complete after the workshop.

Survey Monkey is a powerful online survey platform, a tool to use in numerous ways to collect data and gather responses from the field. Besides this, other instruments, such as interviews and observation, were also employed to collect and complement the data for analysis to improve the new version

workshop program. Data collected from the survey was used as a foundation for revision and improvement of the Chinese version simulation as well as the training program.

The online format also enabled the principals to have three more days to play the simulation individually at home before answering the online survey. In addition, one information technology teacher was hired to assistant the researcher on-site during the workshop, to tackle possible technical problems and provide logistical support (e.g., take notes on participants' answers and responses, enhance class dynamics between the instructor and participants, observe during play, etc.).

The follow-up assessment data for this group were gathered through an online survey (see Appendix H), which had been translated into Chinese. It explored the following five dimensions: (1) general impressions on the simulation; (2) ease of use; (3) validity of the simulation contents; (4) usefulness of the simulation; (5) suggestions.

In order to obtain feedback and observational data from as many users as possible, the assistant was trained to observe and record various kinds of responses from the participants during and after the field test. These responses included participants' general attitudes to the simulation, strategies for starting the game, participation in group work, problems that emerged when using the simulation, decisions in selecting change strategies and results at the end of the game.

3.1.4.4 Instructional Process

As in the second, successful practitioner SME group had no prior knowledge of the simulation, they needed to be guided on how to play and interpret the messages gained from the simulation. As summarized in Table 8, at the beginning of the test, the researcher first explained the purpose of the test to the participants. This was to evaluate a training program based on a problem-based simulation for Chinese school leaders and provide information for further revision of the program for the main field test.

After 30 minutes of introduction to the topic of school change and leadership and organizing the team structure, the researcher gave a 40-minute presentation describing the new version of the simulation. She explained how to play the simulation by going through each person and activity in the program tutorial. Then, in order to maintain the participants' enthusiasm and the coherence of the activity, she asked the participants to work in teams and play the simulation for year I and II right away from 10:10 to 10:50 a.m.

The participants played the simulation one or two times in groups of two. Meanwhile, the researcher walked around and helped solve learners' problems with the simulation. While she was walking around and discussing with participants, the assistant helped her to take note of their response and collect participants' feelings about the simulation.

After playing the simulation for 40 minutes, there was a 30 minute break from 11:00 to 11:30. Then the researcher conducted a short debriefing session and team sharing. Meanwhile, she also presented the key change theories

underlying the simulation, especially Rogers's (2003) Adopter Types and Kotter's (1996) eight–stage process for managing change. The purpose of the short debriefing session was to help players better understand the linkage between the simulation problem and the change reality, and how to play the simulation effectively in the next step.

Then, following the first short debriefing and team sharing, the researcher asked participants to start Year III right away at around 11:30 a.m. As in the first session of game play, the researcher again walked around to provide necessary help and answer questions. At the same time, the assistant helped her to record what happened during the class. At 12:30 p.m., the participants and researcher stopped to have lunch together.

The second half of the workshop started at 14:30. From 14:30 to 15:30, the researcher conducted a second instructor-led short debriefing session and team sharing. She asked each team to show their team's scores and patterns of people movement on a multi-media screen and compare them with each other. Each team's strategy record was printed out and exchanged between teams. Then the researcher also encouraged them to discuss their successful strategies and errors with the other teams and relate the change principles provided in the first debriefing session to their experience of playing the simulation. They were also invited to provide suggestions to improve the simulation according to their experiences of school change.

Following the short debriefing, there was a ten minute break. At about 15:40, the participants began to play all three phases, a cycle of three years, in order to check whether they had a better understanding of the simulation.

There was insufficient time for participants to play the simulation through to the end individually and do an interview at the end of the workshop. In order to have more detailed feedback on the preliminary form of the product from the participants, they were asked to play the simulation about five to ten times individually at home and then complete an online survey (Chinese Version translated from Appendix G) created by the researcher on the Survey Monkey website (http://www.lediaocha.com/) within the next three days.

The following sections give summaries of the results of the surveys from both SME groups in the preliminary field test. They also evaluate the new version of the simulation.

3.1.5 Main Field Testing

3.1.5.1 Participants and Preparation Procedure

In order to evaluate the validity of the newly revised Chinese simulation for school leaders in the Chinese context, study examples were focused on Chinese school leaders. This training program was proposed as a 6-hour teaching and learning unit to one of the researcher's associate-supervisors, who would teach a 3-credit specialization course titled "Effective Educational Leadership" to a class of 78 Master's students with a specialization in Educational Management and Leadership at the Hong Kong Institute of Education. The instructor agreed

to apply the new version of the simulation as the training tool and allowed the researcher to observe the class. At the end of the class, students were invited to complete an anonymous online survey on a voluntary basis within the next week. Compared to the preliminary field test, this main field test was more formal and strictly designed and conducted according to the schedule in Table 9.

Table 9: One-Day PBL Workshop Schedule in Main Field Test

Time (min)	***Activity Description***	***Materials***
	The first half	1. Overhead screen (Power Point materials); 2. Learning materials -simulation handouts (people sheet, activity sheet) put on the website of the Hong Kong Institute of Education two days before the workshop. 3. Online survey on SurveyMonkey website.
15min (9:30-9:45)	Introduction to the research project and the development of the simulation.	
60min (9:45-10:45)	Lecture-1: Leadership for Change	
15min 10:45-11:00	Break	
50min 11:00-11:50	Introduction to the simulation (Explain how to play simulation)	
40min 11:50-12:30	Simulation: Phase I (Year 1)	
	The second half	
20min 13:30-13:50	First debriefing	
30min 13:50-14:20	Simulation: Phase I –II and team sharing-1	
60min (14:20-15:20)	Lecture-II: Leadership for change; second instructor-led short debriefing	
15min (15:20-15:35)	Break	
30min (15:35-16:05)	Simulation: Phase I – III and team sharing -2	

25min (16:05-16:30)	Complete debriefing on the entire simulation and lessons; summary of the workshop	

To collect more data for the final revision, the researcher, as an observer, attended the full-day workshop and took notes on participants' answers and responses, the class dynamics between the instructor and participants, observations during the play and interviews with the participants during break times. Before the workshop, the researcher also helped with some initial preparation jobs, such as simulation handouts, Power-Point materials and the online survey (the Chinese version translated from Appendix I) on the Survey Monkey website (http://www.lediaocha.com/).

3.1.5.2 Instructional Process

The instructional process in the main field test is followed on "The Instructional Mode of PBL Computer Simulation the study" in Lu, Hallinger & Showanasai's (2014) study, as shown in Figure 2.

The workshop started at 9:30 on July 18th. First, the instructor introduced the researcher of the present research project and the development of the simulation to the participants and explained the goals and agenda of the workshop (see Table 26). There were three goals that the workshop participants were intended to reach:

1. To reflect on the change process of schools and organizations by experiencing a change task while playing the MCH™ simulation;
2. To identify and evaluate the people and organizational factors which influence change;
3. To be more confident in leading school change in the future.

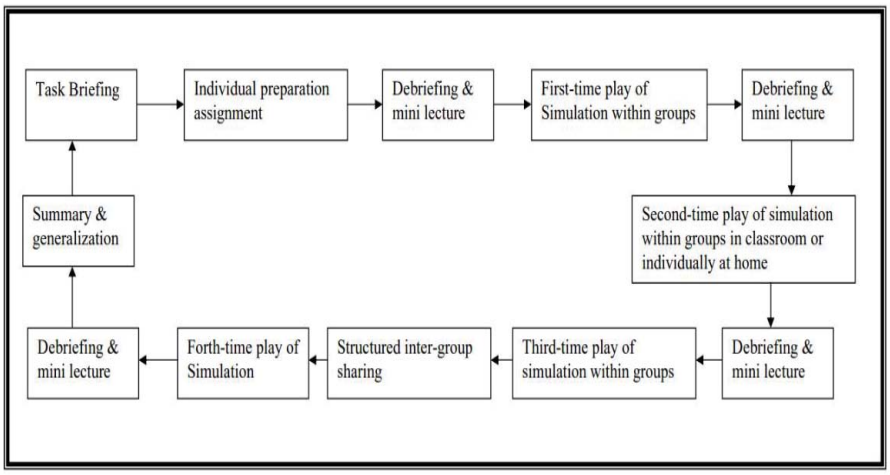

Figure 2. The Instructional Mode of PBL Computer Simulation in the workshop

(Source:: Lu, Hallinger & Showanasai, 2012, p.221)

In the following 70 minutes, the instructor gave a lecture on Leadership for Change (Part I), focusing on the background of school change, the reasons to resist change and the factors influencing change. At the beginning of the lecture, she also asked participants to discuss with partners about any new changes they had encountered in their working school and how these changes influenced school leadership as a warm-up activity to stimulate participants' interest and curiosity in the topic.

After a 15 minute break, from 11:00 to 11:50, the instructor introduced

the new Chinese version of MCH™. In order to help participants have a better understanding of the people and activities in the simulation before starting to play the game, participants were asked to identify and evaluate each person in the game by scoring them from 1 (strongly resistant) to 5 (strongly in agreement) based on the people's descriptions on the People Sheet. In this phase, participants were all engaged in the work and happily shared their opinions in the group and during the report. Then they were asked to read the Activities descriptions and Costs. After completing these tasks, the participants had a comprehensive understanding of the simulation before playing the game. Then, they were assigned to a team of three or four and started to play the simulation at 11:50.

In fact, as the program was conducted in a lecture-room rather than in a computer room, participants had to take their own laptops into the classroom. Since there were not enough laptops for every group of three, some groups consisted of more than four participants (even six or seven in some groups).

From 11:50 to 12:30, participants were all engaged in playing the game--Phase I (Year 1). They were so involved in the game and discussion that they forgot about the lunch time and did not want to leave until instructor stopped them at 12:40.

The second half of the workshop started at 13:30. First, the instructor gave the First Debriefing on the simulation, which mainly focused on theoretical applications of school change principles and leadership, the theory of Adopter Types, and strategies for managing these types. At the same time, in order to explain the principles of the simulation vividly, one example selected

from the participants was demonstrated to explain how to get to know people, how to move people by conducting effective strategies and how to get bennies, etc.

Then, from 13:50 to 14:20, participants were given 30 minutes to replay the simulation for the second time (Phases I –II). Some guidelines were also provided for the play: a) based on the previous experience of the gameplay; b) applying some change principles; c) setting SMART goals for simulation implementation.

Having finished a cycle of the play from Years 1-2, participants were encouraged to visit with other teams and share their achievements and successful strategies in playing the simulation and to compare different strategies between teams. All participants in the classroom were in high spirits in discussion and sharing. After playing the simulation for 30 minutes, Lecture-II: Leadership for Change and the second instructor-led short debriefing were conducted.

In this period, the instructor gave a lecture on the leaders' role, common problems leaders would encounter in leading change and Kotter's (1996) eight –stage process for managing change. However, as most of the participants were still immersed in playing the simulation and discussing in groups, the classroom was full of noise and it was hard to calm participants down to listen to the instruction and debriefing carefully.

Following a short break for 15 minutes, from 15:35-16:05, participants were encouraged to play all three phases, a cycle of three years, in a group. Compared to the previous play, participants were quite skillful in playing the

game this time. What they focused more on was how to move people and gain more bennies by selecting effective strategies. The only problem they had was when there was an instance when their strategy failed; they could not move anymore and did not know what to do next.

Now and then, some loud excited voices were heard here and there when groups gained bennies and got people to move. For example, when one team got a score of 9820 and moved 20 people to the routine use stage, all members of the team were so excited that they could not help laughing and clapping hands with each other; they were very pleased to be invited to share their experience and feelings in playing the simulation at the end of the workshop.

At 16:05, the instructor gave a complete debriefing on the entire simulation and a summary of the workshop. She not only summed up some key points, such as the participants' performance, progress and strategies while playing the simulation, but also delivered two questions for participants to reflect upon after the workshop: a) What is the most important lesson you have learned from today's workshop through the simulation? b) How will you apply what you learned in your practice?

At 16:40, the workshop ended with many participants unwilling to stop the simulation and leave the classroom. At the end of the workshop, participants were asked to do the survey on the Survey Monkey website voluntarily to help provide the researcher with their opinions and suggestions on the new simulation for the final revision.

3.1.6 Final Product Revision

After the Main Field Test and Product Revision were completed and the data had been analyzed, a final revision of the product was carried out. In this stage, the researcher made a final revision of all the scripts and descriptions on the handout in the simulation and turned them over to the programmer for the final production.

3.1.7 Dissemination and Implementation

Dissemination refers to the process of "helping potential users become aware of R & D products and implementations to the process of helping adopters of an R & D product to use it in the manner intended by the developers" (Borg & Gall, 1989, p. 793-794). In this step, two strategies were used for promoting implementation: publishing papers and using the Chinese version simulation as a training tool for school principals in mainland China.

One of the goals of the present research project was that it would result in several papers in Chinese and English, as well as the simulation product itself. Therefore, following completion of the product, the researcher has reported on it at professional meetings in China and will write up the results in journals to foster broader dissemination. The literature review and small scale-study results have already been published in an international journal (see Tang, Lu & Hallinger, 2013).

It is hoped that the simulation could be adopted by the principal preparation centers in Beijing and Shanghai. The researcher will contact them

with the results of the simulation. She is also seeking to incorporate the simulation into training offered to school leaders in Guangzhou where she works. She is trying to help the trainers of school leaders become aware of this simulation and promote the usage of the product to improve the quality of the present school leaders training program.

3.2 Evaluation of Utility of the Simulation Adaptation

The utility of the simulation was assessed using both summative and formative evaluation methods in this study. The function of formative evaluation is to collect data about the simulation while it is still being developed for further improvement. Summative evaluation was conducted to assess the utility of the completed product both in the preliminary and main field tests. Specifically, the data in the summative evaluation included what the participants had learned and the extent to which they had met the learning objectives as they used the product in the training program. Thus, objectives play an important role in the formative and summative evaluations, and provide the criteria for judging the merits of the product (Borg and Gall, 1989). However, in the present study, due to limited time and based on the main purpose of the project, the researcher emphasized formative evaluation in the two field tests.

The purpose of formative evaluation was to collect data to inform the further modification of the simulation and the instructional process. Revisions included a variety of minor changes to the game's decision rules to maintain its internal consistency. They focused on participant reaction to the program. The

instruments of formative evaluation used during the session were observation and written and oral feedback. These were obtained while the participants were playing the simulation as well as when they answered questions in the debriefing sessions and filled out a talkback sheet questionnaire after the session. These forms of feedback are explained as follows.

Direct observation during each field trial. While participants were playing the simulation, the researcher walked around to observe how they encountered difficulties in the program and resolved them throughout the session. For fear of missing participants' dynamics or reactions that could be significant indicators during the debriefing sessions she conducted, she trained an assistant to keep on recording observatory data in the preliminary field test. She was available to answer the participants' questions and prompt them to respond as much as possible. The workshops both in the preliminary and main field tests were systematically scheduled minute-to-minute in order to collect valid triggers and indicators such as were possibly useful in improving and further developing the program.

Online questionnaire and survey. At the end of the workshop, each participant was asked to answer to an online survey to give feedback and evaluation on the simulation. In the preliminary field test, there were two surveys, one for the expert research group (See Appendix G) and another for the school principals group (See Appendix H). These surveys were designed to evaluate the efficacy of the new version of the simulation and to obtain data for further improvement. Specifically, they covered participants' reactions to the session and comments on how to improve the simulation overall. They included

five sections: (1) general impressions of the simulation before and after the session; (2) technical functions; (3) validity of the simulation contents; (4) ease of use of the simulation; (5) usefulness of the simulation; (6) suggestions.

Interviews. The researcher also conducted interviews with participants after every period of simulation play. In this kind of free talk, some questions about the simulation were proposed. At the same time, she could collect more information and data on the effectiveness of the simulation for the further revision.

This chapter described the methodology used in this project aimed at adapting an existing computer simulation for use in the education and training of Chinese school leaders. In the chapter I described how the R & D cycle was applied to this project. In the next chapter I will discuss the actual substantive adaptation of the simulation.

CHAPTER 4

SIMULATION ADAPTATION

This chapter consists of two sections. In the first section, a brief overview of the computer simulation MCH™ will be provided to help readers better understand each element of the original simulation. In the second section, the process of revision of the simulation will be presented.

4.1 A Brief overview of the MCH™ Simulation

Making Change Happen™ (The NETWORK Inc., 1997) was originally developed in the USA as a means of training school leaders to apply theory and research to the problem of implementing changes in schools. The knowledge base of the simulation was grounded in the abundant theoretical framework of change studied and developed in Western societies, such as the concerns-based adoption model (Hall and Hord, 1987, 2002), change adopter types (Rogers, 2003), knowledge diffusion and dissemination (Crandall, Eiseman, & Louis, 1986) and some more general knowledge of implementation and leadership in leading change (Evans, 1996; Fullan, 2007, 2009; Kotter, 1996; Sarason, 1982, 1990).

Besides this rich theoretical knowledge base, this simulation has also incorporated effective guides drawn from abundant empirical research and practices in leading change both in Western and Asian countries (Bridges &

Hallinger, 1993, 1995). The prominent characteristic of this simulation is that it uses the approach of problem-based learning, which can provide learners with a challenging and active learning environment in which to think systematically and critically about school change. It can also enable learners to refine their understanding of school change and to adjust their strategies for solving problems in leading school change and improvement when they come back to their own working context (Hallinger, & Kantamara, 2000c). This is very helpful for school leaders to develop their competence in overcoming predictable obstacles to change implementation in reality (Bransford, 1993; Bransford, Brown & Cocking, 1999; Hallinger & McCary, 1990; Hmelo, Gotterer & Bransford, 1997). The specific learning objectives of the simulation were defined as follows:

1. To learn how to overcome problems to change implementation in schools with effective strategies of change leadership;
2. To learn how to bring about change when working with different types of people in organizations;
3. To learn how to lead change efforts in ways that create a positive impact on teachers' classroom behavior and student learning;
4. To learn how to work as a team in bringing about change.

(Hallinger & Kantamara, 2000c, p. 199)

In other words, the simulation is considered a rehearsal for school leaders before the real performance. It can equip them to confront the challenges in real school change implementation in the future by exposing them to a life-like problem, engaging them in its solution, and providing continuous

feedback on the results of their efforts. In this way, learners can 'learn by doing' without causing harm to those with whom they work.

The simulation is usually played in teams of two or three people per computer, even when there are sufficient computers for everyone. This is consistent with the fact that most organizational improvement efforts in the future will be led by teams rather than individuals (Drucker, 1995; Senge, 1990). In addition, cooperative learning accelerates the learning of individuals in a problem-based environment (Bridges & Hallinger, 1993; Hallinger & McCary, 1990). Working with a partner in this problem-based exercise stimulates each learner to surface his/her assumptions about change. The process of discussion, resolving conflicts among ideas, and mutual reflection visibly raises the quality of thinking in the learning environment. In fact, the development of teamwork skills represents an instructional goal of the simulation (Hallinger, & Kantamara, 2001b).

In the following sections, descriptions of the components of MCH™ (The NETWORK Inc., 1997) and the instructional process, which are taken from Hallinger, Crandall, & Ng (2001), will be presented.

Components of the Simulation. MCH™ is made up of several major elements: Problem & Your Task, Gameboard View, Organization, People, Phases, Activities, Implementing Activities, Bennies/Bits/Year, Feedback, Strategy Record, Game Report, Reference, and Final Notes.

Problem & your task. Consistent with the tenets of problem-based learning (Bridges & Hallinger, 1995), the simulation begins by presenting the learners with a problem rather than with theoretical content. Immediately upon

starting the simulation, the teams of learners confront their challenge: how to implement new information technology in an organization. The statement of the problem is delivered as follows:

> The new Director of the Best School System (BSS) is implementing reforms in teaching and learning, school management systems, and information and communication technology. Foremost among these changes is a new learning technology system (IT 2020) that will enable teachers to communicate and access information more easily, and integrate learning technology into teaching and learning activities. The Director has stated that 'IT 2020 will bring the BSS into the 21st century.' Indeed, he has made implementation of IT 2020 his top priority since arriving earlier this year.
>
> While implementation of IT 2020 is a top priority for the Director, the corporate culture in the BSS is both conservative and strong. Senior and middle management have been uncomfortable with the pace at which recent changes have been forced upon them. Many teachers have been with BSS for a long time, and they have been slow to embrace technology when compared with some neighboring school systems. Younger staff has not always found the school culture receptive to new ideas and some have left for jobs elsewhere.

Given the scope of this change in learning technology, the Director has decided to implement IT 2020 at two schools in the Central region of the school system on a pilot basis. Based on the results of the trial implementation, he will then expand implementation throughout BSS. Despite this step-by-step approach, the Director is under pressure to show results quickly. Therefore, trial implementation is beginning right away.

Although this is the Director's special project, not everyone is happy with it. The project's visibility was raised recently when the School Board chose not to go with the lowest bidder for the software development. The School Board, on a close vote, followed the Director's recommendation and selected Hi-tech International's system, IT 2020. A couple of Board members were upset with the decision to give this contract to a foreign firm, rather than to a domestic company with whom BSS had a long relationship.

The Central Region is the largest region in the BSS, and also the most political. The Regional Director, Al, has held several senior positions in the BSS. In fact, he was the top internal candidate of the Director position last year, but he was not supported by the Board. His support is

necessary if IT 2020 will be implemented successfully in the Central Region.

You have just been selected for special assignment to the project team responsible for implementation of IT 2020 in the Central region. You were unhappy about this assignment since it could interfere with your future promotion in the BSS. Being part of a highly visible, but politically sensitive, change effort could make you unpopular with various people who could influence your future in the BSS. Nevertheless, you were not given a choice, so you must make the best of this situation and hope that success will get you some positive attention from the Director (if he survives).

Your project team is comprised of people from different roles and schools in the Central Region and the Head Office. You were told to coordinate the work with Beth, the Management Information System (MIS) Coordinator in the Head Office, and also with Al, the Regional Director. Two members of the School Board-- Carol and Dave -- have been assigned by the Board Chairman to monitor this expensive project. Shortly, you will find out more about the other people with whom you will be working to implement IT 2020.

The Problem and Your Task are presented via the computer screen. After reading the problem on the computer screen, the learners begin to access other factual information concerning their situation. This information is presented via handouts and the computer screen.

Gameboard View. The game board on the computer screen (see Figure 3) displays the organization, staff members, and stages of the change process.

Figure 3. Making Change Happen™ Game Board

On the left-hand side of the game board are the staff members. The game pieces representing the 24 people begin "off the game board" because they have yet to begin the process of change. Listed across the top of the board are the five stages of the change process: Information, Interest, Preparation, Early Use, and Routine Use.

The ultimate goal of the change team is to move these school and Central Office staff members from a state of not knowing anything about the new technology to being routine users of this new information technology in their work. The more staff are moved to the stage of Routine Use, the more success you have achieved. That means success in the simulation will be assessed by your ability to foster active use of IT 2020 and by increases in the benefits gained from the new technology.

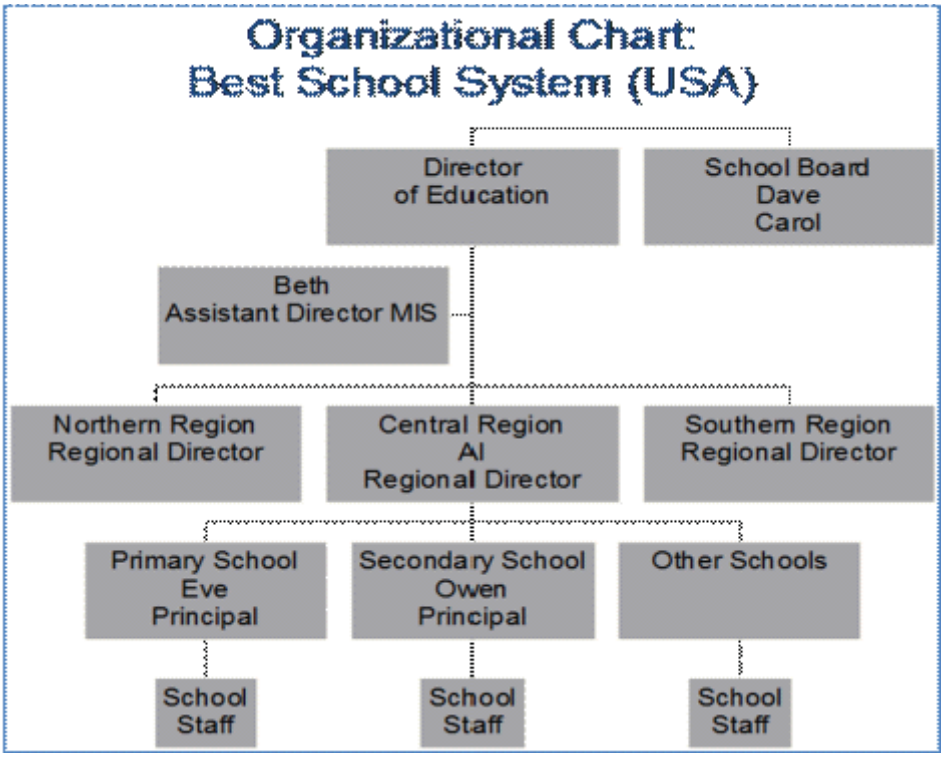

Figure 4 . Organizational Chart of the Best School System

Organization. A chart of the organization infrastructure is provided (See Figure 4) on a handout. This organizational system consists of Head Office, including Carol and Dave from the school system's Board of Trustees as monitors of this project, Beth—the Assistant Director (MIS), Al--the Regional

Director of Education, two trial schools with Primary School Principal Eve and Secondary School Principal Owen, and staff from these two schools.

People. There are 24 staff members who are critical in promoting the new learning technology, IT 2020. They represent many levels across two schools and the central office (see the organizational chart in Figure 4). Each of the 24 staff members has a unique personality that is conveyed through a brief description on a handout.

Players are free to access short profiles of the 24 staff members on the left-hand side of game board. For example, the description of the Central Region's Director reads, "Al is a respected Director who is very concerned with maintaining the Region's reputation. Recently, Al applied but was not selected for the position as Director of the school system. He retains strong political ties to certain board members." The description for Pat, the Assistant Principal of the Secondary School, reads: "Pat feels overworked and spends most of his time solving day-to-day problems. He is not interested in new projects because they waste his time and keep him from the practical work of making the school run smoothly."

Phases. There are five phases of the change process: Information, Interest, Preparation, Early Use, and Routine Use. These stages represent the normal process of people understanding and employing the new change. The ultimate goal of the change team is to move these school and Central Office staff members from the first phase of Information to the last phase of Routine Use. Your success is measured by the final number of people who has moved to the final phase.

Activities & Implementing Activities. There are a total of 18 activities as listed below, which the learners can choose to implement when introducing and fostering the new change. These activities include:

1. Consultant's Report
2. Social Information
3. Talk to First Time
4. Talk to Second Time
5. Talk to Third Time
6. Written Information
7. Presentation
8. School Visit
9. Workshop
10. Advanced Workshop
11. IT 2020 Demonstration
12. Classroom Lesson
13. Follow-Up Help
14. School Technology Fair
15. Theme Week Celebration
16. School Support Group
17. IT2020 Software Revision
18. School Policy Implementation

These are typical activities a change team might undertake. By spending the budget on some combination of these activities, the learners begin to see change occur. If the activity is successful, the game piece(s) representing

the staff move one or more spaces. If unsuccessful, they may stay put. For example, if you choose to talk to three people, those three people may respond in a variety of different ways depending upon their backgrounds, personalities, roles, and levels of interest in learning the new technology.

All these activities are interdependent, which means different sequencing of implementing activities would yield different results. That is because the success of certain activities in the simulation depends upon the completion of other activities.

Bits/Bennies/Year. Your team will lead implementation of IT 2020 over a three year period. In each year you will have a budget to spend on specific activities (e.g., presentations, workshops) designed to foster use of IT 2020 among staff in these pilot schools. The budget is represented in units called "*bits"* as resources (time, money, effort, materials, etc.). There is a budget of 35 bits during Year One, 30 bits in Year Two and 25 bits in Year Three; the budget is replenished each year.

Some activities also generate student benefits or "Bennies" (teaching a classroom lesson, holding a technology fair), while others do not. Each time when players implement an activity which can generate benefits for students, they may get Bennies in their feedback that are tallied by the computer. That means the activities the teams implemented could not only successfully foster change among staff, but also improve student learning outcomes.

As the primary focus of the innovation is to improve the productivity in the organization, the number of Bennies or Benefits the team accumulates indicates how successfully they have implemented change in the organization.

This feature of the simulation serves to highlight the distinction between fostering interest and fostering effective use of the innovation.

Feedback to learners. The simulation provides feedback on learning outcomes. Each time that learners implement an activity in the simulation, they receive feedback describing what happened and why. This feedback is on a pop-up card that is programmed to appear after each activity is implemented. For example, when the team Talks To Al, the Regional Director in charge of the pilot region, for the first time, they receive the following feedback:

> Al is very busy with other projects to improve his region's performance and doesn't have much time for you. He suggests you coordinate with Beth at the Central Office. On your way out he says, 'Nice talking with you." Al moves one space."

Talking to other people will generate a variety of reactions of different degrees of movement (i.e., change) and different feedback. For example, if they "Talk to" Irene, she responds differently. "Irene asks, 'Is this the same computer program they are having trouble with in the other schools? I am not sure what to do if the system breaks down.' Irene doesn't move at all."

Strategy record. The simulation will record all the activities that the team has implemented. The team can access the record at any time during the simulation or may print it out at the end of the simulation.

Game report. At the end of the simulation (i.e. after three simulated years), an assessment of the team's success will be provided by the computer based on two criteria: how many staff are using IT 2020 (i.e. game pieces in

Early or Routine Use stages) and how many bennies (i.e. student benefits) the team accumulated.

Accordingly, the team is assigned to one of six levels of expertise in leading change: Apprentice, Novice, Manager, Leader, Expert, or Master. Specific diagnostic feedback is also provided based upon the level achieved. A description of each result level with the required number of Bennies and game pieces in the Early or Routine Use stages is presented in Table 10:

Table 10: Description of each result level with the required number of Bennies and game pieces in the Early or Routine Use stages

	Bennies	# of Staff in Early/Routine Use
Apprentice	< 1,500	
Novice	< 1,500	>= 6 players
Manager	>1,500 and <=3500	
Leader	>3,500 and<= 5,500	
Expert	>5,500and<= 7,500	
Master	> 7,500	

References. Some references on change are collected and listed for learners at the bottom of the computer screen. Although these references are not for use while playing the simulation, they are helpful for learners to have a better understanding about problem-based learning, the simulation and change.

Some of these components were revised and modified in the Chinese version of MCH™ to make them appropriate to Chinese culture and China's school organizational structure and work system. The revision process and specific changes are discussed in the next section.

4.2 Revision of the simulation

There is no best change strategy that will work in all contexts (Fullan, 1993; Kotter, 1996). As mentioned in Chapter Two, though the simulation incorporated a rich knowledge base of theories and empirical practice on educational change, most of this knowledge was grounded in North America and Europe. Successful change in a country must be grounded in its own culture and context. In order to make the simulation more real and closer to the Chinese school context in the training program for Chinese school leaders, it was necessary to adapt the simulation to the Chinese culture and organizational features.

Based on the findings from the first step of information collection, the simulation was modified in two ways: 1) contextual revision and 2) technical revision. In the following section, the researcher will describe how each component was modified and adapted to the Chinese culture and organization in the Chinese School Simulation Version.

4.2.1 Contextual Revision

There were two parts to the contextual revision: a) translation of the simulation content, workshop materials, and evaluation instruments; b) cultural and organizational adaptation of the simulation content.

4.2.1.1 Translation

The translation process included three phases: direct language translation, application, and cultural and organizational adaptation.

Direct language translation. As the language used in the original simulation is English, the first step was to translate the related materials into Chinese for Chinese learners. This translation work was helped and checked by some researchers and faculty members the Joseph Lau Luen Hung Charitable Trust Asia Pacific Centre for Leadership and Change (APCLC) at the Hong Kong Institute of Education who were fluent in both Chinese and English. In this phase, the translation was straightforward and devoted to the original meanings of the text so as to retain the essential elements of the original simulation. In order to get more information for the revision, these original materials translated into Chinese were used as introduction handouts for a focus group interview.

A focus group is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a product, service, concept, advertisement, idea, or packaging. Questions are asked in an interactive group setting where participants are free to talk with other group members (Debus & Mary, 1990). In this focus group interview, there were 8 interviewees: 2 principals, 2 vice-principals, 2 deans and 2 teachers from both primary and secondary schools in Guangzhou City, Guangdong Province, South China.

Adaptation. In a focus group interview, the researcher collected the participants' general opinions on the original problem scenario and the infrastructure of the school system. Based on these suggestions and the previous information collected in Chapter Two, she revised the problem scenario and the organizational chart in the original simulation and translated them into Chinese for further review. In order to have more detailed information for the revision,

The researcher conducted individual interviews with the 8 participants as well. In the individual interviews, after reading the revised Chinese handout, each interviewee was invited to give their opinions on the materials they thought might need to be adapted to Chinese culture and schools more closely. The adaptation included the popular theme of educational change in China, making the organizational chart in the problem scenario reflective of the infrastructure of the Chinese school system, and ensuring that activities in the scenario paralleled those that Chinese schools implement in change and work systems. These interview findings as well as the results of the literature review and small-scale research study formed a basis for the revision of the problem scenario and organizational chart in the Chinese version of the simulation. The list of the analyzed results which provided implications for the revision is displayed in Table 11.

Table 11: Summary of Interview Results

Category	Results of Meetings
The main theme of	1. School change is a popular topic in China since the new curriculum was carried out in 2001. The quality of classroom teaching is regarded as the lifeline of education. However, Examination-Oriented Education is still the main stream in

education change	Chinese schools.
	2. Classroom teaching reform is the main theme in the change. However, there are many invisible resistances from the top and staff, especially some veteran teachers and even some leaders in the higher positions.
Infrastructure	1. Though decentralization is highlighted in the new round of curriculum reform and leaders in the region or school principals are the key persons to choose the direction of change and decide to start the change, bureaucratic management is still the main style in Chinese schools.
	2. District Bureau of Education is independent from City Bureau of Education on personnel, finance and management. Instead, it is more controlled by the local government on personnel appointment and finance.
	3. Gender discrimination still exists in most Chinese schools; high-level positions are particularly male-dominated, especially in secondary schools.
	4. Only a small percentage of schools in China consist of integrated primary and secondary schools; these are called 9 year schools. Most schools are either primary schools or secondary schools. So, the trial runs will be assigned to two separated schools: one primary school and one secondary school in the region.
	5. The Region Education Guide Centre plays a critical role in secondary and primary school change at the town level in China because the Centre has the right to decide on school personnel and evaluation.
Change Activity /Strategies	1. Teacher training comes first before implementing any change, which is considered “brainwashing” for the new thing.
	2. Going out to visit schools each term which have implemented the new teaching approach successfully and exchanging experiences on teaching are popular practices and welcome by teachers. They would inspire teachers to try the

	new thing.
	3. Establishing incentive systems for successful implementers, such as bonuses, promotion, and recognition is useful to stimulate other teachers and build a good environment for change.
	4. The middle-level leaders and experienced teachers are the key persons to form the team to start and continue the change.
	5. Experts and professional community's guidance and support are necessary to enhance staff understanding and capacity of implementing the change.
	6. Periodically reflecting on collective experience is meaningful to enhance teachers' awareness of change and improve their teaching effectiveness.
	7. Providing teachers with successful models of the new change would help teachers to implement the change more easily.
	8. Providing opportunities and platforms (such as Open Classes, School Open Days and Classroom Teaching Competitions) for successful teachers to show off their progress in schools and helping to build up these teachers' status among staff is helpful.

As mentioned above, classroom teaching innovation is the hottest topic in China and Examination-Oriented Education is still the mainstream in Chinese schools. For most schools, the success of school change largely depends on student achievement in the final examination. Therefore, for the Chinese version of the simulation, the urgency of improving the present situation of lower school achievement compared to other districts in the city was emphasized. This was done in order to raise people's attention to the urgency of beginning the change. The revision of the problem and the task in the scenario were modified as follows (also see Appendix C):

Problem: The teaching quality in Evergreen District has been declining in recent years. Under pressure from the stakeholders' increasing demands for a higher quality of education, the new Director of the Evergreen District Bureau of Education said it was time for change. "Our traditional methods of teaching and learning are inadequate to meet the needs of the development of education. We must have an operation on our traditional depressing classroom teaching." Moreover, in the Director's words, "The Evergreen District has been slow to adopt practices and policies necessary to the new curriculum innovation." As his first step in acting on his promise of change to the District's Board of Directors, the new Director has mandated implementation of a new information technology system -- IT2020.

IT 2020 will, however, mean significant change for all who work across the schools. In addition to the purchase and redesign of IT hardware and software, IT 2020 will require changing the way staff communicate and share information. This will in turn affect their relationships with students and with each other.

Uncomfortable with the pace at which other recent changes have been forced upon them, some veteran staff have begun to joke that the learning technology advocated by the new Director just might get used by the year 2020 or it just might be another show that passes by quickly like smoke.

> Given the scope of this change in learning technology, the Director has decided to proceed by pilot testing the use of IT2020 at two schools (one primary school, Sunny Primary School, and one secondary school, Blue Sky Secondary School) in the Central Region of the district. Based on results of the trial implementation in these schools, IT 2020 will then be rolled out in other schools. Despite this step-by-step approach, the new Director is under pressure to show results soon. Therefore trial implementation will begin immediately.

Application. Based on the adaptation to the problem scenario, the language in the revised version was refined and embellished to ensure that the context read smoothly and fitted with the Chinese school context. Therefore, in this stage, some literal linguistic translations, such as those of people's feedback dialogue and activity descriptions, were refined to reflect the Chinese culture and the management style in Chinese schools.

For example, in the original instructions, being worried about the influence of the new technology on the current classroom teaching, Irene says, "…I am not sure what to do if the system breaks down." This was revised to, "…I am not sure what to do if the system breaks down in the middle of the class. What will school leaders think of my teaching if students' achievement in the final examination falls after using IT2020?" This reflects people's feeling of uncertainty about change, the Large Power Distance and the Chinese culture of examination.

In the people sheet (See Appendix E), Carol, who is resistant to the new change from the top, was described as follows: "Carol wonders why such a

radical change is needed given the system's past success. She didn't vote to hire the new Superintendent and does not support his purchase of IT 2020." This was revised to, "…Before the new director came, Carol was one of the people recommended to be the director. However, she was passed over in the end. She has some disagreements with the new director. And she wonders why such a radical change is needed given the district schools' past success. She does not support his purchase of IT 2020." The reason for this change is based on the fact that, in the Chinese cultural context, even if people do not agree with their leaders, they seldom express this disagreement in public.

Cultural adaptation for the majority of the simulation content and materials was made during the contextual revision. The revised content, including the entire simulation content and overview, information about people and activities, and evaluation instruments, were translated into Chinese.

4.2.1.2 Cultural and Organizational Adaptation

The cultural and organizational adaptation constituted the most important part of the program revision. Besides the results from the literature review, small-scale qualitative study and practical input from school leaders, in order to guarantee the quality, reality and efficacy of the revised Chinese version, the researcher also referred to the three versions of the simulation used in the U.S. (Network Inc., 1999), Thailand (Hallinger & Kantamara, P. (2000c), and South Korea (Song, 2003).

The researcher looked for broader and deeper knowledge about change theories and principles both in Asian and Western countries and the different cultural features embedded in the simulation. She tried to refine the simulation without losing its original essence. In the following section, she will explain how the simulation was revised and adapted to the Chinese culture with examples based on the literature review, small scale study and input of school leaders in practice.

Organizational adaptation. Compared to the original organization infrastructure (See Figure 3), which consists of Head Office, including Carol and Dave from the school system's Board of Trustees as monitors if this project, Beth—the Assistant Director, Al--the Regional Director of Education, and two trial schools with Primary School Principal Eve and Secondary School Principal Owen and staff from these two schools, there are some differences in people's positions and roles in the revised version, made according to the context of the Chinese school organizational structure.

For example, in China we do not have a Board of Trustees in the school district. However, we have an Administrative Leader Committee in the City or District Education Bureau. What's more, we have another special educational organization in China, which is the Town-Level Education Guide Centre.

In the history of education development in the new China since 1949, this Town-Level Education Guide Centre was set up to deal with the vast geography and large population in China. It has played a key role in teaching guidance and school management in primary and secondary schools at the town level. It is still maintained at present and has a great impact on school

management and change. Therefore, people's roles in the simulation were changed as shown in the following chart (See Figure 5).

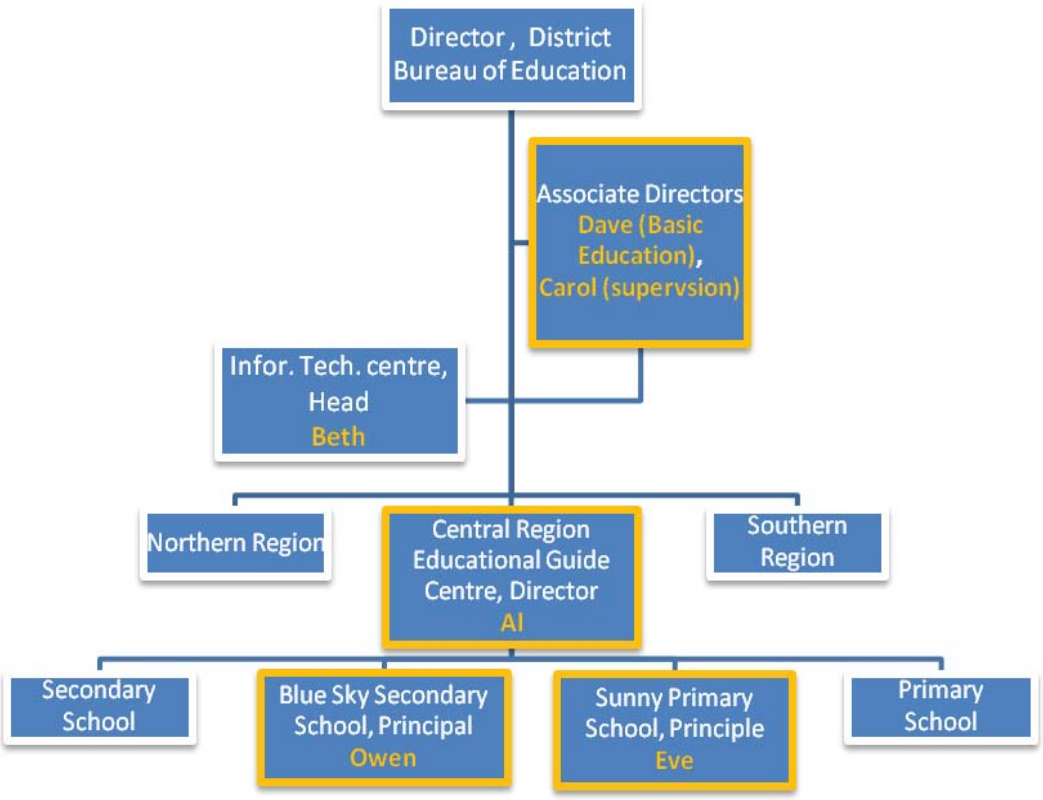

Figure 5: Organizational Chart of Evergreen District Educational Bureau

As shown in the above chart, the Head Office consists of two Associate Directors–Dave (Basic education) and Carol (Supervision); the Head of the Information Technology Center in the District Bureau of Education, Beth; the Head of the Central Region Education Guide Centre, Al; two trial schools principles, Primary School Principal Eve and Secondary School Principal Owen, and some staff from these two schools.

Cultural adaptation. The revision of the cultural adaptation included five major parts: (a) people descriptions, (b) feedback dialogue, (c) some

change activities, (d) people movement and (e) bits/bennies. In the following section, each part of the revision is briefly described with the school practices from the interview results and implications from Hofstede's (1983, 1991) cultural dimensions.

Revision of people descriptions. The revision of the people descriptions included some people's office roles and information based on the present school system in China (See Figure 4). For example, Al's office role as "Central Region Director" was changed to "Director of Central Region Educational Guide Centre", because, as shown in the organizational chart, most primary schools and secondary schools are directly under the Regional Education Guide Centre in China.

Given that educational management in each district in China is independent of the City Education Bureau in personnel appointment and finance and the District Education Bureau can make educational policy without the city's leaders' permission, two Board Members, Carol and Dave, were changed into Associate Directors appointed by the District Education Bureau as the project monitors representing the supportive and resistant parties respectively in the high positions. Beth's office role of "Coordinator, Central Office" was changed to "Head of Information Technology Centre, District Education Bureau".

Fern in the primary school's office and Pat in the secondary school's office roles as Assistant Principals were revised to be Associate Principals. Few schools in China have assistant principals. Instead, every school must have two associate principals, one in charge of moral instruction, reflecting the idea that

"moral instruction is the priority" in school work in the Chinese new curriculum (MOE, 2011), and the other in charge of instruction.

Also, we have the School Office instead of the Community Liaison Office in schools in China. Therefore Mia, the Learning Resource Teacher, was revised to the Information Technology Teacher. In addition, the "Science Department Head" was changed to the "Political Section Head" and the "Social Studies Teacher" to "Registry Office, Head". Thus, the revisions of some people's office roles based on the present school system in China and Chinese culture are synthesized and displayed in Table 12.

Table 12: Revision of people's office roles, information

People's office roles, information	Office roles in Asian School version	Revised roles in Chinese version
Al	Central Region Director	Director of Central Region Education Guide Centre
Beth	Coordinator, Central Office	Head of Information Technology Centre, District Education Bureau
Carol	Board Member	Associate Director (Education Supervision), District Education Bureau
Dave	Board Member	Associate Director (Basic education), District Bureau of Education
Fern	Assistant Principal, Primary School	Associate Principal, Primary School
Mia	Learning Resource Teacher	Information Technology Teacher
Nora	Parent	Head of School Office
Pat Q..T.	Assistant Principal, Social Studies	Associate Principal, Section Head of Politics

	Department Head	
Ray	Language Studies, Department Head	Section Head of English
Upton	Social Studies Teacher	History Teacher
Velma	Science Department Head	Registry Office, Head
Will	Language Teacher	English Teacher

Revision of people feedback dialogue. In the game board of the simulation, there are 24 staff members involved in promoting the new learning technology, IT 2020. They represent many levels across two schools and the central office (see organizational chart in Figure 4).

Rogers' (2003) Adopter Type Categorization proposes five adopter type categories each with a specified percentage of respondents: (a) innovators (2.5%), (b) early adopters (13.5%), (c) the early majority (34%), (d) later majority (34%), and laggards (16%). There has not however been any relevant research data on adopter type categories in Chinese schools until now. Therefore, the researcher retained this classification and the related percentages in the Chinese version of the simulation. Based on Rogers' adopter categorization, the 24 staff members in the simulation were classified into five categories, each with a unique profile that was conveyed through a brief description on the People Sheet (see Appendix E).

However, in order to make the scenario more close to reality, the researcher changed some people's feedback and the dialogue provided in response to activities to reflect the Chinese cultural features of large power distance, uncertainty avoidance, collectivism, Confucianism, and examination

orientation, as well as other Chinese customs which have a deep impact on education and school change as explained in the literature and empirical research. These revisions will be displayed in Table 13-15.

Revision on feedback dialogue for the large power distance. Although democracy has been proposed in management in China for a long time, the cultural feature of large power distance or bureaucracy still dominates in most organizations in China. Chinese schools epitomize Chinese society. Chinese schools are is no exception. For example, in the original version of the simulation, when the team Talks To staff, there are many questions and a fair amount of overt resistance is expressed. This is not a likely scenario in Chinese schools.

However, in the Chinese version, staff ask fewer questions but give more compliments and the tone of resistance is not so hard and overt; this is quite similar to the Thai version (Hallinger & Kantamara, 2000c). The responses reflect the cultural tendency towards subordinates' respect for and obedience to those at the top. On the other hand, leaders' support is critical and necessary to foster change because they have great power to decide the change initiation and implementation as well as the distribution of finances and personnel. Even the associate leaders can only follow the head.

Revisions to the Chinese version of this simulation reflect these cultural features. For example, the original card PR8 (one of the random cards responding to the implementation of Policy revision) reads: "…Although Carol puts up a fight, Dave makes a persuasive presentation." However, even though Carol is an associate director in the District Education Bureau, given the culture

of large power distance and Confucianism in China, it is rare for a leader to ‘put up a fight’ in a meeting or in front of an upper leader. The same issue arose in cards PR2, PR4 and PR6. This cultural tendency was reflected in the revision of the feedback dialogue and activities. More examples are shown in Table 13.

Table 13: Revisions of Feedback Dialogue for Large Power Distance Culture of China

Item (feedback card)	Asian School Version	Chinese School Version	Rationale
3a	'Nice talking with you.'	"We will have something new to do now. But, you know I always support any changes to improve school performance from the top!"	Acceptance of power and authority; subordinate’s compliment, respect and obedience to the top.
3b	'You have my full support.' However, since Al doesn't seem very enthusiastic about IT 2020, she isn't sure what to do to help you get things started in the region."	However, since Al seems uncertain about IT2020, she doesn't want to take the initiative. She is going out of town for a few days on business, so she asks you for a report when she gets back. “Contact my staff if you need any assistance.”	Large power distance, respect and obedience to the top.
3o	“…but I really don't know much about computers.”	“…Is Al supporting this project?...”	Large power distance, implicit, mean attitude.
4i	“You know, I've already heard that there may be a budget cut for IT2020. What	“I've heard that some leaders are not so supportive about the IT 2020 project and there may be a budget cut for	Large power distance, implicit information about leaders.

	will that do to the project?"	IT2020. Is that true?"	
4p	"By the way, is it true that the proposal to expand the use of IT 2020 to other schools will be defeated at the next Board Meeting?"	"By the way, is it true that leaders in District Education Bureau have different views about the proposal to expand the use of IT 2020 to other schools?"	Large power distance, implicit information about leaders.
W4	"However, there is flooding and people can't get to the workshop so it is cancelled."	"However, as there is a temporary inspection from the top, it is cancelled."	Large power distance, respect and obedience to the top.

Revisions on feedback dialogue for uncertainty avoidance and collectivism. According to the literature review, uncertainty avoidance and the collectivist culture of China also influence people's attitudes and performance during the implementation of change. With a culture of uncertainty avoidance, Chinese people are not so confident about the future of change. When change comes, they tend to wait and see and remain conservative. This cultural feature is quite similar to those in the Thai and Korea versions of the simulation. As a result, examples or rumors of some failed changes are often used as evidence to stop the implementation of the change, no matter whether the cause of the failed change is the change per se or bad management, individual actions or organizational problems. Therefore, in order to reflect this cultural dimension, I

revised the feedback dialogue accordingly, for example in 3b and 3n (See Table 13).

Another revision involves the Chinese collectivist culture. Although the culture of collectivism in China has been eroded in the past decade, Chinese people are still not used to seeking the limelight and acting differently from others. Chinese tend to work in groups, especially when practicing new things. When some achievements are gained, people tend to attribute their success to support from leaders, government and other organizations. Also, the findings of the small scale study confirmed that mid-level leaders, such as associate principals and section heads in schools, play a critical role in supporting principals to lead change. Their attitudes and practices towards the new change can help to impact other teachers and also they may act as coaches to help staff in practice. Mid-level school leaders are considered to be principals' right-hand men in teamwork for leading school change. This is also one of the strategies successful principals practiced in leading school change (Tang, Lu & Hallinger, 2014). On the other hand, this is also a matter of responsibility decentralization. Examples of revisions of feedback dialogue to reflect the collectivist and uncertainty avoidance culture of China are shown in Table 14.

Table 14: Examples of Revision of Feedback Dialogue for Uncertainty Avoidance and Collectivist Culture of China

Item (feedback card)	Asian School version	Revised Chinese version	Rationale
3c	"I'm not sure if the Board will continue to fund	"… I'm not sure if this software is suitable for our school system. We should be	Uncertainty avoidance, high resistance to

	this or not. TT&I should have gotten the contract for software development, not HI-Tech International."	more cautious about that." He also accepted your invitation to dinner with the principals in two pilot schools.	change in a higher position.
3i	"I am not sure what to do if the system breaks down."	"I am not sure what to do if the system breaks down in the middle of the class. What will school leaders think of my teaching if students' achievements in the final examination fall after using IT2020?"	Uncertainty avoidance, high stress from the high-risk examination.
3n	"Can they use the technology in school if we don't have a computer at home?"	"Let me look at it first. If it's easier to learn than the last one, I'll talk to my colleagues about it."	Uncertainty avoidance, collectivism.
3r	"Have you spoken with the other department heads yet? What about Owen?"	"Have you spoken with the other department heads yet? What are their attitudes? What about Owen?"	Collectivism, Not wanting to stand out in the crowd.
4c		'What's more, I heard that other school systems are having problems with IT 2020. They are not using it anymore."	Uncertainty avoidance.
4e	…and has begun talking to others….	…has also begun to talk about the project to her middle leaders…	Collectivism, role of mid-level school leaders in leading change.
4j	"I really think that we should give it a	"I've started to talk to other staff about this. Some of us	Uncertainty avoidance,

	shot. But don't be too optimistic; it's going to take time."	really think that we should give it a shot. But they wonder how long it will take to bear fruit."	collectivism.
4p	"…is it true that the proposal to expand the use of IT 2020 to other schools will be defeated at the next Board Meeting?'	"…is it true that leaders in District Education Bureau have different views about the proposal to expand the use of IT 2020 to other schools?"	Large power distance, uncertainty avoidance.
4x		"What's more, what will students do if some of them don't have computers at home?"	Additional sentence- Uncertainty avoidance.
10a		"Some teachers in non-pilot schools begin to ask when the program will be expanded to their schools."	Additional sentence to show the nature of the collectivist in China.

Revisions on feedback dialogue for other Confucian elements. As mentioned in Chapter Two, Confucianism lies at the core of Chinese culture, with its central value of moderation —doing everything with compromise and being harmonious with the rest of the world (Luo, Kai & Yang, 1995; Zhang, 1989). Obvious conflicts with others are always regarded as signs of a bad attitude and performance when people have different opinions.

Implications of this traditional culture can be easily found at the start stage of change, such as 'waiting to see' and being afraid of being 'too outstanding'. That's also the reason why change can be easily suggested and

begun, but no real action or productivity happens or only slow progress can be made later in the process (Hallinger, 2010). So, in order to maintain a harmonious state, building good relationships with others in daily life and in school work is still given a high value in China. The moderate attitude in Confucian culture is absolutely treasured.

In addition, Chinese culture tends to be more short-term orientation than long-term orientation, as said before. For example, in an "examination-oriented culture", the Chinese are more and more impatient to see quick results and wish to make quick gains in student academic achievement. Although the new curriculum which promotes quality education has been mandated in China for more than ten years, the examination-oriented culture has not changed and is even emphasized more than ever before.

Thus, student examination scores are given priority in evaluating the quality of classroom teaching and school performance. Even when teachers are told that the use of IT2020 can improve students' communicative competence, student performance in the final examination is always the sole and authoritative standard for evaluating schools, teachers and student achievements. That's why students' study loads are even heavier than before. An examination-oriented culture is often regarded as the stumbling block in the way of school change.

Table 15: Examples of Revision of Feedback Dialogue for Confucianism and Examination-Oriented Culture of China

Item (feedback card)	Asian School Version	Chinese School Version	Rationale

3i	"I am not sure what to do if the system breaks down."	"I am not sure what to do if the system breaks down in the middle of the class? What will school leaders think of my teaching if students' achievements in the final examination fall down after using IT2020?"	Additional sentence to show uncertainty avoidance, short-term orientation and examination culture.
3k	…When you ask if he would like to see more information, he replies, "No, you've answered all of my questions. If I need more information, I'll get in touch with you."	…When you ask if he would like to see more information, he replies, "No. If I need more information, I'll get in touch with you."	Cancel the sentence, "You've answered all of my questions" to show people's compromising attitude to the change.
3p	Pat says, "It's interesting and I'm sure it will be a great success. I'm very busy right now with three students who've been fighting…"	Pat says, "It's interesting. But I'm very busy right now with three students who've been fighting."	Cancel the sentence "I'm sure it will be a great success" to show people's compromising attitude to the change.
3q	Q.T. says, "I understand we all have to use this. Is that correct? I	Q.T. listens and then responds. "I understand we all have to use this. Is that correct? But I am afraid it will slow down our	Uncertainty avoidance, short-term orientation and examination culture.

	believe this will be a good thing for the math department.'"	teaching process."	
3s		"If IT 2020 could be really helpful to improve students' Math performance in the examination, could it be acceptable for teachers?"	Additional sentence to show uncertainty avoidance, short-term orientation and examination culture.
3x		"…and they also worry that this would influence their examination results in the future."	Additional sentence to show uncertainty avoidance, short-term orientation and examination culture.
4c	"…I hate to see you…."	"I don't agree with you …..What's more, I heard that other school systems are having problems with IT 2020. They have stopped to use it anymore."	Compromising attitude to avoid direct conflict between people, uncertainty avoidance,
4k	"…Why don't you feel better about it?..."	…He says, "This IT project is a great idea." Then he walks away. You are not sure if he is for it or not.	Additional sentence to show compromising attitude.
4w	"…Do stop by and see me anytime."	"…By the way, shall we get more bonuses by doing this extra work?"	Short-term orientation
13b	You don't have enough support to get people to participate in	You have Al's support, but as teachers are not so satisfied with their students' achievements in the final exam, not enough	Short-term orientation

	planning such a major event. You need to involve people after more of them are already using IT 2020.	of the staff are willing to participate in this major event. You need more evidence of good results from using IT 2020 before planning an event to share and celebrate its use.	
13c	Key administrators, staff from other schools, Board Members and parents come. They're impressed by student and staff enthusiasm and results.	Key administrators, teacher representatives from other schools in the Central Region, and Board Members come. They're impressed by student and staff enthusiasm and amazed by results from using IT2020 in the classroom.	Examination-oriented culture
13d	While the first Theme Week Celebration was a success, in an early planning meeting you realize there isn't staff support for another one yet.	Some progress has been made in using IT2020 in the classroom, but it is too soon to organize such a large event as this.	Short-term orientation
SR2 (Software Revision2	Carol is angry at the resources that	But Carol questions its worth and the effort invested in the IT2020	Avoiding direct conflict between people, modesty.

)	have gone into IT 2020 already. You respond with facts on how IT is helping the schools' effectiveness. People listen and you get good publicity.	revision. You respond with facts on how IT is helping the schools' effectiveness.	
SR4,SR6, SR8 (Software Revision2 ,6,8)	Although Carol fights your proposal to invest in software revision, Dave stands up and makes a persuasive presentation. He says, 'This is not a time when we can let disagreements over details stop new opportunities for the school.' He gets strong applause and the plan to invest in revising the software is	Although Carol questions your proposal to invest in software revision in the following-up discussion, Dave makes a persuasive presentation and says, 'Evidence shows that IT2020 has helped improve students' outcomes in these schools. Can we give more opportunities for the school to develop at this time?' Then the Director suggests voting for investing in revising the software. At last, the plan to invest in revising the software is approved by two thirds of the Board.	Avoid direct conflict between people Modest. Examination Culture

	approved."		
PR1 (Policy Revision1)	Your proposal is met with hostile questions from parents.	The Director has received complaint letters from some parents about their children's worse results in the examinations when using IT2020 in the classroom.	Short-term orientation, examination-oriented culture
PR2 (Policy Revision2)	…Carol is angry at… People listen and you get excellent publicity.	…Carol questions…	Avoiding direct conflict between people, modesty.
PR4,PR6, PR8 (Policy Revision2 ,4,6)	…Carol puts up a fight,… He says, 'This is not a time when we can afford to let disagreements over details hold back opportunities for our schools.' He gets strong applause and the plan is approved.	…Carol objects…. He says, "Evidence shows that IT2020 has helped improve students' outcomes in these schools. Can we give more opportunities for the school to develop at this time?" Then Director suggests voting for investing in revising the software. At last, the plan to invest in revising the software is approved by two third of the Board.	Avoiding direct conflict between people, examination-oriented culture.

These Chinese cultural features were reflected in the revision of the feedback dialogue. Examples of revision of the feedback dialogue for

Confucianism and the examination-oriented culture of China are shown in Table 15.

As an Asian country, Chinese culture has more similarities than differences with other Asian cultures regarding features such as large power distance, uncertainty avoidance and collectivism, which were already present in the Asian School version of the simulation. Therefore, except for the revisions to the people's descriptions and the feedback and dialogue mentioned above that were made to emphasis some special Chinese cultural features and differences from other Asian countries, most of the contents of the simulation were kept the same to retain the original meaning and function of the simulation.

Although the researcher tried to reflect the different cultural tendencies of China as seen in Hofstede's(1983, 1991) dimensions through the revisions to the people's descriptions and the feedback and dialogue, it is impossible to convey all the differences in the revised content because many contextual changes lose their subtlety when they are translated back into English. Therefore they would be difficult to report in this paper.

Revision of change activities. There were a total 18 activities in the original Asian School Version of the MCH™ program. Based on the results of the literature review, the small scale qualitative study and the response of principals in the focus group interviews, one activity was canceled, three activities' names were revised and replaced with other names, and two new activities were added to the Chinese version to make the activities more realistic and close to the context and practices of Chinese schools, as shown in Table 16.

Besides the revision of the names of some activities, partial functions of some activities were also changed in the Chinese version simulation. These activities needed to be more specifically identified for the Chinese school context and formal procedures needed to be included during the change implementation. More detailed description of the modifications and rationale to support the changes are presented in the following section.

Table 16: Summary of the Revised Activities' Names in the Chinese Version of the Simulation

Activities' Names in Asian School Version	Revised Activities' Names in Chinese School Version
Advanced Workshop	Canceled
Classroom Lesson	Classroom Implementation
School Technology Fair	School Open Day
Regional Theme Week Celebration	Regional Summary and Commendation Meeting
Added two new activities	a) Open Class b) IT2020 Classroom Teaching Competition

IT2020 Demonstration. At the initial stage of change, schools usually invited some experts or experienced teachers outside of the school to give model lessons—to demonstrate how to implement the new change in classrooms for teachers. In order to communicate with students as well as parents the advantages of the change for improving student's achievements, sometimes some parents are invited to attend this demonstration as well. However, this kind of demonstration is mainly for teachers to learn about how to implement the change in classroom teaching. So some words were changed as shown in Table 16.

Workshop. Teacher training for improving teacher's quality and professional development in China has been more emphasized and invested in more than ever before in recent years. Although in the original version of the simulation, there are two workshops to train teachers for the change, the descriptions focus more on practical use and hands-on training for those who are already interested in and ready for the change. Therefore, in order to inform teachers more about the rationale for and principles of the change and equip them with richer knowledge and practical skills about the change, in these kinds of workshop, the contents and purpose should include the knowledge base, the rationale, and the approaches, implementing procedures and strategies for the change. Accordingly, the activity description of the "Workshop" was modified in the Chinese school version as shown in Table 16.

Advanced workshop. Advanced Workshop activity was deleted from the simulation. In the original simulation, the activity of "Advance Workshop" is described as "Advanced strategies for applying IT 2020. Training designed to encourage discussion of alternative applications of IT 2020 to improve teaching and learning. Choose five people from one school." However, these functions can be covered by the revised activities of the "Workshop" and some follow-up activities such as "Follow-up Help", "School Open Day" and "School Support Group". So, in the new version, this was deleted and replaced with a more suitable activity.

School Technology Fair. This was replaced with "School Open Day". Every year, some schools, especially key schools with outstanding performance, have their school open day or open week in China, which usually lasts for one

to five days. In the School Open Day, teachers in or outside of the district are free to visit the school and go to observe any lesson.

Usually, some good teachers' lessons are recommended as Recommending Lessons for observation. After the lesson, there are usually some lesson evaluation meetings, in which lesson observers can express their opinions about the lesson and ask some questions about classroom teaching. By this means, the progress and achievements are presented and reviewed in the School Open Day or Week. This also provides good opportunities for schools and teachers to reflect on and sum up what they have done in implementing the change for further improvement. This event is usually initiated by a school instead of by an individual.

Regional theme week celebration. This was replaced with "Regional Summary and Commendation Meeting". In Chinese schools, when a change is adopted and certain goals are reached after a period of time, a period summary and evaluation is necessary for the next stage improvement. This activity includes program summary, evaluation and commendation.

In this meeting, experiences are summed up and some distinguished teachers who have implemented the change successfully are recognized and honored. This recognition and modeling can stimulate the interest and motivation of other teachers. It includes the function of reviewing achievement at the pilot schools in addition to celebrating success. The evaluation included collecting internal opinions at the schools, making an effort to attract people's interest in IT 2020 internally and externally, and reporting evaluation results to

share stories of successes and challenges, and advantages and disadvantages, of the program as well as suggestions to improve the program.

Add two new activities. In the original simulation, the 18 activities are essential to the process of change and appreciated in most contexts. However, some features of practice in Chinese school change were not included. Therefore, in order to reflect the characteristics of Chinese schools in the process of change, I added two activities: "Open Class" and "IT2020 Classroom Teaching Competition".

Open Class. In Chinese schools, the Open Class is popular in school-based and region-based teaching research activities which are often organized once or twice a month. It is something like a lesson demonstration. However, teachers who give lessons are often selected inside the school or region. These teachers are regarded as qualified and excellent teachers in the school who can be role models for other teachers in classroom reform. We usually have Young Teachers Open Class and Regional Open Class or School Open Class. Those who have given Open Class are awarded with a certificate as proof of their capacity. These certificates are valuable in assessing teacher academic titles. Open Class is considered as a way to set up role models and train new teachers as well. Therefore, in the process of change, Open Class is necessary to foster those who positively respond to the change and perform well in implementing the change. It is also a strategy to stimulate other teachers.

IT2020 Classroom Teaching Competition. "Improving teaching through competition" is very popular and has a long history in Chinese schools, especially when a new teaching method or new educational change is

implemented in the school or district. Teaching competitions are commonly employed as strategies and tools of propaganda for a new change rationale, provide the method and criteria for evaluation of a new change and foster teacher understanding of the change and their abilities to implement it in practice as well. This kind of activity is usually organized once a year. It is also regarded as a good way to find some excellent teachers who can implement the change successfully to set examples for other teachers. The winners are also rewarded by bonuses and certificates. The revision of the activities' description is synthesized in Table 17:

Table 17: The revision of the activities' descriptions for the Chinese version simulation:

Activity Items	Asian School Version	Chinese School Version
IT 2020 Demonstration	An on-site demonstration of IT 2020 for school staff. Following the demonstration, a demo model is left on display so it can also be viewed by parents and students. Designate whether the demonstration is at the primary or secondary school.	An expert or experienced teacher outside of the school is invited to give an on-site demonstration of IT 2020 for school staff. Following the demonstration, a demo model is left on display so it can also be viewed by parents and students as well as teachers. Designate whether the demonstration is at the primary or secondary school.
Workshop	How to use IT 2020 in the workplace.	A workshop is organized to help teachers have better knowledge and understanding about the theory and

	Hands-on training designed to promote the ability to use IT 2020 in teaching. Choose five people from one school.	implementation of the change. Meanwhile, hands-on training is designed to promote the ability to use IT 2020 in teaching. Choose five people from one school.
Open Class	(New Activity)	A teacher at this school offers a series of 3 Open Class sessions to model the new classroom techniques for colleagues. Each Open Class is followed by a discussion on how to use the new methods and also on problems and obstacles to using them. Select 4 teachers to attend.
IT2020 Classroom Teaching Competition	(New Activity)	IT 2020 Classroom Teaching Competition is held in the school to foster teachers' understanding of the change and their abilities to implement it in practice. The winners will be identified as "IT2020 Classroom Teaching Experts" in the school and are also rewarded by bonuses.
School Technology Fair--School Open Day"	A staff initiated fair that shows off the advantages of IT 2020. It's open to students, staff, and also to parents. Designate Secondary or Primary School.	A school-initiated Open Day that shows off the process of change implementation and the advantages of IT 2020. It's open to other schools and teachers in or outside of the region and district. Designate Secondary or Primary School.
Regional Theme Week Celebration—Regional	A major event showcasing how staff in the pilot schools are using	A major event to sum up the experience of implementing the change and commend teachers in the pilot schools who have used IT 2020 to

Summary and Commendation Meeting	IT 2020. Staff, parents, and the media throughout the region are invited to stop by during the week to participate.	improve productivity at the end of the year. Teachers from other schools in the Central Region and the media throughout the district are invited to participate.

Revision of people movement, bits and bennies. Another form of adaptation concerned the underlying decision rules governing player movement on the gameboard. Here the research on change in Chinese schools was considered in terms of the need for adaptation of decision rules in the simulation. Several changes were made.

People Movement. In total there are five phases of the change process on the game board of the simulation: Information, Interest, Preparation, Early Use, and Routine Use. Each of the phases has three or two moves (spaces) staff would pass through during the process. There are a total of 16 moves on the game board. The speed of the movement represents staff's speed of accepting and implementing the change. The theory of the speed of people's movement is based on Rogers' (2003) categories of Adopter Types and the percentage of each distribution in the process of change as shown Table 18.

As there is no new evidence-based study of the categories of Adopter Types and the percentage of each distribution in the process of change in China, the present study maintained these categories and their distribution in deciding people's movement in the process of change. What's more, the new Chinese simulation version in the present study was modified from the Asia School

Version Simulation, and there are more similarities than difference among the cultural features of the respective target Asian countries. For example, as an Asian countries with a large power distance, a bureaucratic working style (people's acceptance of the authority) and uncertainty avoidance are deeply rooted in Chinese school organizations. The Chinese are inclined to follow top management decisions when they deal with uncertainty. Especially at the initial stage of change, the tendency to accept authority and obey the top-down policies and management decisions is strongly observed in Chinese schools.

Table 18: Rogers' categories of Adopter Types and the percentage of each distribution in the process

Adopter Types	Percentage	Movements	Rationale
Innovator	2.5%	8	Innovators adopt the change fast as role models.
Early Adopter	13.5%	6	Early Adopters adopt the change faster as role models than the Early Majority.
Early Majority	34%	1-2	Majority adopters, especially for some mid-level school leaders, accept authority under uncertainty within the organization.
Late Majority	34%	1	
Laggard	16%	0	Fewer resistors. Resistors remain at the early stage.

In most cases, to start a change is much easier in China than it is in Western countries. As some interviewees in the focus group interviews revealed, "There is no big problem to start a change in our school. It is easy come, easy

go. We start a new change almost every year. The problem is how long it can last." From this aspect, except for some revisions to the descriptions of people's response in the first "Talk To" activity, there were no changes to people's movements, except for the two new activities of "Open Class" and "Classroom Teaching Competition", in which people move one or two spaces if they successfully implement the activities.

*Bits***.** In the original simulation version, there are amounts budgeted for the change team to spend on activities of change for each year over a period of 3 years. These are expressed in units called "*bits"* of resources (time, money, effort, materials, etc.). The amount of the budget during Year One is 35 bits, 30 bits in Year Two, and 25 bits in Year Three. In total, there are 90 bits in the original version. However, these total bits do not remain at the same level; they can be reduced and added according to the changes in activities.

In the Chinese version, based on the feedback from the principals in the focus group interviews, the researcher revised the costs of some activities. For example, compared to a School Visit, which would require a sum of money and energy for organizing teachers to visit other schools out of the district in terms of travel, board and lodging, the activity of Workshop, which is often held at the school, would cost less. Therefore, in the new version of the simulation, she decreased one bit from "Workshop".

It was the same with the activities of "School Support Group" and "Regional Summary and Commendation Meeting". However, in the activities of "Follow-up Help" and "School Open Day" (School Technology Fair in the original), the researcher increased 1 bit respectively to each of them to indicate

the greater expense of these activities. At the same time, 4 bits were added to the new activity of Open Class and 6 bits to IT2020 Classroom Teaching Competition. The revised costs of some of the activities for the Chinese version simulation are displayed in Table 19.

Table 19: Summary of the Revisions to the Cost of Activities

Activities Names	Costs in Asian School Version	Costs in Chinese School Version
1. Workshop	5 bits	4 bits
2. Follow-Up Help	1 bit	2 bits
3. School Open Day (School Technology Fair in original)	6 bits	7 bits
4. Regional Summary and Commendation Meeting (Regional Theme Week Celebration in original)	8 bits	7 bits
5. School Support Group	4 bits	3 bits
6. Open Class (new activity)		4 bits
7. IT2020 Classroom Teaching Competition (new activity)		6bits

Bennies. "Bennies" refer to student benefits generated from activities. The amount of Bennies or Benefits the team accumulates indicates to what extent they successfully implemented change in the organization. That means the activities the teams implemented could not only successfully foster change among staff, but also improve student learning outcomes.

Based on the results of the literature review and empirical studies, at least two or three years are needed to yield change outcomes in Chinese schools. Especially in education, there is no short-cut or quick success in school change

(Fullan, 2007). Although some changes would happen over a short period of time after initiating a change project, this kind of change is only superficial and does not represent real deep change. Compared to Western countries, in China, when change is initiated by administrators, the pace of change may be faster in the early stages. Due to the high power distance, staff may be under greater obligation to show a positive response to mandated change.

However, there is no significant difference for the total period of time required for the process of real change between countries (Fullan, 2007). Therefore, the time segment of the change 'Year' in implementing innovation was maintained in the Chinese version of the simulation. Although the descriptions and some costs of activities were revised to reflect the features of the change in the Chinese version simulation, the number of bennies remained the same as in the Asian version except that some bennies were added to the two new activities of "Open Class" and "Classroom Teaching Competition" as displayed in Table 20.

Table 20: Summary of the Revisions to the Bennies of Activities

Cards	Names of the new activities	Bennies in Chinese School Version
19d-1	Open Class	100 bennies
19d-2	Open Class	50 bennies
20c-2	Classroom Teaching Competition	100 bennies

It should be noted that the decision rules underlying player movement throughout the stages of the change process are interconnected. That means

change in one decision rule could have an unintended but potentially important impact on another dimension of the simulation. For example, the "Talk To" activity for different staff may yield different responses and subsequent movements. In the original version of the simulation, the "Talk To" activity is not only used as a means of informing people about IT 2020, but also as a means of finding out staff perspectives on the change. When the teams talk to individuals, their responses and subsequent movements are linked to their adopter types.

For instance, the innovators may move three spaces, leaders two spaces, the majority one space or laggards and resistors not at all. Therefore, though some revisions of people's positions, activity names and descriptions were made to reflect the Chinese culture, the theoretical integrity of the simulation was maintained and its internal coherence was not damaged. In sum, compared to the revisions of the people's descriptions, the feedback dialogue and some of the change activities, the revisions of the people's movements and the bits/bennies were much slighter.

4.2.2 Technical Revision of the Simulation

Having finished the conceptual and practical adaptation of the simulation, the last step of the revision was the technical revision. This was made to complete all the content revisions in the program were embedded in the computer simulation. This phase included text changes in each stage that were composed

of numerous casts, changes in behavior codes for people movement, and partial graphic refinement. As tasks in this technical revision required an advanced level of professional knowledge and skills using the software program, technical support staff (i.e., computer programmer) in the Joseph Lau Luen Hung Charitable Trust Asia Pacific Centre for Leadership and Change (APCLC) assisted in producing the working revision of the simulation.

In sum, the researcher tried to revise the Asian School Version to create a new Chinese School version of MCH™. This included contextual and technical changes that would make it more effective by reflecting the Chinese culture and school systems as well as change to the associated teaching materials used with the simulation. In terms of contextual changes, besides the translation of the simulation, the workshop materials, and the evaluation instruments, the cultural and organizational aspects of the simulation context were also revised. In the technical revision, all the content in the simulation was embedded and programmed in the computer software.

CHAPTER 5

RESULTS

In this chapter, the results from both field tests of the Chinese version of the MCH ™ simulation will be reported and the revision process based on the results will be presented as well. There are three sections in this chapter. The first section will describe the results of the Preliminary Field Test, including the participants' involvement in the workshop, the results of the formative evaluations of the Preliminary Field Test and the subsequent revisions of the simulation based on the results from the preliminary field test. In the second section, the results of the main field trial will be described. This section mainly focuses on participants' involvement in the workshop, formative evaluation derived from data on the effectiveness of the simulation and the training program used with the simulation. The last part of this section presents the final revision process through which the results and information collected from the main field test were incorporated into the final product. Then, in the third section, conclusions will be drawn from the results of the two field tests.

5.1 Results of Preliminary Field Test

The purpose of preliminary field testing was to establish the face and content validity of the new version of the simulation. Therefore, after a preliminary

form of the MCH™ Chinese School Version simulation was produced, the researcher did initial testing to check on its technical functions, the logical consequences of the movements and the accuracy of the translation of the contents. In this initial test, some minor incorrect translations and missing words were found and adaptations were proposed to the programmer. After the researcher had played the preliminary product about ten times and found no obvious errors in functions, changes of results, or text content, she concluded that it was ready for the preliminary field testing. Then a preliminary field test was conducted to test the face and content validity of the new version of the simulation. The study samples, preparation procedure, instructional process and ways to gather data to evaluate the new Chinese simulation in the preliminary field test was presented in Chapter 3. The results of the preliminary field test and the revisions to the simulation based on the results will be described in the following.

5.1.1 Participants' Involvement in the Workshop

The following section describes some participants' responses and feedback recorded during the first round of playing the simulation.

When participants started to open the simulation, it was found that they had never used FireFox as a web browser before. It also took some time to explain how to change the character encoding to Simplified Chinese. The three teams started the game at varying times.

Team 1 took about 20 minutes to read and get to know all the people's characteristics and the meaning and functions of each activity before starting the game. On the contrary, Team 2 started to click on the buttons for "Conducting" the activities without much forethought about the people and activities. Team 3 was more serious and careful before conducting any activity. What they were most concerned about was the cost of each activity. All in all, in this initial stage, all the participants in each group had heated discussions and showed great curiosity towards the game.

While playing the game, the members of Team 1 discussed and exchanged opinions more often than the other two teams. They discussed every single decision they made to implement a designated change task. However, they were more random in selecting the activities than the other teams.

Although, at the beginning of the workshop, the researcher had spent 40 minutes describing the new version of the simulation and explaining how to play, this was found to be insufficient for the participants to go through and get familiar with all the game's features and activities. The participants still could not clearly understand the rules of the simulation and how to play. So, while the participants were playing the simulation, it was necessary for the researcher to walk around to help answer their questions and observe how they used the handouts and figured out how to play the simulation.

In the short debriefing session all the participants were quite attentive and stopped to listen to the instructions carefully. After the short-debriefing, participants were more thoughtful and careful in playing the game. They demonstrated greater awareness of successful change strategies which could

move people effectively. Having had the previous experience of playing Simulation I and II and the explanations in the debriefing session and team sharing, this time, the participants moved through the last stage of the simulation more quickly.

5.1.2 Evaluation of the Chinese Version of the MCH Simulation

The following sections give summaries of the results of the surveys from both SME groups in the preliminary field test. They also evaluate the new version of the simulation.

The purpose of evaluation in the preliminary field test was to assess the face and content validity of the new version of the simulation used in a real training context. Therefore, the evaluation in the preliminary field test mainly focused on formative evaluation. Data for the formative evaluation was obtained through a questionnaire survey (see Appendix G-H) and observation.

5.1.2.1 Technical Functions

In the initial test of the preliminary product, feedback on its technical functions was mainly received from the group of research experts. The research experts' feedback on the functionality questions in the Preliminary Field Testing Survey (see Appendix G) showed that the research experts considered the simulation's technical functionality to be satisfactory in general.

Nonetheless, they also helped to identify a few technical problems with the gameboard display, the generation of pop-up pages, the accuracy of people's movements and changes in bennies and bits that needed to be improved. For example, some unreadable codes were displayed on some laptops. It may be that there were problems with the Windows 8 system or the latest version of Firefox as the simulation had worked well in the library of the Hong Kong Institute of Education. There were also a few times when some pop-up cards were overlapped during the game play. In addition, after quitting the gameboard, a webpage popped up and said: "PHP: The Strategy Record is" with nothing after that. It was also found that the buttons for "Open Class" and "IT 2020 Teaching Competition" in the second and third years could not be clicked. In addition, some other accuracy problems were identified in terms of people's movements and changes to bennies and bits. A summary of the functional problems in the simulation that needed to be improved in the preliminary field test is presented in Table 21.

Table 21: Summary of the functional technical problems in the simulation in the preliminary field test

Problems	Examples
Additional sentence	In Year 2, Written Information: feedback: Need to verify with Teresa. In Open Class: Note: Before the third Talk, you must have talked with each person twice. Select three people to talk with.
Moves(Card No. 20d)	Nobody moves when conducting the activity of "Classroom Teaching Implementation" even when the conditions are met.
Bits	The numbers of bits of 12 turned into 24 bits automatically at the end of Year 1.
Buttons	In Year 2, the button "IT2020 Teaching Competition" was empty and the buttons for both "Open Class" and "IT2020 Teaching Competition" couldn't be pressed. No bennies were increased when it was shown that 100

Bennies	Bennies should be added when implementing "Workshop" in card w6 in Year 1.

5.1.2.2 General Impressions of the Simulation

Questions1-4 in the survey for the second SME Group—Six Successful Chinese School Principals—in Appendix H were intended to obtain participants' initial feelings about the simulation. From the survey, the researcher found that all of the participants in group two expressed their feelings of surprise, curiosity and interest in the new learning tool before starting to learn about leading change with a computer simulation. They stated that this learning method was new, creative, fresh and original, and one they had never seen before in principals' training in mainland China. In answering Q2, five of the participants also expressed their feelings about this method of learning about leading change through the simulation as "marvelous", "practical", "creative", "integrated with theory and practice", and "expanding to my ways of thinking". Some comments included the following:

> When I started to play the simulation, it gave me a sense of reality as if I was implementing a new school change in our school. It is practical and relates to my real work.
>
> After learning with the simulation, I have a better understanding about the procedures of implementing school change. In playing the simulation, I can try different strategies which would lead to different results. In this way, I had more chance to practice my strategies

without any risk of waste and losing anything. It gives me more confidence to lead school change in real life, rather than just walking through the river by blindly feeling for stepping stones as I was before.

Data from the survey also showed that one principal was still confused about the 24 people's roles in and attitudes towards the change; he did not know whom to select and what to do at the beginning of the game play. He complained that it consumed quite a lot of his time and energy to play the simulation at the beginning of the game. He was still at the stage of exploring the rules of the simulation and was eager to know the best way to get the highest number of bennies. It should be noted however that this is typical of most players at the start of the simulation and was not unique to this version or the setting.

In Q3, when asked to list three adjectives that best describe the feelings about the experience of learning through this simulation, all the words were quite positive. The following were some groups of adjectives given by the principals: a) novel, multiple and practical; b) prospective, advanced and innovative; c) resemble, completed and rigorous; d) surprised, joyful and shocked etc. These positive responses on the simulation were also approved by the observation during the workshop and interviews with the participants at the tea break and lunch time.

Q4 aimed to verify whether the lessons principals gained from the simulation were consistent with the intended learning objectives. The following is a summary of the lessons the principals reflected upon after the workshop:

1. To increase the possibility of leading change successfully, at the initial stage, it was necessary to understand the basic procedure and path of school change and have a good plan for the change.
2. To make change happen, we should have a systematic scheme and try to arouse different types of people's interests and engagement in the change.
3. To save energy by reducing unnecessary expense, we should have a strong sense of the cost of time and economy and tidy up our thinking and choose the right path for the change.
4. When the strategies did not work, we should reflect and try to find out the reasons why they were not effective and prevent them from consuming costs in the next step.
5. Each change strategy was related and influenced with each other. We should have a whole plan and a good comprehension of all the strategies we choose and their relationships in leading change.
6. Proper understanding of the short term achievements was necessary to promote further change implementation.
7. Communication and gaining support from the leaders was critically important.

After a short debriefing, they had a better understanding of the rules, people and activities. Then in the second game play in the afternoon, they were clearer about how to play the simulation and proceeded faster than in the morning. This is, again, typical of other groups playing the simulation. The first time they play, much of the time is consumed learning about 'how to play' and

about the people and activities. During the second round, learners are better able to concentrate on the 'change management dimensions' of the simulation.

When they got the school staff to move and gained bennies, they were excited and encouraged. However, they still felt frustrated when some of their strategies failed to achieve intended results. As a result, their scores in the final game records after a round of three years were still not so satisfactory. The following table showed each team's game record at the end of the workshop:

Table 22: Summary of principals' game records in the preliminary field test after playing the game for a round of three years

Team No.	Bennies	Information	Interest	Preparation	Early Use	Routine Use
1	860	6	2	2	1	3
2	4160	0	5	7	1	11
3	1820	0	11	3	5	7

It should be noted that this pattern of progress among the learners was largely consistent with other groups playing the original version of the simulation. However, the combination of seeing observable progress, gaining constructive feedback on results, and challenge to achieve better results is part of what stimulates and motivates learning through the simulation. Indeed, the learners could see that making change happen is not easy and they became more interested in learning successful strategies.

5.1.2.3 Ease of Use

Questions 5-7 were used to assess the ease of use of the simulation for school leader practitioners in China. The results showed that most of the users needed only to play the simulation twice before they could understand "how to play" (i.e., not achieve a high score, but have a general feel for game). Among them, two users played only once before they knew how to play. However, one user said that he had played seven times before he could understand how to play the simulation.

As for the meaning of the buttons and labels in the simulation, half of the users found them easy to understand while half of them remarked that they had difficulties in remembering the names of most of the people as they appeared quite strange and foreign to them. They also suggested that it is more common in China to call leaders by their family name followed by their official title rather than just using their given name or whole name directly. At the same time, it was easier for users to match the titles with the roles when playing the simulation. Regarding the information in the simulation (i.e. on the response cards), all of the participants remarked that they had no problem reading and understanding them.

Besides the above comments, all of the users complained about the way they had to open the simulation. In this process, Firefox is used as the web browser. However, this software is not so popular in China at present. All of the principals felt it was too complicated to install Firefox on their computers at home. Another shortcoming in the opening of the simulation was that users needed to find the viewing menu and adjust the browsers' character encoding to

Chinese Simplified to properly display all the text. This again presented an obstacle for Chinese users.

5.1.2.4 Face Validity of the Simulation Content

The face validity of the revised simulation content was queried in both the research experts group and principals group (Q6-Q12 in Appendix G and Q8-Q13 in Appendix H). The purpose of the questions was to assess whether the simulation contents, such as the change problem, the scenario, the organizational chart, the relationships among people, the people's descriptions, the response cards and the activities, were valid in the Chinese school context. Results from both of the surveys showed that participants' answers to these questions were quite positive.

All of 12 participants agreed that the scenario, the people's descriptions and the response cards in the simulation were reasonable and resembled key characteristic of the Chinese educational reality. They felt that the organizational chart in the simulation could also represent a reasonable relationship between people in the Chinese education system. All of them thought that the change activities listed in the simulation were representative of those used in leading school change in Chinese schools. However, they suggested one or two additional activities they thought also were effective in their own schools, such as parent meetings and moral instruction.

Question 12 in Appendix G and question 13 in Appendix H contain 18 statements of change principles. The purpose of the statements was to evaluate

the principles and strategies imbedded in the simulation. In adapting the original Asian simulation for the Chinese School Version, some Chinese cultural features as mentioned in Chapter Two were taken into account, such as large power distance, collectivism, high uncertainty avoidance and Confucianism. All these Chinese cultural characteristics had permeated the new simulation as demonstrated in the statements given on the survey.

For example, statements No. 4, 7 and No.15 represent the Chinese culture of large power distance, indicating that in school change, people were used to accepting hierarchy and obeying orders from the centralized power or the autocratic, paternalistic boss. In managing school change, there were often many interventions from the senior level leaders. These cultural components had been integrated into the new Chinese simulation.

However, some change tenets valid for both China and the West that were embedded in the simulation remained the same. For example, Kotter's (1996, 2012) eight-stage process for managing change mentioned in Chapter Two and the three core leadership features identified as "setting directions, developing people, and re-design of the organization" (Leithwood ,1994) were viewed as highly applicable in China.

The face validity of the simulation content was also assessed by the participants' feedback to these statements when applied to managing change in the Chinese education context. These were displayed on the online survey (Q12 in Appendix G and Q13 in Appendix H). Results of the 12 participants' feedback on the 18 statements of the change principles are displayed in Figure 6.

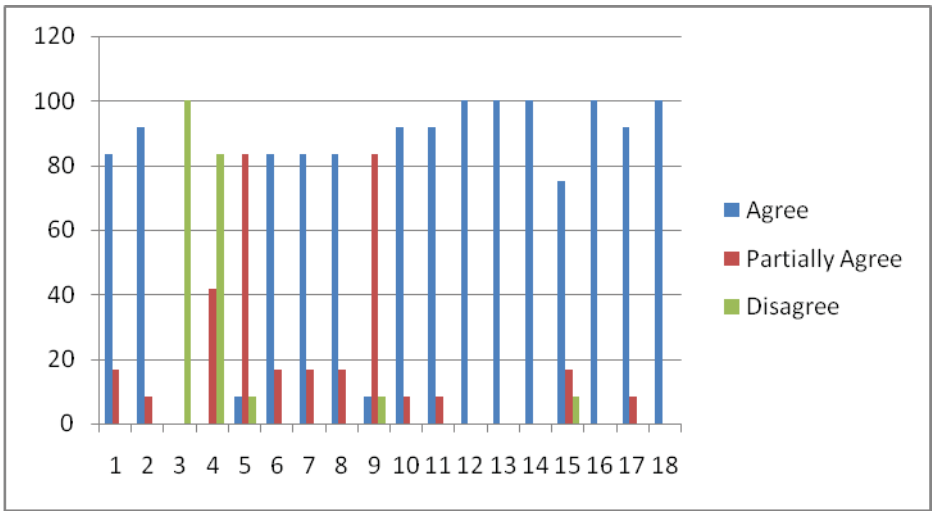

Figure 6: Percentage of the participants' agreement with the 18 statements of the change principles in the preliminary field test

As shown in Figure 6 and Table 24, all the participants totally agreed with the statements No. 12, 13, 14, 16 and 18. Also, 92.7% percent of principals agreed that the strategies of gaining a common vision for a proposed change among staff, using successful examples of change to gain the support of teachers, developing a team to lead curriculum change and publicly rewarding and celebrating successful efforts by teachers who advanced change were effective and important in leading school change. As well, 83.35% of the participants also expressed their agreement with statements No. 1, 6, 7, and 8, which related to the process and sequence of leading change strategies. The contents of and the percentage of agreement with these statements are displayed in Table 23 according to the order of the percentage of agreement.

Table 23: Percentage of agreement with the validity of simulation contents in the preliminary field test.

No.	Change Principles	Percentage of Agreement		
		Agree	Partially Agree	Disagree
12	In Chinese schools, activities such as training workshops and sharing practices among teachers are needed to bring about successful change in teacher practice.	100		
13	In Chinese schools, successful change is achieved by activities that encourage teachers to communicate with and learn from each other.	100		
14	In Chinese schools, it is effective to enable some people to change first and then use them as examples to drive other people to change.	100		
16	In Chinese schools, identifying and sharing early successes of teachers is a useful approach to support change by other teachers.	100		
18	In Chinese schools, school policies may need to be revised during the change process to adapt to new circumstances that result from the change.	100		
2	In Chinese schools, gaining a common vision of a proposed change among staff is important to achieving successful implementation.	91.7	8.3	
10	In Chinese schools, it is helpful to use successful examples of change to gain the support of teachers.	91.7	8.3	
11	In Chinese schools, developing a team to lead curriculum change is an effective strategy to win broader support from staff.	91.7	8.3	
17	In Chinese schools, it is useful to publicly reward and celebrate successful efforts by teachers who advance change.	91.7	8.3	
1	Implementing changes in curriculum and instruction can take up to 3 years before we see real changes in the practice of the majority of teachers	83.3	16.7	

	in a school.			
6	In Chinese schools, it is important to gain the widespread support of teachers in order to achieve real change in teacher practice.	83.3	16.7	
7	In Chinese schools, formal leaders such as the principal must give approval and support before engaging in major changes.	83.3	16.7	
8	In Chinese schools, persuading teachers and other school staff to support a change may require repeated efforts over a period of time.	83.3	16.7	
15	In Chinese schools, the principal should gain support from district officials when proceeding to make significant changes in the school.	75	16.7	8.3
5	In Chinese schools, informal leaders are an important source of influence on their colleagues about whether to support a change in the school.	8.3	83.3	8.3
9	Chinese teachers who are slow to adopt new teaching methods may respond positively after they see that their colleagues have adopted the new practices.	8.3	83.3	8.3
3	In Chinese schools, all teachers will adopt a change such as a new teaching approach at the same speed.			100
4	In Chinese schools, the principal only needs to order teachers to change their teaching method, and they will do so.		41.7	58.3

As shown in Figure 5 and Table 23, 83.3% of the users agreed that, in Chinese schools, formal leaders such as the principal must give approval and support before engaging in major changes and 75% agreed that, in Chinese schools, the principal should gain support from district officials when proceeding to make significant changes in the school. Compared to school

principals, educational administrators in the district have less direct control over school change according to the new curriculum reform policy. Even the strong autocratic, paternalistic statement No. 4, "In Chinese schools, the principal only needs to order teachers to change their teaching method, and they will do so", received 41.7% agreement from the participants.

Results also showed that users totally disagreed with statement No. 3, which is a reversely phrased statement. The results indicate that Rogers' (2003) categories of Adopter Types may also be suitable in China though, due to large power distance, more teachers might respond initially more quickly to mandated change in school change. In conclusion, the contents and principles imbedded in the new simulation were valid, as least at face level, since the actual validity needs to be tested in practice in the future study.

5.1.2.5 Usefulness of the Simulation

Question 14 in Appendix H was used to provide an overall assessment of the product by asking participants' opinions on the strengths and weaknesses of using the simulation to learn about leading school change compared with alternative approaches they had used in the past.

In their answers to Q14, participants in both groups gave many positive remarks about using the computer simulation as an instructional method. More specifically, they mentioned that they enjoyed learning through the computer simulation, as opposed to the ordinary lecture-style workshop that they typically found boring and un-engaging. The following were the five main strengths

identified by the participants in comparing the simulation with alternative approaches they had used in the past:

1. It helps users have more vivid and distinct thinking about leading school change;
2. The method of PBL enables users to learn effectively to lead school change in a daedal circumstance and reduces blindness in practice;
3. It can develop participant's systematic and comprehensive thinking patterns about school change;
4. Learning through games is very vivid and can help users directly perceive the nature as well as general principles and strategies of leading school change through their senses;
5. It enables users to learn to lead school change by selecting their strategies based on their own experience and working context and they can gain different feedback accordingly.

Also, at the end of the workshop, many participants sincerely expressed their gratitude to the researcher for providing them with a great opportunity to learn about change implementation in an innovative fashion. They said that this workshop had inspired them to think about school change more comprehensively and systematically.

At the same time, besides praising the advantages and efficacy of the simulation, participants also identified a few weaknesses of using the simulation to learn about leading school change and limitations for further development and study. They were:

1. There is still a gap between the rules and process of the school change in the simulation and the reality in Chinese schools as there would, in practice, be more factors influencing the results of the change;
2. Some of the descriptions of the problem, people and activities were too long for users to read within the time allotted in the training program. In particular, those users who knew little about the simulation had to spend more time learning about the characteristics and roles of each person and activity, and the information on the feedback cards.
3. It was difficult to open the simulation for Chinese users who were not used to the Mozilla Firefox browser and had to change the encoding in the view menu into Simplified Chinese.

5.1.2.6 Suggestions for Improvement

A key purpose of the formative evaluation was to generate suggestions to improve the usefulness of the simulation as in Question 15. For the design of the simulation, participants pointed out that, though there are more and more foreign teachers in Chinese schools, most of them are English teachers. So it was still quite strange to see Western names and faces appearing in the simulation, especially in the political section. They indicated that, in order to make simulation more Chinese, it should use Chinese names and pictures. In addition, they also pointed out that the design of the game board was not so

beautiful to the eye or as bright as the fashionable games people were playing in network.

In terms of the Chinese text, participants pointed out that some Chinese translations of the names of the characters and places were inconsistent. Some of the expressions on the cards were not explained clearly and needed to be modified. For example, in Eve's description, the words "She does not yet use a computer herself" was not consistent with the Chinese reality because, in China now, using computer at work is one of the requirements for all teachers and principals. Finally, participants also suggested adding some Chinese mood articles to increase the efficiency of interaction and entertainment of the game play.

All these suggestions will be considered in the revision of the preliminary form of the product. The summary of the revisions based the above suggestions after Preliminary Field Test are listed in Table 24.

Table 24: List and Rationale of Revisions of Simulation after Preliminary Field Test

Item	Before field tests	After field tests	Rationale
Additional sentence	In Year 2, Written Information: feedback: Need to verify with Teresa. In Open Class: Note: You must have talked to each of these people two times before you can talk to them a third time. Choose three people to talk to the third time.	Cancel the additional sentences.	
Moves	Nobody moves	Adjustment	

	when conducting the activity of "Classroom Teaching Implementation" (20d) even when the conditions are met.		
Bits	The numbers of bits of 12 turned into 24 bits automatically at the end of Year 1.	Adjustment	
Buttons	In Year 2, the button "IT2020 Teaching Competition" was empty and the buttons for both "Open Class" and "IT2020 Teaching Competition" couldn't be pressed.	Adjustment	
Bennies	No bennies were increased when it was shown that 100 bennies should be added when implementing "Workshop" on card w6 in Year 1.	Adjustment	
Eve's description	…She does not yet use a computer herself	Changed to "She is not so good at computers."	Technical requirements of principals in China.
People's titles	Al, Beth, Caral, Dave, Eve, Fern, Jane, Nora, Owen, Pat, Thelma, Xavier are called by their names directly.	Official titles added before the family name; no longer called by given name.	Large Power Distance
People's pictures	Pictures of Dave, Eve, Mia, Thelma, Owen, Pat, Q.T and Xavier are Western.	Replaced with Chinese figures.	More Chinese
Participants' names	Only names appear on the left-hand side of the gameboard.	Add the first letter of the names in front of the names.	Easy to remember and find the participants.
Expressions	There is no mood article.	Add some Chinese Chinese mood	Chinese communication

		articles (i.e. la, ou and ne) were added at the end of some sentences).	manners
Reference	Only English references and no updates in the past ten years.	Added some Chinese references and updated.	Available for the Chinese users to access. Updated readings about school change.

5.1.3 Revisions to the Simulation

Although the sample size in the preliminary field test was relatively small, which would affect the information obtained, valuable refinements and instructional suggestions were collected for the revision of the simulation. Based on the above results of the preliminary field test, some revisions and adjustments to the new version of the simulation were made, mainly in terms of technical functions and content.

As shown in Table 24, some errors in the technical functions were found by participants during the workshop, such as the additional sentences in Written Information and Open Class, errors in the movements in "Classroom Teaching Implementation" (card 20d), the wrong bit number at the end of Year 1, empty buttons in the activities of "IT2020 Teaching Competition" and "Open Class" in Year 2, the wrong Bennie numbers in the "Workshop" (Card w6) in Year 1 and the references. At the same time, as it is more common in China to call leaders by their official titles before the family name rather than just using their names directly, the names of all the people who have formal official titles

were renamed with their official titles in front of their family names. Also, some foreign-looking pictures were also replaced with Chinese figures so that Chinese users could identify them more easily.

In addition, in order to increase the efficiency of the interface with the game, there was some embellishment to the overall graphics (i.e. font size, headline boxes, etc). All these revisions were proposed to the programmer and all the errors were corrected through programming.

As for the content, in the Chinese text, some Chinese translations of the names of the characters and places were modified to make them more consistent, as were some of the expressions on the cards. For example, in Eve's description, the words "She does not yet use a computer herself" in the original version were changed to "She is not so good at computers" to reflect the reality of education. In addition, some English expressions, such as "bits", "bennies" and "game report", were also translated into Chinese and some Chinese references were added for Chinese users as well.

Moreover, some Chinese mood articles (i.e. la, ou and ne) were also added at the end of some sentences to increase the efficiency and entertainment of the game play. In addition, concerning Chinese users' difficulties in reading English reference, some Chinese references were also added for learners' further study. Table 25 is the List and Rationale of Revision of Simulation after Preliminary Field Test.

However, despite the participants' complaints about the use of the Firefox web browser to open the simulation, it was still strongly recommended to use this web browser owing to its advantages. These included being faster

than other browsers, having better security, flagging lots of dangerous sites and blocking those sites from accessing the computer, etc. It was also regrettable that this browser's character encoding still needed to be manually adjusted to Simplified Chinese. This technical difficulty in opening the simulation needs to be improved in the future.

5.2 Main Field Test

The purpose of the main field test is to collect data for the final revision of the simulation, which was conducted after the revision from the preliminary field test. Besides evaluating the validity of the new version of the simulation in a real professional development setting with more school leader practitioners, it also included evaluating the effectiveness of the workshop with the new version of the simulation, such as the pace of the workshop, the usefulness of the training tool, and the participant perceptions of the training program.

The method employed to collect data in the main field test was described in Chapter 3. Data for the evaluation in the main field test was mainly obtained from an online survey on the Survey Monkey website (http://www.lediaocha.com/) created by the researcher. As in the preliminary field test, interviews and observation were also employed to collect data for improving the new version of the workshop program. This data was collected by the researcher during the workshop while the instructor was occupied with the direct instruction and debriefing sessions. These interviews and observations focused on participants' experience with and attitudes to the workshop, and their

behaviors during the simulations.

5.2.1 Participants' Personal Information

Of the 78 students in this program, 44 students responded, resulting in a response rate of 56%. This response rate is regarded as satisfactory for online surveys and it was achieved without the use of any form of reminders or incentives. The respondents included teachers as well as school leaders and educational administrators in the Shanghai Educational Bureau. Personal information and characteristics of the participants are displayed in Table 25.

Table 25: Participants' personal information in the main field test

Exampls	Sex	Age	Educational Background	Position
n	F / M	31-40 / 41-50	Bachelor/Master	P / D / SH / T
44	82%/ 18%	46% / 54%	96% / 4%	54% / 18% / 18% / 10%

P=Principal; D=Dean; SH=Section Head; T=Teacher

Table 25 shows that the majority (82%) of the participants were female, which reflects the trend of gender distribution in Chinese schools, especially in basic education. All of the participants were in the age range of 30 to 50 years old, the typical age range of key teachers or leaders in schools. All of the participants had a bachelor's degree or above. Among the 44 participants, more than half (54%) were school principals and 54.5% of the principals had been in the position of school principal for more than 4 years. From casual conversation

with the participants, the researcher learned that they were from both primary and secondary schools of different sizes, locations and types in Shanghai. All of them had had little knowledge about the innovative computer simulation before this.

5.2.2 Participants' Involvement in the Workshop

As observed from the workshop, participants were all engaged in playing the game--Phase I (Year 1). They were so involved in the game and discussion that they forgot about the lunch time and did not want to leave until the instructor stopped them at 12:40. And even while the instructor was giving a lecture on the leaders' role, common problems leaders would encounter in leading change and Kotter's (1996) eight –stage process for managing change, most of the participants were still immersed in playing the simulation and discussing in groups, the classroom was full of noise and it was hard to calm participants down to listen to the instruction and debriefing carefully. What they focused more on was how to move people and gain more bennies by selecting effective strategies. The only problem they had was when there was an instance when their strategy failed, they could not move anymore and did not know what to do next.

Now and then, some loud excited voices were heard here and there when groups gained bennies and got people to move. For example, when one team got a score of 9820 and moved 20 people to the routine use stage, all members of

the team were so excited that they could not help laughing and clapping hands with each other; they were very pleased to be invited to share their experience and feelings in playing the simulation at the end of the workshop. At 16:40, the workshop ended with many participants unwilling to stop the simulation and leave the classroom.

5.2.3 Evaluation of Chinese Version of the Simulation

There were seven sections in the survey as shown in Appendix I, which included: personal information, general impressions of the simulation, ease of use of the simulation, validity of the simulation contents, usefulness of the simulation, effectiveness of the workshop with the simulation as a training tool and suggestions for the new version of the simulation. In the following section, the results of each of these parts of the survey will be analyzed and discussed in turn.

5.2.3.1 General Impressions of the Simulation

Questions 8-11 in Appendix I were used to obtain participants' general impressions of the simulation. All these questions were open-ended questions concerning the participants' feelings about the computer simulation. The results showed that participants' feelings about the simulation were quite different before and after the use of the simulation. They could be divided into three

categories: 1) positive; 2) confused; 3) troublesome. For those who felt positive (N=36; 82%), they expressed that they felt that this training tool would be a refreshing change. It was something different and they felt curious as they had never used something like this before". Especially after the initial brief instruction on the research project and the simulation, they felt very interesting, a little bit excited and were eager to have a try.

Among the 44 participants, 36 of them showed positive attitudes. At the same time, 6 of them (13%) felt confused about the rules of the game. They complained that they did not know what to do and how to do it. They even felt troubled, uneasy and worried as well as excited about the unknown situation. For the third group, as they had seldom played games before and had little interest in them, they felt that playing the game was a troublesome, childish and time consuming way to learn. They were not so eager to learn and just obeyed the instructor in the class. The summary of participants' feelings is displayed in Table 26.

Table 26: Summary of participants' feelings of the simulation in Main Field Test

Positive (n= 36; 82%)	Confused (n= 6; 13%)	Troublesome (n=2; 5%)
Felt the game was novel, refreshing, strange, interesting; were curious, excited, eager to have a try.	Confused about the rules and goals of the game. Felt troubled, uneasy and worried as well as excited about the unknown situation.	Felt game was troublesome and childish. Not interested in playing games. Just obeyed the instruction in the class.

Compared to Q8, participants' responses to Q9 (feelings about this

method of learning after using the simulation) were quite centralized and consistent. Except for one participant who showed his/her bland attitude to the learning method, the rest of the participants gave a high appraisal of it. The most popular expression used to praise the learning method was that it was an extraordinary learning approach they had seldom used before. For example, one participant stated that:

> This method of learning by doing is very vivid, operational and practical. It can involve learners in the learning activity and help learners think independently, critically and work collaboratively in leading school change.

> Learning through simulation is a new method of learning through practice, which can stimulate learners learning interests and improve learners' competence in practice as well. It is worth trying.

The simulation was also appreciated by the users for its outstanding feature of combining theory with practice. One participant expressed in this way:

> At the beginning of the game, I regarded it just as a game and played with blindness and carelessness. However, after playing the game more than ten times, I gradually sensed that there were many inside meanings behind the game, such as leadership theory, the nature of school change, principles of leading change and strategies of communication and cooperation with other people, as well

as experimental facts and results. Although there is a little bit of difference between the principles and the reality in my working school, we can get many implications from them in leading school change. In sum, it is a learning process that goes from blindness to clarity, from carelessness to seriousness. It is worth recommending and propagating.

When asking to use three adjectives to describe their feelings about the experience of learning through this simulation, most participants used quite positive words. Except for two participants who used negative adjectives (one felt bored and the other felt puzzled and helpless in the class), the rest gave positive feedback. The most popular adjectives they used to evaluate this learning method were: creative, original, lively, interesting, attractive, inspiring, effective, meaningful, appropriate, practical, fun, explorative, surprising, reflective and easy to learn.

Q11 was intended to learn what lessons participants gained from the simulation. Examples of the answers from the participants were extracted as follows:

1. It is necessary to gain leader and staff support in leading change. If we encounter problems, communication is very important (i.e. Talk To).
2. Planning is very important in leading change. Various jobs can only be done successfully at the proper stage.
3. Setting good examples to move other people is very useful and

effective.

4. It is important to get to know people's personalities and relationships with others in their work.
5. Leadership is critical in change. Change can't go far without a good leader.
6. It is necessary to avoid or put the resistors on one side if they hold up the change.
7. It is effective for school change to employ proper people at the proper stage.

Although, in the main field test, several participants showed their negative attitudes toward the simulation initially on hearing about the learning approach, computer simulation as a learning tool to lead school change was, in the end, quite welcomed by most of the participants from both of the field tests.

5.2.3.2 Ease of Use of the Revised Simulation

Questions 12-14 in Appendix I were used to evaluate the ease of use of the simulation. When asking "How many times did you play the simulation before you understood 'how to play' the simulation (i.e., not achieve a high score, but the way of playing it.), results showed that the average number of playing times for the 44 participants was 1.19. This indicated that users could get to know 'how to play' the simulation after they had played it one or two times.

It was obvious that the simulation was quite easy for most users even if they knew little about it before they played. Data also showed that 84.1% of the

participants felt it was easy to understand the meaning of the buttons and labels in the simulation and 90.9% found it easy to read the information appearing in the simulation (i.e. on the response cards).

5.2.3.3 Face Validity of the Simulation

Questions 15-20 in Appendix I were intended to evaluate the face validity of the simulation contents. For Questions 15 to 19, the focus was to find out whether the scenario of the simulation, organizational chart, and descriptions of people and activities seemed reasonable to Chinese users in practice or not. As shown in Figure 7, the results shows that, more than 90% of the participants agreed that the description of the change problem in the simulation seemed reasonable to them and the organizational chart in the simulation could represent a reasonable relationship between people in the Chinese education system.

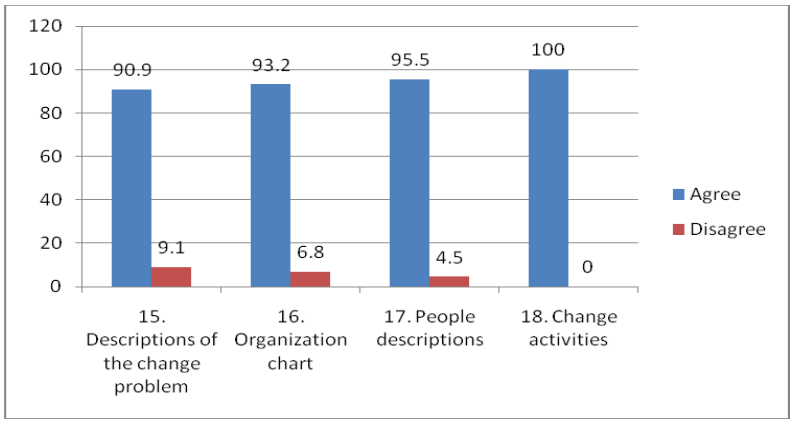

Figure 7: Percentage of the participants' agreements with Q 15-18 in the main field test

They also agreed that the people's descriptions could reflect the

characteristics of Chinese school staff and the change activities listed in the simulation were representative (typical, commonly seen) of those taking place when leading school change in Chinese schools. In Q19, 31.8% of the participants thought that there were some activities missing that principals used to support successful change in their schools. The results of the frequency distribution on questions 15 to 18 are respectively displayed in Figure 7.

As in the survey in the preliminary field test, there were 18 items in Question 20 in Appendix I, which were intended to evaluate the principles and strategies imbedded in the simulation. The percentage of agreements with the validity of the simulation contents in the main field test are displayed in Table 27.

Table 27: Percentage of agreements with the validity of simulation contents in the main field test.

No.	Change Principles	Percentage of Agreement		
		Agree	Partially Agree	Disagree
6	In Chinese schools, it is important to gain the widespread support of teachers in order to achieve real change in teacher practice.	88.4	4.7	7
13	In Chinese schools, successful change is achieved by activities that encourage teachers to communicate with and learn from each other.	88.4	4.7	7
7	In Chinese schools, formal leaders such as the principal must give approval and support before engaging in major changes.	83.7	9.3	7
12	In Chinese schools activities, such as training workshops and sharing practices among teachers are needed to bring about successful change in teacher practice.	79.1	14	7

10	In Chinese schools, it is helpful to use successful examples of change to gain the support of teachers.	76.7	16.3	7
14	In Chinese schools, it is effective to enable some people to change first and then use them as examples to drive other people to change.	76.7	16.3	7
17	In Chinese schools, it is useful to publicly reward and celebrate successful efforts by teachers who advance change.	76.7	16.3	7
2	In Chinese schools, gaining a common vision of a proposed change among staff is important to achieving successful implementation.	74.4	18.6	7
8	In Chinese schools, persuading teachers and other school staff to support a change may require repeated efforts over a period of time.	74.4	18.6	7
11	In Chinese schools, developing a team to lead curriculum change is an effective strategy to win broader support from staff.	74.4	18.6	7
16	In Chinese schools, identifying and sharing early successes of teachers is a useful approach to support change by other teachers.	74.4	18.6	7
1	Implementing changes in curriculum and instruction can take up to 3 years before we see real changes in the practice of the majority of teachers in a school.	67.4	25.6	7
15	In Chinese schools, the principal should gain support from district officials when proceeding to make significant changes in the school.	67.4	27.9	4.7
18	In Chinese schools, school policies may need to be revised during the change process to adapt to new circumstances that result from the change.	67.4	23.3	9.3
9	Chinese teachers who are slow to adopt new teaching methods may respond positively after they see that their colleagues have adopted the new practices.	34.9	58.1	7
5	In Chinese schools, informal leaders are an important. source of influence on their colleagues about whether to support a change in the school.	20.9	69.8	9.3

4	In Chinese schools, the principal only needs to order teachers to change their teaching method, and they will do so.	18.6	34.9	46.5
3	In Chinese schools, all teachers will adopt a change such as a new teaching approach at the same speed.	14	16.3	69.8

The findings from Table 27 and Figure 7 indicate that, though the responses to the 18 statements were not so unified as in the preliminary field test, there was not so much difference between the trends in the percentages of participants' attitudes to the statements. Except for No. 4, 5, and 9, about70% of the participants totally agreed with all the other statements of the change rules, principles and strategies the present simulation was based on. However, some results needed to be taken into account in the final revision.

One obvious difference between these two test fields was in No. 3. In the preliminary field test, 100% of the participants disagreed with the statement, while in the main field test, it was strange to find that 30.3% of participants agreed or partially agreed that all teachers would adopt a change such as a new teaching approach at the same speed in Chinese schools.

It was also surprising to find that about 53.5% of the participants agreed or partially agreed that, in Chinese schools, teachers would change their teaching method when the principal order them to do so. This high percentage indicates that the culture of large power distance still dominates in Chinese schools. At the same time, it also implies that school principals are more critical in leading schools than in other countries in the West. As a result, only 20.9% of participants totally agreed that, in Chinese schools, informal leaders were an important source of influence on their colleagues about whether to support a

change in the school.

This further reinforces the perception that, in China, formal leaders have more authority than informal leaders in the eyes of staff. Additionally, only 34.9% of the participants agreed that "Chinese teachers who are slow to adopt new teaching methods may respond positively after they see that their colleagues have adopted the new practices." This implies that it is difficult to persuade some resistors to change even if you have made efforts in Chinese schools.

The percentages of the participants' agreement with the 18 statements of the change principles in the main field test are shown in Figure 8. In sum, results from both of the field tests suggest that the simulation contents appeared to reflect a reasonable level of face validity in the eyes of the principals.

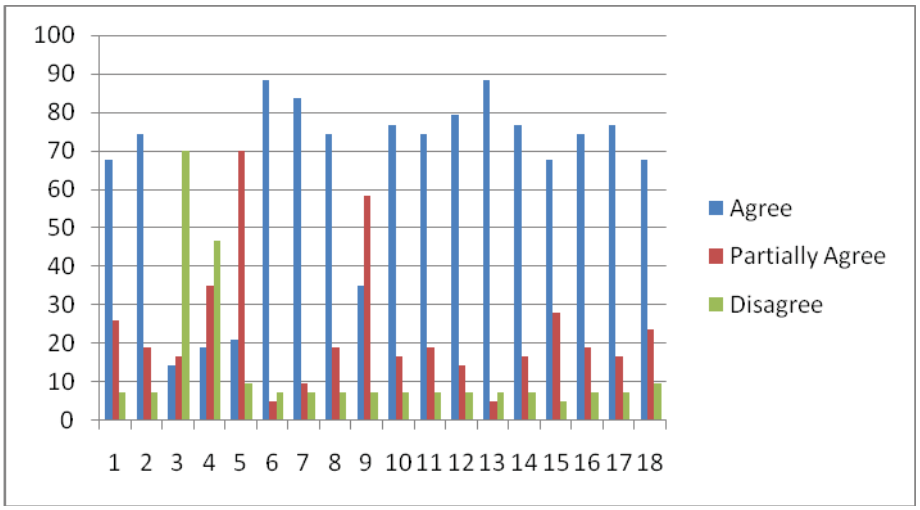

Figure 8: Percentage of the participants' agreement with the 18 statements of the change principles in the main field test

5.2.3.4 Usefulness of the Simulation as a Learning Tool

In Section Five of the survey in Appendix I, the usefulness of the simulation was evaluated by questions 21-24 and question 30. Results showed that 83.7% of the participants felt that the information on the response cards was useful for their learning/thinking. 90.7% stated that the feedback on the strategy record was useful for learning to revise their strategy in leading school change and 81.4% thought that this experience of learning about leading school change through the simulation might affect their leadership practices in school.

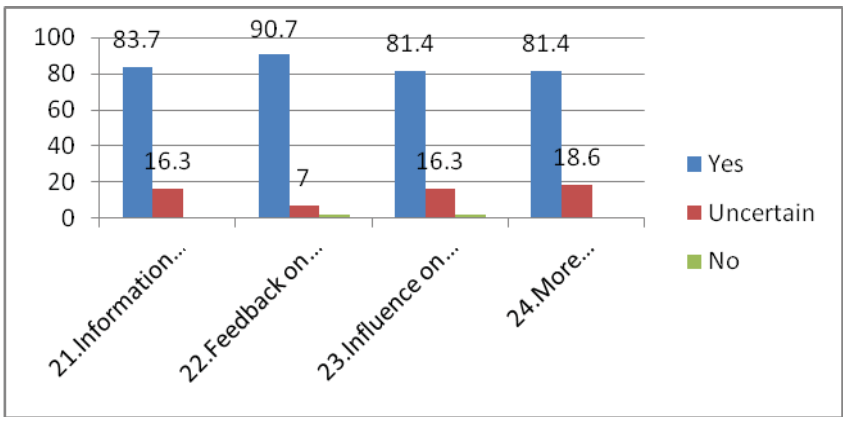

Figure 9: Frequency distribution of participants' attitudes on Q21-24 in the main field test

Also, 81.4% felt more confident about leading change in their school after having learned the change strategies through the simulation in the workshop. This further proved that the simulation could be a very useful as a tool in developing leadership capacity in Chinese schools. The frequency distribution of participants' attitudes on questions 21 to 24 are displayed in Figure 9.

Q30 in Appendix I was an open-ended question intended to obtain participants' opinions on the strengths and weaknesses of using the simulation to learn about leading school change compared with alternative approaches participants had used in the past. 42 participants (95.4%) gave a high appraisal of using the computer simulation as an instructional method compared to the lecture-centered training they had attended before.

Indeed, these results were very similar to the answers obtained from the preliminary field test. For example, the strengths of the simulation most frequently mentioned by the participants were that it: a) was practical; b) encouraged high involvement; c) facilitated visualization; d) was relaxing and entertaining; e) provided timely feedback; f) saved time; g) was effective; h) was flexible; i) had personality; j) was interactive; k) was creative; l) was inspiring and encouraged reflection on implications, etc. The following were some of the participants' comments on the strengths of the simulation:

> I found myself in an entirely new world and felt as if I was personally on the scene when playing the game. It is so amazing and attractive that we couldn't help playing the game even after class and wanted to see how high a score and number of bennies we could get at the end of the game.

Compared to traditional training programs, which emphasize more theory learning, model emulation and material learning, more than half of the participants remarked that this new learning method helped them think more and learn more effectively. Some participants also reported that this kind of training method had encouraged them actively to participate in school change

and given them more confidence in its implementation. As one participant commented:

> We are so pleased to find that, with this unprecedented training method of learning by doing and PBL, we can have a better understanding to the concepts of leading change and develop effective strategies for successful change in practice unconsciously. What's more, during playing games, some knowledge can be transferred into personal knowledge and abilities.

As for the weaknesses of the workshop using the computer simulation as an instructional tool, participants also provided some valuable feedback for further consideration. Some weaknesses of the simulation that participants identified are listed below:

1. The learning goal was not so clear;
2. It seemed not so formal for a principal training program;
3. The simulation can't imitate exactly the diversity and complexity of people in reality;
4. Time to read the handout and understand the rules of the simulation was needed before playing;
5. Players could easily focus more on playing the game rather than on what they should learn;
6. If learners haven't played the game a sufficient number of times and played it seriously, they won't benefit a lot from it;
7. Learners who initially knew little about playing computer games had

to spend a lot of time on the rules of the game play.

From the observations and communication with participants, it could be seen that some seemed to have little confidence in the strategies that they developed themselves, even though they had reached the mastery level in the simulation. After the instructor explained more about the knowledge base used for the creation of the simulation and gave a summary of important change strategies and discussed important lessons, the participants had more self-confidence to play the game.

It should be noted that not all the feedback was accepted for the revision because, based on observation, one or two learners were not so used to this way of learning and had some bias or resistance to it. However, some of the above comments were valuable for the next revision of the simulation and helped instructors to improve the effectiveness of the workshop. For example, the feedback reminded the researcher that it was necessary to explain the goal of the workshop, the foundation for the simulation, and the rules and people and activities instructions clearly to learners at the beginning of the workshop in the future.

5.2.3.5 Evaluation of the Simulation-Based Workshop

The evaluation of the effectiveness of the workshop with the simulation as a training tool was another main purpose of the main field test. So, in the survey in Appendix I, 5 questions from 25 to 29 were designed to evaluate the pacing, the organization and preparation, and the instructions in the workshop.

The results indicated that more than half of the participants (58.1%) felt the pacing of the workshop was just right and 39.5% thought it was too fast. That was why 27.9% participants complained that they had not enough practice time for the simulation. As was shown in the preliminary field test, a one-day workshop for the program was really insufficient. As for the organization and preparation of the workshop, 93% of the participants regarded it as quite effective and 97.7% appreciated that the instructor could respond to participants' problems in an actively and timely manner. In response to Q29, 72.1% of the participants expressed that they would use or suggest the MCH™ simulation workshop to colleagues for training purposes.

5.2.3.6 Suggestions

At the end of the survey, Question 31- 32 in Appendix I were designed to collect participants' suggestions and recommendations to improve the usefulness of the simulation and the accompanying workshop.

As for the simulation, 14 participants expressed that they were satisfied with the present Chinese version of the simulation and had no further revision suggestions right now. Other participants' feedback to the questions was quite scattered. However, these scattered suggestions were instructive for our further revision of the simulation. For example, participants hoped that the playing rules of the simulation could be simpler, that users could buy some tips for help with bits, and that the wording on the feedback cards could be shortened.

In answering Q32, participants also provided the researcher with some

valuable recommendations for improving the effectiveness of the workshop with the simulation as a training tool. These included expanding the learning period for the program and increasing practice time, enhancing concepts and strategy instruction and playing games in a group of two rather than three or more.

Results also indicated that some participants did not like the style of the instruction in the workshop, in which theory and practice were handled alternately during the lesson. They preferred to concentrate some time on learning the theory of leaderships and change strategies before or after playing the game. In this way, they would not be interrupted with speech here and there.

From the observation, the researcher also found that, if participants played in a group of more than three, except for the two who sat nearest to the computer, the others would not be so careful to concentrate on the game and could not benefit much from it. Meanwhile, in the process of the lesson, in which theory and practice was done alternately, most of the participants just focused on their playing or talking with teammates and did not pay much attention to the instruction. As a result, the class was chaotic and noisy. Also, the instructor-led debriefing could not be heard clearly and learners could not play the game thoroughly as well.

In conclusion, the overall results indicated that the effort to revise the MCH ™ simulation to make it more culturally appropriate was successful and welcome by most of the participants in both of the field tests. However, in order to make it more appreciated by Chinese practitioners, it was still necessary to make continuous efforts to refine and develop the new version of the MCH ™

simulation for its professional applications. This included some revisions to the people and activities' descriptions, the information on feedback cards, and the schedule of the workshop. The final revisions to the new version of the simulation are presented in the next section.

5.2.4 Final Revisions to the Chinese Version of the Simulation

The findings from the main field test and comments from the evaluation provided the researcher with a few areas for recommendations. The main area of the suggestions for the final revisions focused on two aspects: 1) technical function and the contents of the simulation; 2) the instructional design of the problem-based learning workshop.

First, one new technical function –"Expert tips" was added on the gameboard. During each year, the team can consult with experts on problems it may be encountering. Each consultation will cost 1 bit. In the contents of the simulation, the tutorial materials and the rules of the game play needed to be further simplified as shown in Appendix D. In addition, the activity of "Workshop" was replaced with "Teacher Training" to be more accepted by Chinese teachers.

Second, the workshop needed to be modified in terms of its program schedule and instructional strategy. First of all, it was suggested that sufficient background information pertinent to the simulation, such as people's characteristics and relationships and activity implementation in different change

periods, should be provided to participants prior to the workshop. Specific information about the workshop would also stimulate the participant's interest in and expectations for the topic and the new learning program of the simulation.

Therefore, one or two more days for the program were strongly recommended. Additionally, since the MCH ™ simulation is still new to Chinese school principals and teachers in China, sufficient information and knowledge about the simulation and workshop should be provided to help participants more actively participate in the content from the beginning.

As for the learning style, data from the follow up evaluation supported the idea that the game play was more effective in a group of not more than three. Thus, each player would be more involved and learn more deeply. Finally, the instructor-led debriefing during the program should be designed to be more centralized to engage all participants in the instruction and the game play as well. Table 28 is the list and rationale of revisions to the simulation after the main field test.

Table 28: List and Rationale of Revisions to the Simulation after Main Field Test

Item of revision	Before field tests	After field tests	Reasons
Add one function in the game board		Expert tips: the team can consult with experts on problems it may be encountering. Each consultation will cost 1 bit.	Help learners better understand how to lead change.
Activity Name	Workshop	Change the name to "Teacher Training"	More popular in China.

Simplify the instruction		Simplified the goal and instruction and the rules of the game in the tutorial material	Help to save time to understand the simulation more clearly.
Time of workshop	One day	One and half days or two days	Learners need more time to learn and practice the simulation.
Number of people in group	More than three in some groups.	2-3 in group	Involve all learners in the game play.

5.3 Summary

In summary, the findings from the main field tests confirmed not only that it was important to revise the context and functions of the MCH™ simulation but also that the effectiveness of the instruction and workshop program design could affect participants' learning and satisfaction with using the MCH™ simulation and further applications. Throughout the formative evaluation, the results also proved that the simulation workshop was effective in providing the participants with knowledge of managing change and could be applied cross-culturally for the training and development of Chinese school principals. In sum, the present study obtained relatively successful findings for its revision across cultures.

CHAPTER 6

CONCLUSION AND DISCUSSION

In this chapter, conclusions from the major findings and a general discussion on the present research study are presented. In addition, implications for leading school change in Chinese school culture and reflections on PBL application of training in Mainland China are also discussed. Besides these, limitations of the present study and recommendations for future research in the Chinese school context are included as well.

6.1 Major Findings

As mentioned in Chapter One, the purpose of the present project was to develop a culturally-adapted and translated Chinese version of the MCH™ with school leaders in China. The project began with a foundation literature review on leading change in Chinese schools. This yielded some counter-intuitive findings that were then explored further through a small-scale interview study with successful Chinese school principals. Then two-field tests were designed to gain feedback on the use of the simulation as well as the learning approach which contrasts greatly with the predominant lecture-based training offered to Chinese school leaders currently. Results from the three phases of the project can be summarized as follows.

First, findings from the general literature on leadership in Chinese

societies suggest that the culture of high power distance still dominates in Chinese schools, and the relationships between leaders and followers is characterized by high power distance and transactional exchange considerations. Moreover, the descriptions and the strategies reported among successful school leadership for change in China bore a clear resemblance to best practice recommendations that appear in the Western literature on leading change in schools, which was associated with transformational school leadership (Hallinger, 2003a; Leithwood & Jantzi, 2000), such as vision, inspiration, engagement, empowerment, and capacity-building. However, the use of terms such as direction, command, control, authority, reward and sanction was much less frequent.

Second, results from the small-scale study indicates that, though Chinese principals encounter a number of rather different contextual constraints, such as China's social structure, government policy, cultural norms, educational theories and teaching principles, key factors that influenced school principals' capacity to 'make change happen' in their schools have more similarities than differences with many of the high leverage practices reported in the Western literature on leading change (Hall & Hord, 2002; Hallinger & Lee, 2011; Kotter, 1996; O'Toole, 1995) and transformational school leadership (Hallinger, 2003a; Leithwood & Jantzi, 2000; Leithwood, Day, Sammons, Harris, & Hopkins, 2006; Marks & Printy, 2003). This included offering an inspiring vision of change, creating a coalition for the change, motivating and engaging teachers, building staff capacity to implement through training, coaching and feedback, modeling change practices, maintaining support with external stakeholders such

as parents and the system level, and persisting in the face of predictable resistance and obstacles.

From the study, it is also concluded that the success of leading school change is determined by the attitude of educators towards educational reform and change. These principals were active in pursuing their 'personal visions' (Barth, 1990) of education despite the risk lack of support from system administrators and persist in their beliefs during the process of change and use their wisdom and competence to transform challenges into opportunities.

Moreover, the results further proved that there is no successful school change without considering the context. Neither is there a best strategy for all school contexts. Successful school principals should choose the way of change by themselves, frame the change within the context of government policy and manage to leverage the content (i.e., student development) and process (i.e., autonomy) features of China's curriculum reform as well in order to achieve meaningful changes in their schools.

Other essential features possessed by these successful principals are their persistence and the attitudes of long-term orientation towards the school change. It is impossible to succeed if one is too eager to gain success in a short period of time.

Third, results from the formative evaluations from the two field tests supported that the Chinese version of MCH ™ was successfully adapted to be culturally appropriate for Chinese schools for the purpose of school leader training and development. Most of the participants commented that the new Chinese MCH ™ simulation was refreshing, innovative, inspiring, and practical

for Chinese practitioners. Compared to the current training mode, they indicated that it could provide a more positive learning opportunity to challenge and to implement change with the strategies that they had developed on their own.

Moreover, with its integration of theory and practice in the area of leading change in the most recent thirty years around the world, this new training tool could not only inform learners of classical and updated theories specific to leadership both in the West and in China, but could also develop learners' competence in change implementation in practice. Users reflected that their systematic and critical thinking abilities had been greatly improved by learning through the simulation; these abilities were very important for them for dealing with issues they would evitably face in the process of leading school change in practice, such as how to communicate with varied people, formal and informal leaders, change principles and effective strategies in various stages of change.

The foremost advantage of the simulation, based on the learners' reflections, was that by learning through the simulation in PBL, participants began to sense the importance of learning and working collaboratively in a team for leading school change. It could be concluded that this simulation was apparently timely and gave helpful lessons to Chinese school leaders about effective school change management, particularly during the era of the second round of curricular reform in China.

Participants' positive comments and feedback on the content of the simulation also indicated that the cultural adaptation of the simulation content was also successful. Most of the participants reflected that the scenario,

organizational chart, and people and activities descriptions in the simulation were representative and close to the reality of the Chinese school context. This experience of the simulation could stimulate learners' participation in change and enable learners to apply their strategies tested in the program to their real work context with more confidence and clear goals in the process of change implementation.

Findings from previous studies proved that the time and the instruction used in the simulation workshops had a significant impact on the effectiveness of the program (Kantamara, 2000). Although there were only 6 hours in each of the workshops in both of the field tests, the two online surveys, the main instruments used to collect data, were administered after the workshops using the Survey Monkey website as a way to make up for time limitations. However, an extra half or whole day more for the program was strongly recommended for future workshops. In addition, the effectiveness of the instruction of both of the workshops was highly praised by most of the participants.

Finally, the training mode was warmly welcome by most of the participants and was considered unprecedented and creative for school leader training in China. Participants commented that the method of learning through the simulation with PBL was fun and they enjoyed learning by doing. They liked the learning environment which could provide a fair competition to achieve their goals while playing the game. The key point is that this learning method of a simulation could effectively improve users' knowledge and skills in change strategies. After the program, they could apply what they had learned promptly to their current jobs rather than the learning just disappearing like

smoke once the training program was finished.

6.2 Implications for Leading School Change in Chinese Culture

The ultimate goal of the present project is not to develop a new Chinese version of the MCH ™ simulation per se, but to develop school leaders' competence in leading school change and make change happen successfully in their working context. Several implications were drawn from the results of the study for trainers in school leadership training programs and the development of leadership on leading school change in Chinese cultural contexts in the future.

First, the effectiveness of a training method mainly lies on how it can stimulate learners' engagement, thinking and practice. The finding regarding the method of training proves that a problem-centered scenario can stimulate individuals to construct their own ways of learning and take initiative to make decisions on how to solve a problem. School leaders are used to the traditional lecture-based training mode. To some extent, this one-way knowledge transfer is a quite relaxed way for learners to study, as they do not need to expend energy on individual thinking. In this learning process, principals' intelligence and initiative may be in a state of suspense and laziness. Participants are only knowledge receivers and submit to what others tell them. As a result, their initiative can be hardly demonstrated.

However, without principals' initiative and enthusiasm, real school change cannot happen or high achievements cannot be obtained. What is more, the identified successful strategies which work well in one school may not work

well in other schools. Every school has its own characteristics. Successful school change can only be achieved when it is implemented with initiatives and responsibility. To achieve successful school change, everybody must be a change agent (Kotter, 1996).

The method of learning through simulation in PBL also enables school leaders to become directly goal-driven and find their own solutions through practice. In contrast to previous training programs which have focused more on one-way knowledge transfer or experience exchanges, this method of learning through simulation in PBL can arouse learners' curiosity and motivation to solve the problem at the beginning of the learning. With a definite learning goal, which is consistent with learners' work demands, the learning process becomes more personal, challenging and fun. In a word, in contrast to previous training programs which have focused more on one-way knowledge transfer, the method of learning through simulation was perceived to be very applicable and practical for Chinese school leaders.

Second, the finding regarding the training content and strategies implies that the strategy for training programs for school principals should shift to a mode of integrating learning through experience and participation as well as theory instruction. Studies have proved that training strategies which expect to improve school quality by developing principal's competence through knowledge-based learning tend to be lacking in authenticity and unsatisfactory (Zheng, 2009).

Compared to the content and strategies in other types of principal training, the essential difference of the training strategy of the PBL computer

simulation is its integration of practice and theory imbedded in the simulation. Participants can learn and improve their competence unconsciously by playing games with fun and initiative. With the shift of the training focus downward to Chinese school principals in the new century, improving and developing school principals' competence in leading school change through practice would be the best choice.

The finding regarding the training content also implies that training programs integrated with international and local knowledge about leadership practice could extend school principals' international vision. This is undoubtedly critical for Chinese principals to grasp the trends of contemporary educational development clearly and improve the quality of Chinese basic education. Although the problems Chinese school principals need to study and solve are mainly the problems of Chinese education, the aim of an integrated program is to serve Chinese educational development by drawing lessons from experience abroad. Principals who have no international vision lack a horizon. In addition, those who do not know how to study Chinese school problems cannot be successful principals either.

Third, the finding demonstrates the potential of technology integration into school leadership training program in China. As mentioned in the literature review in Chapter Two, the present training programs for Chinese school principals are often criticized for their backward training modes and contents. This leads to a vicious spiral: low effectiveness of training—low interest of principals—lower motivation—lower effectiveness of training. The core of this condition is the training per se.

Changing this ineffective training strategy and increasing principals' learning motivation and participation is urgently called for in China. In the 21st century, improving the training mode with the help of modern technology has become a hot topic in the world of exploring the effectiveness of school principals' training and development. Some Chinese researchers (Zhao, 2005; Zheng, 2009) have also suggested that technology should be integrated into the principal training curriculum in order to improve school leaders' competence in leading school change to a greater extent. Learning through a computer-based simulation appears to fit this trend, and could also change the perspective of participants towards the value of learning technology (Zahed, 1996).

Fourth, the research and development found that it is effective to increase school leaders' confidence in leading school change by practice during the training course. The tendency to seek the "best way" to lead change was quite obvious among participants. This indicated the Chinese tendency towards strong uncertainty avoidance. However, no leadership training can give the "best way" for leading change in the world, especially in the process of educational change.

It is easier to say something than to do it. Moral instruction alone is insufficient to move and empower people in change implementation. Confidence comes from practice. This PBL learning approach with a simulation can provide a more flexible learning environment that allows participants to have better results by seeking guidance from the instructor or other participants compared to a typical lecture-based class where they can only get one-way knowledge insertion. The participants in this study did not have to be

embarrassed with their unsatisfactory results and could attempt to get a better result until they reached a high level of accomplishment.

Fifth, the finding regarding the learning mode implies that collaboration will be the most effective learning mode to enhance the capacities of leadership in the 21st century. Especially in a moderately paced context and a fast-moving world, teamwork is necessary to deal with periodic transformations, and is enormously helpful almost all the time (Kotter, 2012). In the training program with a PBL computer simulation, participants learned and played the game in a group of 2 or 3; thus they learned from each other, and explored and solved the learning problems through teamwork.

The kind of teamwork involved in use of the simulation is not just communication of information and research, but communication from the heart and a sharing of thinking and vision. In this learning collaboration, the learning results and effectiveness are greater than the sum total of the individual learning. What's more, this type of training enables each participant to demonstrate their personal potential fully in the teamwork. In the teamwork, learners' enthusiasm was obviously stimulated more than ever before. Nothing is more important than participants' involvement in learning and the ability of group members to learn from each other. That is the healthy start of improvement and personal professional development.

Change means a stereotypical way of life and work. It needs to disrupt routines, to change traditional concepts, to employ strategies one can be proud of, to open the up the past and to cause individuals to gain new skills and confidence. Continual reform is the nature of modern education. In China, there

is no doubt that basic education must be reformed urgently. The direction and goal of reform is becoming clearer and clearer. The goal of reform is not the reform per se, but development.

Within a culture of large power distance, developing the leadership capacities of the school heads for quality improvement and effective management of schools is the first step toward the goal of reform. Based on the long-term nature of education and the law of the primary-middle school principals growth, principals' training needs time and continuity. Despite great efforts and investment in various levels of training programs for school leaders in China, there is still a huge need to improve the effectiveness of school leadership training.

6.3 Limitations of the Study

Although the present study employed systematic steps of R & D, two key limitations should be noted.

First, the project relied on a small-scale qualitative interview study in the initial stage of the research process. This study was conducted in Guangzhou and may not reflect the diversity of Chinese schools. Schools in urban and rural areas, or in the coastal vs. inland cities and towns, represent quite different contexts. Thus, this represents a real constraint with respect to the resulting simulation. This limitation presents a threat to the generalizability of findings in the case of China, given its huge size both in geography and population.

Second, the R & D method applied in this research was limited to an evaluation focusing on formative assessment of the simulation during the training program with school leaders. Although the face validity of the simulation and the training program received initial confirmation, data that shed light on the external validity of the simulation and the program were not obtained. Therefore, a more extensive summative assessment of the simulation in use with school leaders is deemed useful and important. However, this is beyond the scope of this project and is proposed instead as a topic for future research.

6.4 Recommendations for Future Research and Development

Given the limitations and need for further revision of the new Chinese version of the simulation developed in this study, five recommendations are made for future research.

First, a more in-depth, summative assessment of school leaders' learning based on the simulation is needed to establish the training effectiveness (Kirkpatrick, 1977) of the simulation. The ultimate goal of the present research project is not to develop a Chinese version of the simulation in question per se, but to improve the practical competence of school leaders in leading school change in China. Although the face and internal validity of the simulation were supported by the results from both field tests, the external validity of the simulation and the program need to be confirmed.

This will call for further study to observe the extent to which users'

leadership strategies and behaviors in their practical work changed after their participation in the program with the simulation and to compare the degree to which the strategies conceptualized as effective in the present study with the simulation result in change in a set of real schools. These could include experimental tests and comparative studies across cultures as well.

Second, a larger scope test with more participants in varied regions is proposed to increase the reliability of the simulation. There were only 96 participants mainly from Guangzhou and Shanghai in both of the field tests in the present study. Since China is a large country with varied regional cultures, this could be realized with the help of a web-based version of the simulation as recommend below.

Third, it is necessary to do some further revisions to the MCH™ simulation to increase its visual and technical effectiveness. Based on the comments of some participants, as a game to be played in a training program, it is recommended that the simulation could be visually more effective with refined graphic design, such as making it more interactive, colorful, and competitive to increase audience interest and willingness to play.

Fourth, it is necessary to develop the MCH™ simulation as a remote training tool for school principals in China. With the development of Internet technology in the 21st century, e-learning, online classes and self-directed learning are already the mainstream and the future trend. In addition, for a country with a huge size both in terms of geography and population, a web-based simulation would enable more people in different regions to have easy accessibility and to participate in the learning process with more flexibility

and convenience.

Moreover, it is economical to use a web-based program to build a virtual learning community among school leaders in a district to discuss and exchange strategies for change. At the same time, this would enable instructors and educational administrators to monitor and provide feedback and suggestions to users with online communication. Therefore, a Chinese version of an online MCH™ simulation to be used as a learning tutorial with intelligent feedback should be developed in the future.

Finally, inspired by recent doctoral research (Showanasai, 2014) in which a web-based version of MCH™ as an online learning tool for research and assessment for change leadership was developed and tested, the researcher would urgently recommended developing a web-based simulation based on the new Chinese version of MCH™ to be used as an online tool to gather data for research purposes on leadership and to assess the development of school leader preparation in China in the future. This new online simulation with data collection would allow researchers to investigate more deeply and broadly the behavior and thinking patterns of learners. It could allow better access to a greater number of users and particularly focus on leadership development research (Showanasai, 2014).

REFERENCES

Albanese, M. A., & Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. *Academic medicine*, *68*(1), 52-81.

Allinson, R. E. (1989). *Understanding the Chinese mind: The philosophical roots.* New York: Oxford University Press.

Anderson, P. H., & Lawton, L. (2014). Simulation performance and its effectiveness as a PBL problem: a follow-up study. *Developments in Business Simulation and Experiential Learning*, 34.

Bai, T.(2006). *A study on the validity of the training of principals in middle and primary schools- a case of three districts of Yuzhong,Gaolan,Yongdeng in Langzhou city in Ganshu province.* Master Thesis, Institute of Education of Northwest Normal University. (in Chinese)

Barth, R. (1990). *Improving schools from within*. San Francisco: Jossey Bass.

Belchetz, D., & Leithwood, K. (2007). Successful leadership: Does context matter and if so, how?. *In Successful Principal Leadership In Times Of Change* (pp. 117-138). Springer Netherlands.

Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied psychology,* 46(1), 5-34.

Bershad, C., & Mundry, S. (1997). *Systems thinking/systems changing: Facilitators guide.* Rowley, MA: The NETWORK Inc.

Bershad, C., Mundry, S., & Hallinger, P. (1999). *Systems thinking/systems changing: Facilitators guide for computer-based version.* Rowley, MA: The NETWORK Inc.

Bolam, R. (2003) The Changing roles and training of headteachers: Recent experience in England and Wales. In Hallinger, P. (Eds.), R*eshaping the landscape of school Leadership development.* Dordrecht: Swets & Zeitlinger.

Bolman, L. G., & Deal, T. E. (1992). Leading and managing: Effects of context, culture, and gender. *Educational Administration Quarterly,* 28(3), 314-29.

Borg, D., & Gall, M. (1989). *Educational research: An introduction,* 5th Ed. Longman, White Plains, NY.

Bossert, S., Dwyer, D., Rowan, B., & Lee, G. (1982). The instructional management role of the principal, *Educational Administration Quarterly,* 18(3), 34-64.

Boyd, V. (1992). School Context: Bridge or Barrier for Change?. *Southwest Educational Development Lab.,* Austin,Tex.

Bransford, J. (1993). Who ya gonna call? In P. Hallinger, K. Leithwood, & J. Murphy (Eds.), *Cognitive perspectives on educational leadership.* New York: Teachers College Press.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.) (1999). *How people learn. Brain, mind, experience, and school.* Washington DC: National Academy Press.

Bridges, E. M. (1977). The nature of leadership. In L. Cunningham, W. Hack, & R. Nystrand (Eds.), *Educational administration: The developing decades* (pp. 202-230). Berkeley: McCutchan.

Bridges, E. M., & Hallinger, P. (1991). Problem-based learning: A promising approach for preparing educational administrators. *UCEA Review*, 32(3), 3-7.

Bridges, E. M., & Hallinger, P. (1992). *Problem-based learning for administrators.* Eugene: University of Oregon, Educational Resources Information Center, Clearinghouse on Educational Management.

Bridges, E. M., & Hallinger, P. (1993). Problem-based learning in medical and managerial education. In P. Hallinger, K. Leithwood, & J. Murphy (Eds.), *Cognitive perspectives on educational leadership* (253-267). New York: Teachers College Press.

Bridges, E. M., & Hallinger, P. (1995). *Implementing problem-based learning in leadership development.* Eugene, OR: ERIC Clearinghouse.

Bridges, E. M., & Hallinger, P. (1996). Problem-based learning in leadership education. *New Directions for Teaching and Learning,* 68, 53-61.

Bridges, E. M., & Hallinger, P. (1997). Using problem-based learning to prepare educational leaders. *Peabody Journal of Education*, *72*(2), 131-146.Bridges, E. M. (1982). Research on the School Administrator: The State of the Art, 1967-19801. *Educational Administration Quarterly*, *18*(3), 12-33.

Brooks, J. S., & Normore, A. H. (2010). Educational leadership and globalization: Literacy for a global perspective. *Educational Policy,* 24(1), 52-82.

Bush, T., & Glover, D. (2003). School leadership: Concepts and evidence. *www.ncsl.org.uk/literature reviews.*

Bush, T., & Haiyan, Q. (2000). Leadership and culture in Chinese education.

Asia Pacific Journal of Education, 20(2), 58-67.

Carnoy, M. (2000). Globalization and educational reform. *Globalization and education: Integration and contestation across cultures,* 43-61.

Carnoy, M. (2002). *Distance Education in China: A Discussion of the History, Challenges and Implications for China in the 21st Century.*

Chan, A.M. (1998). *Construction of a Chineseness Value Scale and a Chineseness Ethnicity Scale.* paper presented at the Association for Consumer Research Asia

Chao, T. S.(2007). School change competence in practice. *Educational Development Research,* 4. (in Chinese)

Chen, C. L. (2005). Implications of principal curriculum leadership and its requirement of principals' way of thinking, *Education Exploration,* 168(6), 31-33. (in Chinese)

Chen, R. P. (2004). Principal instructional leadership: Strategies of improving school effectiveness and promoting school change. *Contemporary Educational Science,* 20, 30-32. (in Chinese)

Chen, S. W. (2010). Exploring the negative impact of patriarchal culture on Chinese modern family. *Knowledge Economy,* (020), 54-55.(in Chinese)

Cheng K. M. (1995). The neglected dimension: Cultural comparison in educational administration, In K.C. Wong and K.M. Cheng (Eds.). *Educational leadership and change* (pp. 87-102). Hong Kong: Hong Kong University Press.

Cheng, K.M. (2001). Changing cultures and schools in the People's Republic of China: tradition, the market and educational change. *Values, culture and education, 7, 242.*

Cheng, Y. C. (1994). Principal's Leadership as a Critical Factor for School Performance: Evidence from Multi-Levels of Primary Schools 1. *School Effectiveness and School Improvement,* 5(3), 299-317.

Cheng, Y. C., & Walker, A. (2008). When reform hits reality: The bottleneck effect in Hong Kong primary schools, School Leadership and Management, 28(5, 505-521.

Chinese Government Net. (2013). The Twelfth Five Year Plan (2011 - 2015) of the National Economic and social development of People's Republic of China.*www.gov.cn/2011lh/content_1825838... - 2011-03-16*. (in Chinese)

Chu, H. Q., & Cravens, X. C. (2012). Principal professional development in China: Challenges, opportunities, and strategies, *Peabody Journal of*

Education, 87(2), 178-199.

Crandall, D., Eisenman, J., & Louis, K. S. (1986). Strategic planning issues that bear on the success of school improvement efforts. *Educational Administration Quarterly,* 22(3), 21-53.

Cui, Y. G. (2006). School change based on partnership. *Contemporary Education Science*, (22), 3-5. (in Chinese)

Dana, N. F., & Pitts, J. H. (1993). The use of metaphor and reflective coaching in the exploration of principal thinking: A case study of principal change. *Educational Administration Quarterly,* 29(3), 323-338.

Davis, S., Darling-Hammond, L., LaPointe, M., & Meyerson, D. (2005). Developing successful principals. *Stanford Educational Leadership Institute,* (Ed.). Retrieved February, 20, 2009.

Day, C. W., & Leithwood, K. A. (Eds.). (2007). *Successful principal leadership in times of change: An international perspective* (Vol. 5). Springer.

Debus, Mary. (1990). *Handbook for excellence in focus group research.* Washington, D.C.: Academy for Educational Development.

Delors, J., Mufti, I. A., Amagi, I.,Carneiro, R., Chung, F., Geremek, B.,…& Nanzhao, Z. (1996). *Learning the Treasure Within, Report to Unesco of the International Commission on Education for the Twenty-first Century.* Paris: UNESCO.

DeNeve, K. M., & Heppner, M. J. (1997). Role play simulations: The assessment of an active learning technique and comparisons with traditional lectures. *Innovative Higher Education,* 21(3), 231-246.

Department of Education of Guangdong Province (2004). Announcement on selecting the first famous principal and teachers of basic education in Guangdong Province. *http://www.docin.com/p-23585021.html*

Department of Education of Guangdong Province (2010). Announcement on selecting the second famous principal and teachers of basic education in Guangdong Province. *http://www.gzyz.net.cn/Article/XYXW/sjwj/201001/1884.html*

Dimmock, C., & Edwards, A. (1996). Implementing problem-based learning in a master's degree program in educational administration. *Teaching in Higher Education,* 1(3), 305-324.

Dimmock, C., & Walker, A. (1998). Comparative educational administration: Developing a cross-cultural conceptual framework. *Educational Administration Quarterly*, *34*(4), 558-595.

Dimmock, C., & Walker, A. (2000). Introduction justifying a cross-cultural comparative approach to school leadership and management, *School Leadership and Management,* 20(2), 137-141.

Divaharan, S., & Lim, C. P. (2010). Secondary school socio-cultural context influencing ICT integration: A case study approach. *Australasian Journal of Educational Technology*, 26(6), 741-763.

Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of problem-based learning: A meta-analysis. *Learning and instruction*, *13*(5), 533-568.

Dong, A., X., & Geng, G. Y. (2008). Exploration of principal leadership style under new curriculum. *Forum on Contemporary Education,* 6, 33-35. (in Chinese).

Dong, X. P. (2006). From transactional leadership to shared leadership: building the drive for quality education. Contemporary Educational Science, Vol. 12, pp. 33-36. (in Chinese)

Drucker, P. (1995). *Managing in a time of great change.* New York: Talley House, Dutton.

Duke, D. L. (1996,). *The normative context of organizational leadership.* Paper presented at the Toronto Conference on Values and Leadership, Ontario Institute for Studies in Education.

Evans, R. (1996). *The human side of school change.* San Francisco: Jossey Bass.

Fan, W. W. (2011). *Research on middle school principal training course in the perspective of role theory.* Master Thesis. Nanjing Normal University.(in Chinese)

Fan, Y. (2000). A classification of Chinese culture. *Cross Cultural Management: An International Journal,* 7(2), 3-10.(in Chinese)

Fang, Z. H.,& Chen, L. (2009). Study on the training mode of experience based and skill practice for school principal. *Primary and Secondary Teacher Training,* 5, 24-26.(in Chinese)

Fei, L. Y. (2006). *Study of school principals' intervention in the school organizational change curve—A case of a primary school in Shanghai.* Master thesis. East China Normal University. (in Chinese)

Feng, D.M. (2002). The training mode for principal supported by IT. *Primary & middle school management,*(2). (in Chinese)

Feng, D.M. (2003). Principal training in the People's Republic of China:

Retrospect and prospect. *Reshaping the landscape of school leadership development: A global perspective, 205-216.*

Feng, D. M. (2006), "China's recent curriculum reform: progress and problems", *Planning and Changing,* Vol. 37 No. 1/2, pp. 131-144.

Forsyth, P. B., & Willower, D. J. (1999). A brief history of scholarship on educational administration. In J. Murphy & K. S. Louis (Eds.), *Handbook of research on educational administration* (2nd ed., pp. 1-23). San Francisco: Jossey-Bass.

Fry, G.W., & Bi, H. (2013). The evolution of educational reform in Thailand: The Thai educational paradox. *Journal of Educational Administration,* 51(3), 290-319.

Fullan, M. (1993). *Change forces: Probing the depths of educational reform.* London: Falmer Press.

Fullan, M. (2003). *Change forces with a vengeance.* London: Falmer Press.

Fullan, M. (2006). The future of educational change: System thinkers in action. *Journal of Educational Change*, *7*(3), 113-122.

Fullan, M. (2007). *The new meaning of educational change.* New York: Teachers College Press.

Fullan, M. (2009). *The challenge of change: Start school improvement now!* Thousand Oaks, CA: Corwin Press.

Fullan, M. (Ed.). (2005). *International Handbook of Educational Change: Fundamental change* (Vol. 3). The Netherlands: Springer.

Fullan, M., Cuttress. C. & Kilcher, A. (1999). 8 forces for leaders of change. In Sarason. S. B. (Eds.), *Revisiting "the culture of school and the problems of change"*. New York: Teachers College Press.

Gao, H. Y. (2002). Comparisons and considerations of the 'autonomous management' in China and abroad. *Comparative Education Review,* Vol. 8, pp. 54-57. (in Chinese)

Gao, K. F. (2005). New trends of policy of prim-secondary school principal training. *Continues Study Education.* (4), 102-103.

Goldring, E., Huff, J., May, H., & Camburn, E. (2008). School context and individual characteristics: what influences principal practice?. *Journal of Educational Administration,* 46(3), 332-352.

Grady, N., Macpherson, R., & Mulford, B. (1995). Problem-based learning in educational administration through block delivery modes. *International Studies in Educational Administration.* 23(1), 58-64.

Griffith, J. (2004). Relation of principal transformational leadership to school staff job satisfaction, staff turnover, and school performance. *Journal of Educational Administration*, *42*(3), 333-356.

Gu, M. Y. (2004). *Cultural foundation of Chinese Education.* Shanxi Education Publishing House. (in Chinese)

Hall, G., & Hord, S. (1987). *Change in schools: Facilitating the process.* Albany, NY: State University of New York Press.

Hall, G., & Hord, S. (2002). *Implementing Change: Patterns, Principles, and Potholes.* Allyn & Bacon, Boston.

Hallinger, P. (1995). Culture and leadership: Developing an international perspective in educational administration. *UCEA Review,* 36(1), 3-7.

Hallinger, P. (2003a). Leading educational change: Reflections on the practice of instructional and transformational leadership. *Cambridge Journal of education,* 33(3), 329-352.

Hallinger, P. (2003b). School leadership development: Global challenges and opportunities. In P. Hallinger (Ed.), *Reshaping the landscape of school leadership development: A global perspective.* The Netherlands: Swets & Zeitlinger.

Hallinger, P. (2007). A problem-based approach for management education [electronic resource]: *Preparing Managers for Action.*

Hallinger, P. (2010). Making education reform happen: Is there an Asian way? *School Leadership and Management,* 30(5), 401-408.

Hallinger, P. (2011). Leadership for learning: lessons from 40 years of empirical research. *Journal of Educational Administration,* Vol. 49 No. 2, pp. 125-142.

Hallinger, P., & Bridges. (2007). *Problem-based management education: Developing "managers for action."* Dordrecht, Netherlands: Springer.

Hallinger, P., & Bryant, D.A. (2013a). Mapping the terrain of research on educational leadership and management in East Asia. *Journal of Educational Administration,* 51(5), 618-637.

Hallinger, P., & Bryant, D.A. (2013b). Review of research publications on educational leadership and management in Asia: A comparative analysis of three regions. *Oxford Review of Education,* 39(3), 307-328.

Hallinger, P., & Heck, R. H. (2003). Understanding the principal's contribution to school improvement. In M. Wallace & L. Poulson (Eds.), *Learning to read critically in educational leadership and management.* London: Sage.

Hallinger, P., & Heck, R. H. (2010). Collaborative leadership and school improvement: Understanding the impact on school capacity and student learning. *School Leadership and Management,* 30(2), 95-110.

Hallinger, P., & Kantamara, P. (2000a). Leading educational change in Thailand: Opening a window on leadership as a cultural process. *School Leadership and Management,* 20(1), 189-206.

Hallinger, P., & Kantamara, P. (2000b). Leading at the confluence of tradition and globalization: The challenge of change in Thai schools. *Asia Pacific Journal of Education,* 20(2), 46-57.

Hallinger, P., & Kantamara, P. (2000c). Learning to lead global changes in local cultures: Designing a computer-based simulation for Thai school leaders. *Journal of Educational Administration,* 39(3), 197–220.

Hallinger, P., & Kantamara, P. (2001a). Exploring the cultural context of school improvement in Thailand. School Effectiveness and School Improvement, 12(4), 385-408.

Hallinger, P., & Kantamara, P. (2001b). Learning to lead global changes in local cultures-Designing a computer-based simulation for Thai school leaders. *Journal of Educational Administration,* 39(3), 197-220.

Hallinger, P., & Kantamara, P. (2002). Educational change in Thailand. *School leadership and administration. Adopting a cultural perspective*, 123-140.

Hallinger, P., & Lee, M. S. (2011). Assessing a decade of education reform in Thailand: Broken promise or impossible dream? *Cambridge Journal of Education*, 41(2), 139-158.

Hallinger, P., & Leithwood, K. (1996). Culture and educational administration: a case of finding out you don't know you don't know. *Journal of Educational Administration,* 34(5), 98-116.

Hallinger, P., & Lu, J. F. (2011a). Assessing the instructional effectiveness of problem-based management education in Thailand: A longitudinal evaluation study. *Management Learning,* 42(3), 279-299.

Hallinger, P., & Lu, J. F. (2011b). Implementing problem-based learning in higher education in Asia: challenges, strategies, and effects. *Journal of Higher Education Policy and Management,* 33(3), 267-285.

Hallinger, P., McCary, M. (1990). Developing the strategic thinking of instructional leaders. *Elementary School Journal, 91*(2), 90-108.

Hallinger, P., Crandall, D., & Ng, F. S. (2001). Making change happen: A simulation for learning to lead change. *The Learning Organization and*

Educational Policy, 4, 141-162.

Hallinger, P., Lu, J. F., & Showanasai, P. (2010). Learning to lead organizational change: Assessment of a problem-based simulation in Thailand. *Educational Review,* 62(4), 467-486.

Hannum, E., & Park, A. (2002). Educating China's rural children in the 21st century, Harvard China Review, 3(2), *Retrieved from www.economics.ox.ac.uk/members/albert.park/papers/harvard.pdf.*

Hart, A. W. (1993). A design studio for reflective practice. *Cognitive perspectives on educational leadership,* 213-230.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.

Hawkins, J. N. (2000). Centralization, decentralization, recentralization-Educational reform in China. *Journal of Educational Administration,* 38(5), 442-455.

Heath, C., Larrick, R. P., & Klayman, J. (1998). Cognitive repairs: How organizational practices can compensate for individual shortcomings. *In Review of Organizational Behavior.*

Heck, R. H. (1992). Principals' instructional leadership and school performance: Implications for policy development. *Educational evaluation and policy analysis,* 14(1), 21-34.

Hmelo, C., Gotterer, G. S., & Bransford, J. D. (1997). A theory-driven approach to assessing the cognitive effects of PBL. *Instructional science,* 25(6), 387-408.

Hofstede, G. (1980a). *Cultures and Organizations.* London: McGraw Hill.

Hofstede, G. (1980b). *Culture consequences: International differences in work-related values.* Beverly Hills, CA: Sage.

Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of International Business Studies,* 14(2), 75-89.

Hofstede, G. (1991). *Cultures and Organizations: Software of the Mind.* London: McGraw-Hill.

Hofstede, G. (1994). *Cultures and organizations: software of the mind.* London: Harper Collins.

Hofstede, G. (1997). *The Archimedes effect. Working at the interface of cultures: 18 lives in social science.* M. H. In Bond. London, Routledge: 47-61.

Hofstede, G. (2001). *Cultures consequences: Comparing values, behaviours,*

institutions and organizations across nations (2nd ed.). Thousand Oaks, CA: SAGE.

Hofstede, G. (2003). *Cultures and organizations—software of the mind.* London: Profile Books Ltd

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations.*Thousand Oaks, CA: Sage.

Hu, C. S. (2005). *New leadership theory and the growth of servant-headmasters in China,* Unpublished master thesis. Beijing Normal University, Beijing, China. (in Chinese)

Hu, Y. (2008). *Research on "Problem-based" model for headmaster training in China.* Doctoral dissertation. Xinan University.(in Chinese)

Huang, F. (2004). Curriculum reform in contemporary China: Seven goals and six strategies. *Journal of curriculum studies,* 36(1), 101-115. (in Chinese)

Huber, S. G. (2004). School leadership and leadership development: adjusting leadership theories and development programs to values and the core purpose of school. *Journal of Educational Administration,* 42(6), 669-684.

Jia, H. L. (2007). Investigation on leadership effectiveness of primary and secondary school head teachers, *Journal of Teaching and Management,* 12, 12-13. (in Chinese)

Jean-Marie, G., Normore, A. H., & Brooks, J. S. (2009). Leadership for social justice: Preparing 21st century school leaders for a new social order. *Journal of Research on Leadership Education,* 4(1), 1-31.

Kantamara, P. (2000). *Leading change in Thai schools: A problem-based simulation for Thai educational leaders.* Unpublished doctoral dissertation, Peabody College of Vanderbilt University, Nashville, TN.

Ke, Z. (2007). An analyze to new institutionalism of the difficulties in school change, *Peking University Education Review*, 5(1), 42-54. (in Chinese)

Keppell, M. (2000). Principles at the heart of an instructional designer: Subject Matter Expert Interaction. *Ascilite. org. au. Retrieved January*.

Kirkpatrick, D.L. (1977). Evaluating training programs: Evidence vs. proof. *Training and Development Journal, 31*(11), 9-12.

Klar, H. W., & Brewer, C. A. (2013). Successful Leadership in High-Needs Schools An Examination of Core Leadership Practices Enacted in Challenging Contexts. *Educational Administration Quarterly.*

Ko, J. Y., Hallinger, P., & Walker, A. D. (2012). Exploring school improvement in Hong Kong secondary schools. Peabody Journal of

Education, 87(2), 216-234.
Koray, O. (2011). The effectiveness of problem-based learning supported with computer simulations on academic performance about buoyancy. *Energy Education Science and Technology Part B-Social and Educational Studies,* 3(3), 293-304.
Kotter, J. P. (1996). *Leading change. Boston,* MA: Harvard Business School Press.
Kotter, J. P. (2012). *Leading change. Boston,* MA: Harvard Business Review Press.
Kotter, J. P. (1988).*The Leadership Factor.* New York: Free Press.
Kotter, J. P., & Cohen, D. S. (2002). *The heart of change: Real-life stories of how people change their organizations*. Harvard Business Press.
Kuijs, L., & Wang, T. (2005). China's pattern of growth: Moving to sustainability and reducing inequality. *World Bank policy research working paper,* (3767).
Kumar, I. A., & Parveen, S. (2013). Teacher Education in the Age of Globalization. *Research Journal of Educational Sciences,* 1(1), 8-12.
Lam, Y. L. J. (2003). Balancing stability and change: Implications for professional preparation and development of principals in Hong Kong, In P. Hallinger (Ed.). *Reshaping the landscape of school leadership development: A global perspective* (pp. 175-188). Lisse, The Netherlands: Swets and Zeitlinger.
Leithwood, K. (1994). Leadership for school restructuring. *Educational Administration Quarterly*, *30*(4), 498-518.
Leithwood, K., Day, C., Sammons, P., Harris, A., & Hopkins, D. (2006). *Seven strong claims about successful school leadership*. Nottingham, England: National College of School Leadership.
Leithwood, K., & Jantzi, D. (2000). The effects of transformational leadership on organizational conditions and student engagement with school. *Journal of Educational Administration.* 38(2): 112-129.
Leithwood, K., Seashore Louis, K., Anderson, S., & Wahlstrom, K. (2004, September).How leadership influences student learning. Retrieved June, 2005, from http://www.wallacefoundation .org/NR/rdonlyres/E3BCCFA5-A88B-45D3-8E27-B973732283C9/0/ReviewofResearchLearningFromLeadership.pdf
Leithwood, K., & Steinbach, R. (1992). Improving the Problem-Solving

Expertise of School Administrators Theory and Practice. *Education and Urban Society,* 24(3), 317-345.

Leithwood, K., & Sun, J.P. (2012). The nature and effects of transformational school Leadership: A meta-analytic review of unpublished research, *Educational Administration Quarterly,* 48(3), 387-423.

Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claims about successful school leadership. *School leadership and management,* 28(1), 27-42.

Li, C. H., & Ma, Y. P. (2006). Situation and strategies for principal curriculum leadership. *Global Education,* 35(6), 50-55. (in Chinese)

Li, C. L. (2007). *Real construction of reality: Study on government-dominated school reform.* Zhejiang University press. (in Chinese)

Li, J. P. (2006). Study on the cause and development of personality cult and personal authoritarian. *Journal of Qiushi,* zl, 017

Li, T. (2005). *Review on Chinese educational administration: needs of principal training.* Beijing, Education Science Press.(in Chinese)

Li, Y. (2009). Strategies Consideration of Improving the Training for Primary and Secondary School Principals. *Journal of Hefei Teachers College,* 27(4).(in Chinese)

Liang, S. M. (2003). *The essence of Chinese culture.* Shanghai people's Publishing House.(in Chinese)

Lin, C. C. (2008). Demystifying the chameleonic nature of Chinese leadership. *Journal of Leadership and Organizational Studies*, 14(4), 303-321.

Lin, C. H. (2000). Case study and comparison in terms of principal leadership power. *Shanghai Research on Education,* 149(5), 24-29. (in Chinese)

Lin, S. (2011). On the trend of modern prim-secondary school principal training. *Prim-Secondary School Teacher Training*, 6, 27-30.(in Chinese)

Lin, T. J., Deng, F., Chai, C. S., & Tsai, C. C. (2013). High school students' scientific epistemological beliefs, motivation in learning science, and their relationships: A comparative study within the Chinese culture. *International Journal of Educational Development*, 33(1), 37-47.

Ling, Y. Z. (2006). *Obstacles and strategies of Chinese traditional culture on the innovation education.* Estate & Science Tribune, (4),115-116.(in Chinese)

Liu, L. (2010). Problem and improving strategies of prim-secondary school principal training. *Fujian Education.* (2):84- 85.

Liu, Y., & Fang, Y. (2009). *Basic education reform in China: globalization with Chinese Characteristics*.(in Chinese)

Lu, J., Hallinger, P. & Showanasai.P. (2012). Simulation-based learning in management education A longitudinal quasi-experimental evaluation of instructional effectiveness. *www.emeraldinsight.com/0262-1711.htm.*

Luo, G. J., Kai, L. T., & Yang, B. A. (1995). *Chinese traditional moral.* Vol. 2. Renmin University of China press.(in Chinese)

Luthans, F. (2005). *Organizational behavior.* NewYork: McGraw Hill

Ma, Y. P., Wang, B., & Xie, S. (2008). Principals' curriculum leadership: An important assurance for deepening development of primary and secondary school curriculum reform in rural area, *Journal of Northeast Normal University (Philosophy and Social Sciences*, 231(1), 30-33. (in Chinese)

Ma, Y. P., Wang, B., & Yan, J. S. (2005). Talking about the principals of the rural primary and middle schools as curriculum leaders in the new curriculum reform. *Theory and Practice of Education,* 25(3), 44-48. (in Chinese)

Macbeath, J., & Cheng, Y. C. (2008). *Leadership for learning: International perspectives.* Rotterdam, the Netherlands: Sense Publishers.

Major, C. H., & Palmer, B. (2001). Assessing the effectiveness of problem-based learning in higher education: Lessons from the literature [Electronic version], *Academic Quarterly,* 5(1).

Magno, C. (2014). Educational Leadership in a Global Context. *Educational Leadership: Perspectives on Preparation and Practice, 121.*

Mao, Z. X. (2010). *The research on traits of headmaster of Shandong Province junior secondary school--Based on the first selected group of Shandong eminent headmasters.* Master dissertation, Shangdong Normal University. (in Chinese)

Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. *Educational administration quarterly,* 39(3), 370-397.

Marzano, R. J., Waters, T., & McNulty, B. A. (2005). *School Leadership that Works: From Research to Results.* Association for Supervision and Curriculum Development. 1703 North Beauregard Street, Alexandria, VA 22311-1714.

Miles, M., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods*. Thousand Oaks, CA: Sage.

Ministry of Education (MOE). (1999). *Guidelines for Prim-Secondary school principals training.* Beijing: Ministry of Education. (in Chinese)

Ministry of Education (MOE). (2001a). *The outline of the basic education reform (Tentative),* Ministry of Education, Beijing, China. (in Chinese)

Ministry of Education (MOE). (2001b). *Decisions on the basic education reform and development,* Ministry of Education, Beijing, China. (in Chinese)

Ministry of Education (MOE). (2010). *National Outline for Medium and Long-term Education Reform and Development (2010-2020).* Beijing: Ministry of Education. (in Chinese)

Ministry of Education (MOE). (2011).The Compulsory Education Curriculum Standards (2011Edition). Beijing: Ministry of Education. (in Chinese)

Mounier, A., & Tangchuang, P. (2009). *The quality controversy.* Bangkok, Thailand: Silkworm Books.

Murphy, J. (2006). *Preparing school leaders: An agenda for research and action.* Lanham, MD: Rowman & Littlefield.

Network Inc. (1999). Making Change Happen! TM, The Network Inc., Rowley, MA.

Ng, D. (2004). *Change leadership: communicating, continuing, and consolidating change,* Pearson Education South Asia, Singapore.

Ngok, K. (2007). Chinese education policy in the context of decentralization and marketization: Evolution and implications. *Asia Pacific Education Review,* 8(1), 142-157.

Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education,* 31(2), 199-218.

O'Toole, J. (1995). *Leading change.* San Francisco: Jossey Bass.

Ouyang, W.M. (1995). *Confucian Culture and Chinese Economy*. China: Northwestern Finance and Accounting University Press (in Chinese).

Park, H. J. (2002). *Learning effective organizational strategies across cultures: Leading change in Korean organizations.* Unpublished doctoral dissertation, Peabody College of Vanderbilt University, Nashville, TN.

Pepper, S. (1996). *Radicalism and education reform in 20th century China.* Cambridge, UK: Cambridge University Press.

Prestine, N. A. (1993). Apprenticeship in problem-solving: Extending the cognitive apprenticeship model. *Cognitive perspectives on educational*

leadership, 192-212.

Qi, L.Y. (2007). *Confucius education prize rewarded by UNESCO* . Primary Chinese, (11), 58. (in Chinese)

Qian, H. Y. (2008). *The secondary school principalship in China: Leading at the cusp of change.* Paper presented at the UCEA Annual Convention, Orlando, FL.

Reay, D. G.,(1994). *Evaluating Training.* London: Kogan Page Ltd. ; New Jersey: Nichols Pub. Co.

Ribbins, P., & Zhang, J. (2006). Culture, Societal Culture and School Leadership - A Study of Selected Head Teachers in Rural China. *Leading and Managing*, 34(1), 71-88.

Robinson, V. M. (2007). *School leadership and student outcomes: Identifying what works and why* (Vol. 41). Winmalee, Victoria, Australia: Australian Council for Educational Leaders.

Robinson, V. M., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational administration quarterly*, 44(5), 635-674.

Rogers, E. (2003). *Diffusion of innovations.* Fifth Ed. New York, NY: The Free Press.

Rothfeder, J.(1998). *Computer based training.* Forbes, Sep, New York.

Salas, E., Wildman, J. L., & Piccolo, R. F. (2009). Using simulation-based training to enhance management education. *Academy of Management Learning & Education,* 8(4), 559-573.

Sarason S. (1982). *The culture of the school and the problem of change*. Boston, MA: Allyn & Bacon.

Sarason, S. (1990). *The predictable failure of school reform.* San Francisco: Jossey-Bass.

Sebastian, J., & Allensworth, E. (2012). The Influence of Principal Leadership on Classroom Instruction and Student Learning A Study of Mediated Pathways to Learning. *Educational Administration Quarterly,* 48(4), 626-663.

Senge, P. M. (1990). The fifth discipline. New York: Doubleday

Shi, W. (2003). The variation of Western feminist thought in China. *Journal of Theory.* 2. 035. (in Chinese)

Shi, Z. Y., & Zhang, X. Q. (2008). Thirty years of experience of Chinese educational reform. *Journal of Beijing Normal University (Social Science),*

(5), 22-32. (in Chinese)

Short, P. M., & Rinehart, J. S. (1993). Reflection as a means of developing expertise. *Educational Administration Quarterly,* 29(4), 501-521.

Showanasai, P. (2014). *Adapting a Problem-based Computer Simulation for Teaching and Research in Management Education.* Unpublished Doctorial Dissertation. HongKong Institute of Education.

Song, H. (2003). *Learning effective organizational strategies across cultures: learning Change in Korean organizations.* Unpublished Doctoral Dissertation. Peabody College of Vanderbilt University.

Spillane, J. P., Halverson, R., & Diamond, J. B. (2001). Investigating school leadership practice: A distributed perspective. *Educational researcher*, 23-28.

Spinello, E., & Fischbach, R. (2004). Problem-based learning in public health instruction: A pilot study of an online simulation as a problem-based learning approach. Education for Health-Abingdon-Carfax Publishing Limited, 17, 365-373.

Spinello, E. F., & Fischbach, R. (2008). Using a web-based simulation as a problem-based learning experience: perceived and actual performance of undergraduate public health students. Public Health Reports, 123(Suppl 2), 78.

Spring, J. (2014). Globalization of Education: An Introduction: An Introduction. *Routledge.*

Steadman, R. H., Coates, W. C., Huang, Y. M., Matevosian, R., Larmon, B. R., McCullough, L., & Ariel, D. (2006). Simulation-based training is superior to problem-based learning for the acquisition of critical assessment and anagement skills*. *Critical care medicine,* 34(1), 151-157.

Strobel, J., & van Barneveld, A. (2009). When is PBL More Effective? A Meta-synthesis of Meta-Analyses Comparing PBL to Conventional Classrooms. *The Interdisciplinary Journal Problem-based learning,* 3(1), 44-58.

Su, L. (2009). *Successful principals lead school successfully*. Beijing, China: China Education Press. (in Chinese)

Sun, C. X., & Fan, G. R. (2008). Analysis of the cost of school change-- A case of government-dominated change. *Study on the development of Education*. (19)

Surface, J. L., & Smith, P. J. (2012). Leadership for Social Justice. Educational

Leaders Encouraging the Intellectual and Professional Capacity of Others: A Social Justice Agenda, 1079.

Tang, L. F. (2007). *School culture in the curriculum reform.* Northeast Normal University Press.

Tang, S. B., Lu, J. F., & Hallinger, P.(2014). Leading School Change in China: A Review of Related literature and Preliminary Investigation. *International Journal of Educational Management.*

Tang, Y. H. (2007). *Study on the model of situation training to headmaster.* Master Thesis, Hunan Normal University.(in Chinese)

Tang, Y. J. (1991). *Confucianism, Buddhism, Daoism, Christianity and Chinese Culture.* The University of Peking.(in Chinese)

The NETWORK Inc. (1997). *Making Change Happen™ ™.* Rowley, MA.: The NETWORK Inc.

Townsend, T. (2011). School leadership in the twenty-first century: different approaches to common problems?. *School leadership and management,* 31(2), 93-103.

Treacy, B., Kleiman, G., & Peterson, K. (2002). Successful online professional development. *Learning and Leading with Technology,* 30(1), 42-49.

Triandis, H. C. (1995). Individualism & collectivism. Westview Press.

Triandis, H. C., Chen, X. P., & Chan, D. K. S. (1998). Scenarios for the measurement of collectivism and individualism. *Journal of Cross-Cultural Psychology,* 29(2), 275-289.

Turner, C., & Trompenaars, A. (2000). *Building Cross-Cultural Competence:How to create wealth from conflicting values.* Yale University Press.

Vernon, D. T., & Blake, R. L. (1993). Does problem-based learning work? A meta-analysis of evaluative research. *Academic medicine*, *68*(7), 550-63.

Walker, A., Bridges, E., & Chan, B. (1996). Wisdom gained, wisdom given: Instituting PBL in a Chinese culture. *Journal of Educational Administration,* 34(5), 12-31.

Walker, A., Hu, R. K., & Qian, H. Y. (2012). Principal leadership in China: An initial review. *School Effectiveness and School Improvement,* 23(4), 369-399.

Walker, A., Qian, H.Y., & Zhang, S. (2011). Secondary school principals in curriculum reform: Victims or accomplices? *Frontiers of Education China*, 6(3), 388–403.

Wang, C. (2008). Reflection on improving the effectiveness of the primary and secondary schools principal training--Reform the training courses and methods as breakthrough. *Journal of Adult Education College of Hubei University*, 26(4), 42-44.(in Chinese)

Wang, D. X. (2005). Ideas on the headmaster training under the background of new curriculum reform, *Journal of Jiangsu Institute of Education* (Social Science), 6. (in Chinese)

Wang, D. Y. (2005). *The factors and the countermeasures which influent the effectiveness of the training for headmasters in China.* Master Thesis, Central China Normal University.(in Chinese)

Wang, S. Z. (2007). 15 years of primary and secondary school principals Training in China. *New curriculum research (Education Management),* 6, 015.(in Chinese)

Wei, H. H. (2006). Meanings and strategies of principal leadership in learning schools. *Journal of Teaching and Management,* Vol. 12, pp. 13-14. (In Chinese)

Wong, K. C. (2006). Contextual impact on educational management and leadership. *Journal of Educational Change*, *7*(1-2), 77-89.

Wong, K. C. (2007). *Culture and moral leadership in education.* Peabody journal of education, 73(2),106-125.

Wu, Y. P., & Pang,Q. Z. (2011). *Teaching reform during school transformation.* Educational Science Publishing House, Shanghai. (in Chinese)

Xu, D. (2005). Understanding headmaster's power under headmaster's responsibility system. *Continuing Education Research,* 6, 161-163. (In Chinese)

Yang, X. W. (2009). Three types of collaboration in promoting district schools change in China. Journal of Chinese Education, (7), 5-9. (in Chinese)

Yang, Z. L. (2004). Why China can develop with the miraculous pace? *Guangming Daily*, 6, 25. (in Chinese)

Ye, L. (2002a). Restructuring the perceptions of teaching process--The theory and practice of teaching reform of the"New basic education" classroom teaching reform (2). Educational Research, 10(0). (in Chinese)

Ye, L. (2002b). To realize the transformation of school reform: to China at the beginning of the century. *Explore and Contend,* 7, 10-14. (in Chinese)

Ye, L. (2004). Examining the development of the Chinese Education.

Education Research, 25(7), 3-17. (in Chinese)

Ye, L. (2009). *Realizing transformation: The trend of the school change in China in the early stage of the century.* Educational Science Publishing House, Shanghai. (in Chinese)

Yuan, D. R. (2009). *Re-considering the relations between contemporary Chinese basic education and its cultural tradition.* Doctoral Dissertation. East China Normal University. (in Chinese)

Yuan, G. R. (2010). *Keep on emancipating the mind, persisting in reform and innovation and strive to create a new situation in the cause of science educational development--Speech in the Ministry of education in 2010 annual work conference. China's national education,* (003), 4-9. (in Chinese)

Yuan, J. B. (2010). *The study of the problems and strategies for the training for the rural area principals in primary and middle school—a case of Dalian district.* Master Thesis, Liaoning , Liaoning Normal University. (in Chinese)

Zahed, H. (1996). Computer-based training versus traditional lecture: Effect on learning and retention. *Journal of Business and Psychology,* 11(2), 297-310.

Zeng, X. Y. (2001). The revival of Confucianism and the current educational reform in China. *The study of educational history.* 4. (in Chinese)

Zhang, D. N., & Fang, K. L. (1994). *Introduction to Chinese culture. Vol. 5.* Beijing Normal University press.

Zhang, L. W. (1989). *The introduction of traditional discipline: Multidimensional reflection on Chinese traditional culture.* XinHua Book Store. (in Chinese)

Zhang, T. X., & Zeng, T. S. (2006). School improvement and principal power in the view of citizen society concept. *Educational Research,* 27(5), 55-58. (In Chinese)

Zhang, X. Y. (2009). On the ways of improving the efficiency of headmasters' Training. *Journal of Shaanxi Institute of Education.* 25(3), 15-17. (in Chinese)

Zhang, Y. G. (2007). The Intercultural Communication and Differences of Face Perception in Chinese and Western Culture. *Journal of Sanmenxia Polytechnic*, 2, 027 (in Chinese).

Zhang, Z. S., &Wang, Z. H. (2001). The study on the relationship between

school principal's behavior and teachers' working satisfaction. *Psychology Science,* 24(1).

Zhao, H. T. (2005). Exploration of Problem-Based Principal Training. Doctoral Dissertation. East China Normal University. (in Chinese)

Zheng, Y. L. (2009). *Research on school improvement based training mode for primary & middle school principal*. Master Thesis. Shanghai, East China Normal University. (in Chinese)

Zhong, Q. Q. (2005). Curriculum reform in China: Challenge and reflection. *Comparative Education Review,* 12, 18-23. (in Chinese)

Zhong, Q. Q. (2006). Curriculum reform in China: Challenges and reflections. *Frontiers of Education in China,* 1(3), 370-382.

Zhou, J. (2009). *Opening speech on 60 years of educational reform and development at the State Council Information Office.* Beijing.(in Chinese)

Zhu, C. Q. (2009). *The evaluation of headmaster training.* Master Degree thesis. Hunan Normal University.

Zhu, G. Q.（2010). What kind of training progamme do the new principal need?—A survey on the principals of Changzhou city in Jiangsu province. *Journal of Shanghai education science research*, (7), 52-54.(in Chinese)

Appendix A: Qualitative Small-Scale Study Interview Questions

1. How long have you worked as a school principal in this school?
2. Can you please identify an important change that you have been implementing in your school? Please be specific (for example, a new teaching method, a new curriculum, or ICT).
3. When did your school begin to implement this change and why? Was it a new Ministry policy or something that the school chose to implement on its own?
4. How did you feel about this change at the beginning (e.g., important, useful, waste of time, etc.)?
5. How did you first communicate the need to implement this change to your staff?
6. What was the response of staff (students and parents—if relevant) when you first informed them about it? (e.g., happy, no response, some quiet resistance, open opposition).
7. Would you please describe the process of leading the school change?
    a) How did you start the change?
    b) Who was responsible for leading the change (be specific)?
    c) At the time that you began to make this change, please describe briefly:
        1) Factors in your school that supported the change
        2) Factors in your school that would make implementing the change difficult (e.g., budget, staff attitude, staff skills, school culture)
        3) What obstacles or problems did you face in getting the change started? Please describe these in some detail with examples.
8. What kind of activities have you done to motivate your staff to implement the change?
9. What was the percentage of staff who could implement the change after:
    a) One year?
    b) Two years?
    c) Longer?
10. What percentage of staff are now able to use the change? How successful do you think it has been? Why do you think that? (What is the evidence of success?)

11. What obstacles or problems did you face in moving the change along during the period after you got it started? Please describe these in some detail with examples.
12. Who were the important people in your staff who helped make the change happen? How did each of them help?
13. If you look back now, what were the key factors supporting the change in your school? How did you get these supports?
14. How long did it take for your school to have changed obviously?
15. Would you please provide 4 specific suggestions for other school leaders on how to lead successful change in Chinese schools? Can you order these by importance?

Appendix B: Introduction to the MCH™ Simulation

Introduction

To make a change is to understand a process, to comprehend building a bridge from idea, to action, to use. Changes are so common that people are asked to make and adapt to them every day and yet, as creatures of habit, we resist change. In organizational settings, people rarely pay attention to the best way to make changes occur, or to consider if there are ways to make changes smoother, more efficiently, or with more sensitivity toward those people who will be affected by the change.

Making Change Happen™ is a tool for leaders that simulates organizational change. You will have the opportunity to try out real life strategies for changing policies and practices in a fictional school system, complete with administration, teaching staff, and members of the community.

You are member(s) of a "change committee" charged with the pilot implementation of a major technology innovation in your organization. Your committee will conduct a variety of activities designed to bring about change in the attitudes and practices of people as they learn to use the new technology. Because Making Change Happen™ is based upon findings from over 20 years of research, the situations and the people will appear real, as will the roadblocks and the excitement of achieving your goals.

Although you will be seeking to implement learning technology in this school, the goals of the simulation are more general:

· To think strategically about change;
· To learn to manage change effectively;
· To overcome predictable change obstacles;
· To work as a team to foster change.

Your team's goal in the simulation is to promote the use of a new software system -- Information Technology 2020 (IT 2020) -- in the organization. This integrated software package has been selected for use throughout the organization. However, prior to a full roll-out, IT 2020 will be pilot-tested in two schools within the Central Region. Your committee will oversee the pilot implementation. Success in the simulation will be assessed by your ability to foster active use of IT 2020 and by increases in the benefits gained from the new technology.

Now, please go to the TUTORIAL to see how you will accomplish your task.

Appendix C: The Problem and Task Presented in MCH™

The problem

The teaching quality in Evergreen District has declined in recent years. Under pressure from the stakeholders' increasing demands for a higher quality of education, the new Director of the Evergreen District Bureau of Education said it's time for change. "Our traditional methods of teaching and learning are inadequate to meet the needs of the development of education. We must have an operation on our traditional depressing classroom teaching." Moreover, in the Director's words, "The Evergreen District has been slow to adopt the practices and policies necessary to the new curriculum innovation." As his first step in acting on his promise of change to the District's Board of Directors, the new director has mandated implementation of a new information technology system -- IT2020.

IT 2020 will, however, mean significant changes for all who work across the schools. In addition to the purchase and redesign of IT hardware and software, IT 2020 will require changing the way staff communicate and share information. This will in turn affect their relationships to students and to each other.

Uncomfortable with the pace at which other recent changes have been forced upon them, some veteran staff have begun to joke that the learning technology advocated by the new Director just might get used by the year 2020 or it just might be another show that passes by like smoke quickly.

Given the scope of this change in learning technology, the Director has decided to proceed by pilot testing the use of IT2020 at two schools (one primary school--Sunny Primary School and one secondary school--Blue Sky Secondary School) in the Central Region of the district. Based on results of the trial implementation in these schools, IT 2020 will then be rolled out into other schools. Despite this step-by-step approach, the new Director is under pressure to show results soon. Therefore trial implementation will begin immediately.

Your Task

You have been selected for special assignment to the team responsible for managing trial implementation of IT 2020 in the Central Region of the city. Your team is comprised of people from different roles in the Central Region.

You are leaders of the change.

You will coordinate with Beth, the head of the Tech Resources Center in the District Bureau of Education, and also with Al, the Regional Education Guide Centre Director. Two members of the District's Board of Directors--Carol and Dave--have been assigned by the Chairman of the Board to monitor this project.

Your team will lead implementation of IT 2020 over a three year period. In each year you will have a budget to spend on specific activities designed to foster use of IT 2020 among staff in these pilot schools. Your success will be assessed annually and at the end of the three years to see how widely staff are using IT 2020 and its effects on students learning.

Final Note

Remember:

* Your task is to foster staff's effective use of IT 2020 over a three year period;
* You will have information available about each staff member.
* Each year, you will have a budget of "bits" to spend, but you can't carry over unused funds.
* You will spend your budget on activities intended to inform, interest and support staff in the use of IT 2020.
* After doing an activity you will receive feedback on the results; people on the gameboard may move (i.e., change) and you may receive bennies.
* Your success will be evaluated in terms of the number of people in Early Use and Routine Use and the number of bennies you accumulate at the end of three years.

Good luck!

Appendix D: Simplified Summary of Player Instructions for MCH™

You are a change team implementing new technology in two trial schools in the central region in a district.

- There are 24 people you will get in touch with from the trial schools as well as the educational administration (see handout # 4).
- There are Five Stages of Use in adopting change across the top of the game board.
- Goals: Over a 3 year period you want to get people to use the technology and to increase productivity (bennies).
- Budget of bits: year one 35 bits; year two 30 bits; year three 25 bits.
- Choose one activity at a time from 19 activities (see handout).
- Select activities that you think are effective in moving people and gain bennies in the change process.
- Feedback: As you select activities, bits will be taken from your budget, people will move and you'll receive feedback on the results of each activity.
- You can consult with experts on problems encountered during the change. Each consultation will cost 1 bit.
- After 3 years, your performance will be assessed in a game report and result.

Appendix E: Making Change Happen™: People Descriptions

People Descriptions

These are descriptions of the staff from across two trial schools and the central office in the MCH™ simulation you are going to work with in promoting the new change. Learners can access these descriptions at any point during the simulation through either a printed handout or by 'clicking' on the staff member's name on the game screen.

Head Office

Al: Director, Central Regional Education Guide Centre

Director Al is a respected cadre who is very concerned with maintaining the region's reputation. Recently he was passed over for promotion, but retains strong political ties to certain board members.

Beth: Head, Information Technology Centre, District Bureau of Education.

Beth is an energetic newcomer to the Bureau with a lot of ideas about how IT could improve instruction. She understands the technology, but does not yet have a lot of contacts inside the schools.

Carol: Associate Director (Education Supervision), District Bureau of Education

Before the new director came, Associate Director Carol was one of the people put forward to be the director, but she was passed over in the end. She has some disagreements with the new director. And she wonders why such a radical change is needed given the district schools' past success. She does not support his purchase of IT 2020.

Dave: Associate Director (Basic Education), District Bureau of Education

Associate Director Dave is a strong supporter of programs that improve the quality of schooling. He is from the Central region and sometimes shows up at the schools to chat with staff.

PRIMARY SCHOOL

Eve: Principal, Elementary School

Principal Eve treats her staff with respect and receives their loyalty in return. She has supported a number of innovations to improve

instruction and curriculum and has a strong relationship with the community and upper management. Principal Eve is supportive of technology but only if she thinks it will improve her staff's teaching. She isn't good at computers herself.

Fern: Associate Principal, Primary School
Associate Principal Fern focuses on getting the job done and keeping things running smoothly in the school. She is not interested in new ideas but will go along if she must.

Gary: 1st Grade Teacher
An energetic and enthusiastic young teacher, Gary always seeks new and better ways of using technology. He is respected for his IT capability, but has been unable to get support for his ideas since arriving two years ago.

Hazel: 2nd Grade Teacher:
Hazel is confused by technology. She still can't figure out the new teaching software that was introduced last year. She complains a lot about the problems others cause and says: 'Why do people always like to put themselves in trouble? If we have time, why not relax and enjoy life?"
Irene: 3rd Grade Teacher
Irene says, 'When there's a job to be done, the old ways still work the best.' She doesn't trust technology or see a need for a new software system. She will resist anything that results in more work, even in the short term.

Jan: Registry Office, Head
Bright and articulate, Director Jan is respected by her colleagues. She has been concerned about the resistance to using new technology. Last year, she was asked by Head Office to run workshops for other teachers on how to improve classroom teaching by using IT technology.
Ken: 5th Grade Teacher
Ken is considered 'a nice guy' but nobody really knows where he stands on issues. Discipline in his class has not been good lately and he is worried about being blamed.

Lora: 6th Grade Teacher
Lora is a good teacher and everyone likes her. She keeps an eye out for things that have worked for other teachers, but is cautions about things that are too new.

Mia: Information Technology Teacher
Educated abroad, Mia sees great potential in learning technology. To

the amusement of some, she advocates student-centered learning.

Nora: Head of School Office
She has been with the school for many years. Not only has her child attended the school, but she was a graduate herself! She is well known and influential in the local community. Others like and respect Nora for her positive attitude and practical ideas.

SECONDARY SCHOOL
Owen: Principal, Secondary School
Bright and ambitious, Principal Owen, worked at the Central Office before receiving the promotion to Secondary School Principal (considered a post for those on their way up). He runs a good school, but tends to be cautious and is careful not to offend anyone.

Pat: Associate Principal Secondary School
Associate Principal Pat feels overworked and spends most of his time solving day-to-day problems. He is not interested in new projects because they waste his time and keep him from the practical work of making the school run smoothly.

Q.T.: Section Head of Politics
Q.T. sees education from the human side. He is fearful of technology and thinks it will interfere with the "real work" of his department.

Ray: Section Head of English
Ray believes strongly in the personal approach to teaching. He has yet to be convinced that computers are good for anything beyond the most basic language instruction.

Simone: Math Department Head
Simone has worked at the secondary school for over 20 years. She loves her job, but tends to stick with what has worked in the past. She is not sure what technology could do to improve the school's performance in math.

Thelma: Registry Office, Head
The registry office has become smooth under Thelma's leadership over the past five years. She is proud that her staff finally began using graphics calculators last year (even though she wasn't initially supportive when they were introduced several years back).

Upton: History Teacher
A veteran teacher, Upton is one of the most popular people at the school. He is respected for his

thoughtful ideas and staff from other departments frequently ask his advice. He believes that the Internet could make global issues more real to students.

Velma: Section Head of Information Technology
Velma is a competent teacher who always gets her job done. She is quiet and not well-known to a lot of other staff. She is attending a local college part-time in an IT Masters degree program.

Will: English Teacher
Will was transferred here after having "problems" at another school. He is often late and complains a lot about the extra workload teachers have at this school.

Xavier: Parent
Xavier is popular with teachers and students. He also has many contacts in the community and always looks out for the school's best interest.

Appendix F: Making Change Happen™: Activity Descriptions

Activity Descriptions

These are descriptions of the activities that can be played in the MCH™ simulation. Learners can access and read these descriptions at any time during the simulation through either a printed handout or by 'clicking' on the activity name on the game screen. Some activities can, however, only be played in years 2 and 3 (see below). Note that an activity is not actually implemented until the learner 'clicks' on the 'Do it' icon associated with the activity on the game screen. Some activities can be played multiple times; others can only be played once.

1. Consultant's Report

Information about the schools from a recent consultant's report.

2 bits

2. Social Information

Information you obtained from colleagues in the schools about the informal relationships of staff with whom you are working.

1 bit

3. Talk to First Time

Your first conversation with individual people to introduce information technology issues and IT 2020. Choose three people to talk to.

2 bits

4. Talk to Second Time

A follow-up conversation to further discuss their questions about IT 2020. Note: You must have talked to each of these people one time before you can talk to them again.

2 bits

5.Talk to Third Time

You go back for a third conversation to further discuss their concerns and answer questions about IT 2020. Note: You must have talked to each of these people two times before you can talk to them a third time. Choose three people to talk to the third time.

2 bits

6. Written Information

A short informational brochure about IT 2020 distributed to all staff in the region (i.e. in the Head Office and the two Schools).

2 bits

7. Presentation

A short presentation to all school staff in the region about IT 2020 (i.e. to Head Office and the two Schools).

3 bits

8. School Visit

You identify two schools outside of the district that are implementing IT2020 effectively. A cross-section of staff from the pilot schools take an overnight trip to visit the schools and talk with the staff. Choose eight people from across the region.

5 bits

9.Teacher Training

A teacher training activity is organized to help teachers have better knowledge and understanding about the theory and implementation of the change. Meanwhile, hands-on training is designed to promote the ability to use IT 2020 in the workplace. Choose five people from one school.

4 bits

10. IT2020 Demonstration

An expert or experienced teacher outside of the school is invited to give an on-site demonstration of IT 2020 for school staff. Following the demonstration, a demo model is left on display so it can also be viewed by parents and students as well as teachers. Designate whether the demonstration is at the primary or secondary school.

3 bits

11. Classroom Implementation

The staff that you select begin to try out IT 2020 in the classroom. Choose three people from anywhere in the region.

2 bits

12. Open Class

A teacher at this school offers a series of 3 Open Class sessions to model the new classroom techniques for colleagues. Each Open Class is followed by a discussion on how to use the new methods and also on problems and obstacles in using them. Select 4 teachers to attend.

4 bits

13. Follow-Up Help

A conversation with staff to solve problems they have encountered in using IT 2020. Choose three people. (Note: The people must have conducted a classroom lesson).

2 bits

14. IT2020 Classroom Teaching Competition

IT 2020 Classroom Teaching Competition is held in a school to foster teachers' understanding of the change and their abilities to implement the new changes in practice. The winners will be identified as "IT2020 Classroom Teaching Experts" in the school and are also rewarded by a bonus.

6 bits

15. School Open Day

A school-initiated Open Day that shows off the process of change implementation and the advantages of IT 2020. It's open to other schools and teachers in or outside of the region and district. Designate Secondary or Primary School.

7 bits

16. Regional Summary and Commendation Meeting

A major event to sum up the experience of implementing the change and commend excellent teachers in the pilot schools who have used IT 2020 to improve productivity. School leaders and teacher representatives from other schools in the Central Region and the media throughout the district are invited to participate.

7 bits

17. School Support Group

A group of staff who are actively using IT 2020 meet weekly to help each other solve problems. Choose five people from one school.

3 bits

18. IT2020 Software Revision

Revision of the IT 2020 software to better fit the needs of the schools based on staff feedback. Form a committee of five staff from anywhere in the region.

8 bits

19. School Policy Implementation

Change school policies to reflect changes in curriculum and instruction resulting from the adoption of learning technology. Form a committee of five staff from anywhere in the region.

8 bit

Appendix G: Simulation Preliminary Field Testing Interview Questions for Research Experts--Subject-Matter Expert (SME)

Respected Research Experts,
After playing the Making Change Happen™ simulation several times, please take a few minutes to think about the simulation and give us your answers to the following questions. Your reactions to this simulation will play a very important role in decisions about the further modification of the simulation. Please put a "√" under one of your selections of "Disagree, Partially Agree or Agree" in Agreement and "Low, Moderate or High" in Impact on Change.

Section One: Technical Functions.

1. Did you come across any instances where the Chinese text had errors?
   ☐A. Yes. ☐B. No.
   If yes, please
   explain:_____
2. Did the simulation display properly on your computer?
   ☐A. Yes. ☐B. No.
   If no, please
   explain:_____
3. Did you come across any instances where a feedback card did not appear?
   ☐A. Yes. ☐B. No.
   If yes, please
   specify:_____
4. Did you come across any cards that appeared to be incorrect when playing the simulation?
   ☐A. Yes. ☐B. No.
   If yes, please
   specify:_____
5. Did you come across any instances where the feedback on the card was not consistent with what happened on the gameboard?
   ☐A. Yes. ☐B. No.
   If yes, please
   specify:_____

Section Two: Validity of the Simulation Contents

6. Does the scenario in the simulation seem to be reasonable to you?
   ☐A. Yes. ☐B. No.
   If no, please explain:_____
7. Do you think the organizational chart in the simulation represents a reasonable relationship between people in the Chinese education system?
   ☐A. Yes. ☐B. No.
   If no, please
   explain:_____
8. Do the people descriptions seem to be reasonable to you?
   ☐A. Yes. ☐B. No.
   If no, please
   specify:_____
9. Do the response cards you received from the simulation seem to be reasonable to you?
   ☐A. Yes. ☐B. No.
   If no, please
   specify:_____
10. Are the change activities listed in the simulation representative (typical, commonly seen) of those used in leading school change in Chinese schools?
   ☐A. Yes. ☐B. No.
   If no, please
   explain:_____
11. Are there other important activities that might be missing here?
   ☐A. Yes. ☐B. No.
   If yes, please briefly describe
each:_____
12. The following is a questionnaire with a list of change principles. Please assess the following statements and give your opinion on their validity when applied to managing change in the Chinese education context. Please put a "√" under one of your selections of "Disagree, Partially Agree or Agree" in Agreement and "Low, Moderate or High" in Impact on Change.

No.	Change Principles	Agreement			Impact on Change		
		Disagree	Partially Agree	Agree	Low	Moderate	High
1	Implementing changes in curriculum and instruction can take up to 3 years before				---	---	---

	we see real changes in the practice of the majority of teachers in a school.						
2	In Chinese schools, gaining a common vision of a proposed change among staff is important to achieving successful implementation.						
3	In Chinese schools, all teachers will adopt a change such as a new teaching approach at the same speed.						
4	In Chinese schools, the principal only needs to order teachers to change their teaching method, and they will do so.						
5	In Chinese schools, informal leaders are an important source of influence on their colleagues about whether to support a change in the school.						
6	In Chinese schools, it is important to gain the widespread support of teachers in order to achieve real change in teacher practice.						
7	In Chinese schools, formal leaders such as the principal must give approval and support before engaging in major changes.						
8	In Chinese schools, persuading teachers and other school staff to support a change may require repeated efforts over a period of time.						
9	Chinese teachers who are slow to adopt new teaching methods may respond positively after they see that their colleagues have adopted the new practices.						
10	In Chinese schools, it is helpful to use successful examples of change to gain the support of teachers.						
11	In Chinese schools, developing a team to lead curriculum change is an effective						

	strategy to win broader support from staff.						
12	In Chinese schools, activities such as training workshops and sharing practices among teachers are needed to bring about successful change in teacher practice.						
13	In Chinese schools, successful change is achieved by activities that encourage teachers to communicate with and learn from each other.						
14	In Chinese schools, it is effective to enable some people to change first and then use them as examples to drive other people to change.						
15	In Chinese schools, the principal should gain support from district officials when proceeding to make significant changes in the school.						
16	In Chinese schools, identifying and sharing early successes of teachers is a useful approach to support change by other teachers.						
17	In Chinese schools, it is useful to publicly reward and celebrate successful efforts by teachers who advance change.						
18	In Chinese schools, school policies may need to be revised during the change process to adapt to new circumstances that result from the change.						

13. Please answer these questions if you had played the original version of the Making Change Happen™ simulation.

(1) Briefly describe three differences that you observed in the new version of the simulation when compared with the earlier version.

-
-
-

(2) When compared to the earlier version, in the new version:

a) Did the context seem more like Chinese schools?

☐A. Yes. ☐B. No.

b) Did people respond more in the manner of Chinese teachers and administrators?

☐A. Yes. ☐B. No.

c) Did the process of change seem consistent with your experience of successful change in Chinese schools?

☐A. Yes. ☐B. No.

14. What suggestions would you make to improve the new version of the simulation?

Thank you very much for your support and help.

Appendix H: Simulation Preliminary Field Test Interview Questions for Practice Experts (Six Successful Chinese School Principals)

Respected School Principals,
After playing the Making Change Happen™ simulation several times, please take a few minutes to think about the simulation and give us your answers to the following questions. Your reactions to this simulation will play a very important role in decisions about modification of the simulation. Please answer the questions below or put a "√"in the □ in front of your answer or under your selection in question No. 13.

Section One: General Impressions of the Simulation

1. Before beginning to learn about leading change with a computer simulation, how did you feel about the idea?

2. After learning about leading change through the simulation, how do you feel about this method of learning?

3. List three adjectives that best describe how you feel about the experience of learning through this simulation:

_____ _____ _____

4. What three lessons did you gain from the simulation?

-
-
-

Section Two: Ease of the Use of the Simulation

5. How many times did you play the simulation before you understood 'how to play' (i.e., not achieve a high score, but a have general idea of how it works)?

6. Is it easy for you to understand the meaning of the buttons and labels in the simulation?

☐A. Yes. ☐B. No.

If no, please specify:_____

7. Is it easy for you to read the information you need in the simulation (i.e. on the response cards)?

☐A. Yes. ☐B. No.

If no, please specify:_____

Section Three: Validity of the Simulation Contents

8. Does the description of the change problem in the simulation seem to be reasonable to you?

☐A. Yes. ☐B. No.

If no, please specify:_____

9. Do you think the organizational chart in the simulation represents a reasonable relationship between people in the Chinese education system?

☐A. Yes. ☐B. No.

If no, please explain:_____

10. Do the people descriptions seem to reflect the characteristics of Chinese school staff?

☐A. Yes. ☐B. No.

If no, please specify:_____

11. Are the change activities listed in the simulation representative (typical, commonly seen) of those used in leading school change in Chinese schools?

☐A. Yes. ☐B. No.

If no, please explain:_____

12. Are any activities missing that principals use to support successful change?

☐A. Yes. ☐B. No.

If yes, please briefly describe them:_____

13. The following is a questionnaire with a list of principles from the simulation. Please give an assessment of your agreement with and beliefs about the importance of these principles. Please put a "√" under one of your selections of "Disagree, Partially Agree or Agree" under Agreement or "Low, Moderate or High" under Impact on Change.

No.	Change Principles	Agreement

		Disagree	Partially Agree	Agree
1	Implementing changes in curriculum and instruction can take up to 3 years before we see real changes in the practice of the majority of teachers in a school.			
2	In Chinese schools, gaining a common vision of a proposed change among staff is important to achieving successful implementation.			
3	In Chinese schools, all teachers will adopt a change such as a new teaching approach at the same speed.			
4	In Chinese schools, the principal only needs to order teachers to change their teaching method and they will do so.			
5	In Chinese schools, informal leaders are an important source of influence on their colleagues about whether to support a change in the school.			
6	In Chinese schools, it is important to gain the widespread support of teachers in order to achieve real change in teacher practice.			
7	In Chinese schools, formal leaders such as the principal must give approval and support before engaging in major changes.			
8	In Chinese schools, persuading teachers and other school staff to support a change may require repeated efforts over a period of time.			
9	Chinese teachers who are slow to adopt new teaching methods may respond positively after they see that their colleagues have adopted the new practices.			
10	In Chinese schools, it is helpful to use successful examples of change to gain the support of teachers.			
11	In Chinese schools, developing a team to lead curriculum change is an effective strategy to win broader support from staff.			
12	In Chinese schools, activities such as training workshops and sharing practices among teachers are needed to bring about successful change in teacher practice.			
13	In Chinese schools, successful change is achieved by activities that encourage teachers to communicate with and			

	learn from each other.			
14	In Chinese schools, it is effective to enable some people to change first and then use them as examples to drive other people to change.			
15	In Chinese schools, the principal should gain support from district officials when proceeding to make significant changes in the school.			
16	In Chinese schools, identifying and sharing early successes of teachers is a useful approach to support change by other teachers.			
17	In Chinese schools, it is useful to publicly reward and celebrate successful efforts by teachers who advance change.			
18	In Chinese schools, school policies may need to be revised during the change process to adapt to new circumstances that result from the change.			

Section Four: Usefulness of the Simulation and Suggestions

14. What were strengths and weaknesses of using the simulation to learn about leading school change compared with alternative approaches you have used in the past?

15. What are your suggestions would you make to improve the usefulness of the simulation?

Thank you very much for your support and help.

Appendix I: Simulation Main Field Test Interview Questions for Chinese School Principals and Teacher Leaders

Respected School Principals and Key Teachers,
This is the online survey on the School Principals' and Teacher Leaders' Training Course with the Chinese Simulation-- "Making Change Happen™ Simulation" as the training tool. After playing the simulation several times, please take a few minutes to think about the simulation and give us your answers to the following questions online using the link http://www.lediaocha.com/pc/s/5fpctf. Your reactions to this simulation will play a very important role in decisions about modification of the simulation. Please answer the questions below or put a "√"in the □ in front of your answer or under your selection in question No. 13.

Section One: Personal Information

1．Sex：☐Male ☐ Female

2. Age: ☐25 or below ☐ 26-30 ☐ 31-40 ☐41-50 ☐50 or above

3. Educational Background:
☐Junior College or below ☐ Undergraduate ☐ Master ☐Doctor

4. Position: ☐Subject Teacher ☐ Section Head ☐ Grade Head
☐Vice-Dean ☐Dean ☐Vice-Principal ☐Principal

5. Years in the current position：
☐1-3 years ☐ 4-6 years ☐ 7-9 years ☐10-12 years ☐13-15 years
☐16-18 years ☐19-21 years ☐22-24 years ☐25 years or above

6．Years of being principals:
☐1-3 years ☐ 4-6 years ☐ 7-9 years ☐10 years or above

7．Working Years in the current school:
☐1-3 years ☐ 4-6 years ☐ 7-9 years ☐10 years or above

Section Two: General Impressions of the Simulation

8. Before beginning to learn about leading change with a computer simulation, how did you feel about the idea?

9. After learning about leading change through the simulation, how do you feel about this method of learning?

10. List three adjectives that best describe how you feel about the experience of

learning through this simulation:

_____ _____ _____

11. What three lessons did you gain from the simulation?

-
-
-

Section Three: Ease of the Use of the Simulation

12. How many times did you play the simulation before you understood ‘how to play’ the simulation (i.e., not achieve a high score, but the way of playing it)?

13. Is it easy for you to understand meaning of the buttons and labels in the simulation?

☐A. Yes. ☐B. No.

If no, please specify:_____

14. Is it easy for you to read information you need in the simulation (i.e. on the response cards)?

☐A. Yes. ☐B. No.

If no, please specify:_____

Section Four: Validity of the Simulation Contents

15. Does the description of the change problem in the simulation seem to be reasonable to you?

☐A. Yes. ☐B. No.

If no, please specify:_____

16. Do you think the organizational chart in the simulation represent a reasonable relationship between people in the Chinese education system?

☐A. Yes. ☐B. No.

If no, please explain:_____

17. Do the people descriptions seem to reflect the characteristics of Chinese school staff?

☐A. Yes. ☐B. No.

If no, please specify:_____

18. Are the change activities listed in the simulation representative (typical, commonly seen) in leading school change in Chinese schools?

☐A. Yes. ☐B. No.

If no, please explain:_____

19. Are any activities missing that principals use to support successful change?

☐A. Yes. ☐B. No.

If yes, please briefly describe them:_____

20. The following is a questionnaire with a list of principles from the simulation. Please give an assessment of your agreement with and beliefs about the importance of these principles. Please put a "√" under one of your selections of "Disagree, Partially Agree or Agree" under Agreement or "Low, Moderate or High" under Impact on Change.

No.	Change Principles	Agreement		
		Disagree	Partially Agree	Agree
1	Implementing changes in curriculum and instruction can take up to 3 years before we see real changes in the practice of the majority of teachers in a school.			
2	In Chinese schools, gaining a common vision of a proposed change among staff is important to achieving successful implementation.			
3	In Chinese schools, all teachers will adopt a change such as a new teaching approach at the same speed.			
4	In Chinese schools, the principal only needs to order teachers to change their teaching method, and they will do so.			
5	In Chinese schools, informal leaders are an important source of influence on their colleagues about whether to support a change in the school.			
6	In Chinese schools, it is important to gain the widespread support of teachers in order to achieve real change in teacher practice.			
7	In Chinese schools, formal leaders such as the principal must give approval and support before engaging in major changes.			
8	In Chinese schools, persuading teachers and other school staff to			

	support a change may require repeated efforts over a period of time.			
9	Chinese teachers who are slow to adopt new teaching methods may respond positively after they see that their colleagues have adopted the new practices.			
10	In Chinese schools, it is helpful to use successful examples of change to gain the support of teachers.			
11	In Chinese schools, developing a team to lead curriculum change is an effective strategy to win broader support from staff.			
12	In Chinese schools, activities such as training workshops and sharing practices among teachers are needed to bring about successful change in teacher practice.			
13	In Chinese schools, successful change is achieved by activities that encourage teachers to communicate with and learn from each other.			
14	In Chinese schools, it is effective to enable some people to change first and then use them as examples to drive other people to change.			
15	In Chinese schools, the principal should gain support from district officials when proceeding to make significant changes in the school.			
16	In Chinese schools, identifying and sharing early successes of teachers is a useful approach to support change by other teachers.			
17	In Chinese schools, it is useful to publicly reward and celebrate successful efforts by teachers who advance change.			
18	In Chinese schools, school policies may need to be revised during the change process to adapt to new circumstances that result from the change.			

Section Five: Usefulness of the Simulation

21. Did you find the information on the response cards useful for learning/thinking?

☐A. Yes ☐B. Uncertain ☐C. No

22. Did you find the feedback on the strategy record useful for learning to revise your strategy?

☐A. Yes ☐B. Uncertain ☐C. No

23. Now that you have had this experience of learning about leading school change

through a simulation, do you think it might affect your leadership practice?

☐A. Yes ☐B. Uncertain ☐C. No

24. Having learned change strategies through the simulation, do you feel more confident about leading change in your school?

☐A. Yes ☐B. Uncertain ☐C. No

Section Six: The effectiveness of the workshop with the simulation as training tool

25. How did you feel about the pacing of the workshop?

☐A. Too Fast ☐B. Just right ☐C. Too slow

26. Did you have enough practice time for the simulation?

☐A. Yes ☐B. No

27. Was the organization and preparation of the workshop effective?

☐A. Yes ☐B. No

28. Did the instructor respond to participants' problems in an active and timely manner?

☐A. Yes ☐B. No

29. Will you use or suggest the Making Change Happen™ simulation workshop to colleagues for training purposes?

☐A. Yes ☐B. Uncertain ☐C. No

30. What were strengths and weaknesses of using the simulation to learn about leading school change compared with alternative approaches you have used in the past?

Section Seven: Suggestions

31. What suggestions would you make to improve the usefulness of the simulation?

32. What recommendations would you make for improving the effectiveness of the workshop with the simulation as a training tool?

Thank you very much for your support and help