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An exploratory study on developing an effective collaboration between museums and senior high schools in Ningbo, China to improve students' learning

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Abstract

Museums have been paid increasing attention to for their instructional value in China. This thesis explores the learning experience of senior high school students under the museum-school collaboration (MSC) in Ningbo City, Zhejiang Province, China. The exploratory study presents findings from action research which established a MSC programme, and reports on what the students, the teachers, and the museum educators thought of what students learned. Semi-structured interviews, observation, photography, and audio-visual recording were conducted with fifteen student participants.

Drawing on Falk and Dierking's Contextual Model of Learning (CML), the qualitative analysis shows the experience helps students' history learning and promotes their learning to learn, facilitates the implementation of curriculum reform and the development of future citizens, and proves that the Equal Complementary Model fits the collaboration between museums and senior high schools. There are differences and difficulties that MSC is likely to encounter. Goals, communication, and mutual benefit are imperative for meaningful and successful partnership.

The findings suggest that (1) It is crucial to fully exploit MS advantages and embrace a human-centric approach; (2) Schools should be strongly supported to collaborate with museums; (3) MSC demands more training and guidance; (4) Regarding course design, teachers and museum educators should find ways to listen to students; (5) Assessment is necessary, though the measurement of MSC is hard to reach; (6) There could be diversified forms of MSC; (7) P and E Office should adopt a more collaborative mindset; (8) The support mechanism could be further improved.

In memory of my dearest grandma (1925-2015)

For Mum: a strong, brave and hard-working Chinese woman

Acknowledgments

If I chose museum-school collaboration as the topic of my dissertation out of interest, the writing of the dissertation was a test and exercise for me. When I finished writing, I did not regret the choice of this transboundary research topic. The ideas or conclusions I present in this paper are not very mature or even a bit naive, but the research has been very beneficial to me. After years of doctoral studies in education, my greatest reward is gratitude.

First of all, I would like to thank my supervisor Geoff Hall. His guidance and help made my dissertation go from being in trouble to a desperate situation to its completion. It was because of his hard work, passion, and trust in me. His lenient and strict supervision made me work harder to write up and revise the thesis. Secondly, I would like to thank Chris Hall, whose wisdom and guidance led me to a profound understanding of the topic, from research design to thesis framework. I would also like to say a big thank you to An Wei. An Wei's constant encouragement and great support helped me get up after my fall and keep moving forward in my quest for knowledge. I am very grateful to John Lowe, Andrew Townsend, Sharon Ainsworth, Lily Cai, Lynda O'Brien and Giovanna Comerio for guiding me in researching and writing. I was inspired to explore when I was lost and confused. I was motivated and given strength when I felt anxious and depressed. Thank you all!

I would like to thank my family for their love and tolerance. Only with their understanding, tolerance, and support could I concentrate on my dissertation and complete my studies. In addition, my sincere thanks go to Ningbo Museum. From the provision of curriculum resources to the human and financial resources, the support made the research possible. Many thanks for my EdD classmates, for experiencing EdD together and sharing the joy and sorrow of the journey.

Last but not least, I give thanks for my examiners for reading my thesis and committing themselves to the viva.

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Chapter 1. Introduction

This study explores students' learning experience during a planned collaboration between a museum and a secondary high school in China. The thesis reviews the relevant literature, both English and Chinese, in relation to the museum-school collaboration (MSC), outlines and justifies the design of my action research, reports what my findings on the experience, namely that it helped students who participated in the study improve their learning, and analyses the findings primarily in accordance with Falk and Dierking (2000). The study examines how the key elements in the design promoted learning, and concludes with a discussion of the various ways in which MS relationships may contribute to "Competence-Oriented Education (*suzhi jiaoyu*)", which is currently a focus in the Chinese curriculum. Thus, it is of considerable importance and value from both a research perspective and for its practical applications.

1.1 Motivation for the research

This research was initially inspired by my three-month study visit to the United Kingdom in 2014, where I visited several schools and educational institutions, including Papplewick Pumping Station. Papplewick was built in the 1880s to pump clean, fresh water to the city of Nottingham, and I have never felt so close to the history of the first Industrial Revolution as when I saw the name of "James Watt" carved to an engine there. Moreover, it was particularly intriguing that the station and its machines had been preserved and restored to such a high degree that they are even capable of working properly today. We were informed that the station is now open to the general public as a museum, and Steaming Days are regularly held, during which the boilers are fired up, and the huge beam engines move. The machines work in order and present the full procedure of pumping water, which transports visitors back to the Victorian age.

Following the visit, the supervisor conducted a lecture on a programme titled Get WET, which was developed jointly by schools, artists, and university staff. When students returned to schools after visiting the station, they were provided with an elaborately designed water curriculum that enabled them to work with "experts" and learn more about water through various subjects, such as literacy, chemistry, dance, history, and drama. Students' abilities in learning to apply knowledge and develop their comprehension skills were significantly enhanced, which was demonstrated by short films of the students' activities and performances during the programme's implementation. The entire experience was astonishing, as I had never deemed that learning could take place in such a fashion and that children could enjoy learning to that extent. I realized that the pumping station is more than a museum, it serves as an educational institution, while I was highly impressed by the collaboration between museum-school and university education in terms of its promotion of learning.

Prior to this program, my own experience was very much framed by my Chinese context, as I had considered museums to be places solely for leisure and sightseeing during one's spare time. Moreover, only a few visitors would obtain a real taste of the museum exhibitions, and their activities seemed to have little correlation with formal education. In spring or autumn, schools would often organize visits to museums as an outing rather than as part of an education programme. Hence, the experience of visiting Papplewick Pumping Station transformed my thinking about museums, while the fact that the pumping station operated as an essential educational resource ignited my passion for research, and I became determined to make use of museums upon my return to China.

I discussed my thoughts with my supervisor, such as the sense and feasibility of the research. Firstly, there was a gap that the study could address. Ningbo is the second-largest city in Zhejiang province, and has a resident population of over 9.4 million, according to the seventh census of the primary data of Zhejiang Province (Ningbo Daily, 14 May 2021), yet there has been little collaboration between the city's museums and senior high schools. I deemed myself suitable to make a contribution to this field, and secondly, I am a senior high school history teacher, thus my role

renders me an insider in terms of conducting this research. Lastly, both museums and senior high schools undergoing a process of reform in China, which presents opportunities to try new initiatives.

The research evidenced that these initial thoughts and the examination of the context for the study were practical and reasonable.

1.2 Background to the study

The 21st century heralded the arrival of the era of the knowledge economy, with capacities and skills, such as critical thinking, synthesis of information, innovation, creativity, teamwork, and collaboration becoming necessary to thrive in this new era (Merritt, 2014a). These changes also raise new requirements in education and challenge old learning styles, with Merritt (2014b, p.7) stressing that "the US educational system is on the cusp of transformational change" and suggesting that formal learning, also known as the era of industrial-age education, which is characterized by teachers, physical classrooms, age-cohorts, and a core curriculum, is gradually being supplanted by self-directed, experiential, social and distributed learning. This transformation in education and learning is inevitably occurring worldwide.

To maintain pace with the latest trends of education reform, since 2001 the Chinese government has initiated a new round of curriculum change, which is widely regarded as the core of modern educational development (Zhong & Tu, 2013). Zhong and Jiang, in a paper published in 2004, highlight that the key of the reform is to change both teachers' teaching behaviour and students' learning style, and rationally develop curriculum resources, thereby establishing a new classroom teaching model. In the Chinese context, developing and utilising curriculum resources is referred to as a critical aspect of classroom teaching reform. This idea is adopted and confirmed in policy terms by the *Outline of China's National Plan for Medium and Long-term Education Reform and Development* (2010-2020) issued by the Ministry of Education (MOE) in 2010. It states that "the social educational resources could be sufficiently applied to operate extracurricular

activities and off-campus activities". Furthermore, the plan stresses the importance of advancing the curriculum in primary education (age 6 to 14) and senior high school (age 15 to 17), with the latter potentially setting the stage for the development and opening of selective courses for students.

According to Kratz and Merritt (2011), museums are set to play a vital role in the new education reform with them. Having been acknowledged as social and ideal educational resources, which possess many strengths, for instance, their learning environments, their vast resources in terms of their collections, buildings, and staff, and their close communication with the collaborative profession (Merritt, 2014a). Despite museums also having weaknesses, they have been regarded as places of learning since the 1860s in western society, while the history of museums and public schools' partnerships may be traced back to the early 1900s (Barragree, 2007). In contrast, mainland China has been much later in developing an awareness of museums' considerable potential in school education. Previously, ideological and political education was the core of the museum-school relationship (Song & Sun, 2014). However, since 2001, the importance of social resources such as libraries, exhibition halls, museums, and abundant natural resources was underlined in the *Compendium for Curriculum Reform of Basic Education* (trial edition), which also asserted that curriculum resources are to be extensively employed by schools to strengthen ties between curriculum contents, students' life, and modern society (MOE, 2001). As stated explicitly in basic education, students' interests and competencies are to be fully considered.

1.3 Museum and culture fever

The modern world is globalised, multilingual, and multiethnic, hence it is highly important to understand and tolerate 'difference'. It has been held that as human institutions, museums can significantly contribute to this (Fleming, 2012), and accordingly, the trends of museums' involvement with social issues and focus on culture have increased, as reflected by *Museum International*, a leading international academic journal in the field of museum studies (Wang, 2016). During my sojourn in the United Kingdom, I was profoundly moved by the services that

museums (galleries, etc.) provide to society. My heart swelled with excitement when witnessing the enthusiasm of different groups of people toward museums.

The ongoing deepening of the reform and opening-up policy in China has led to passion for museums spreading to China and becoming a "new culture fashion" (People's Daily, 2 April 2019). Such 'fever' has been firmly supported and positively responded to by the government and nation alike. *Chinese Museum Ordinance*, enacted and implemented in 2015, promoted the sustainable development of museums (Li, 2015), while museum development has also been made a national cultural strategy. *Several Opinions on Strengthening the Reform of Cultural Relics Protection and Utilization* was printed and issued in 2018 to encourage museums to take the initiative with regards to the dissemination of the cultural essence and value of the times implied by cultural relics (GOSC, 2018).

Museums have been inspired to improve their offerings, namely in addition to permanent exhibitions, various high-quality shows have been displayed in succession, thereby satisfying the public's needs for cultural diversity. In 2015, a special exhibit of the 90th anniversary of the establishment of the Palace Museum and 'a history of the world in 100 objects' was exhibited at the National Museum. Visitors were fascinated with these exhibitions, with some queuing for hours to get a glimpse. Moreover, new technology and media has successfully moved museums to the "cloud", while digitised collections have made an abundance of museums and cultural resources available online, such as increasingly relevant WeChat official accounts. Museums in Ears, which provides content specifically for children, attracted approximately 200,000 users in nine months (Beijing Daily, 13 Nov 2017).

The boom in museums and the enthusiasm for visiting has also gripped the attention of both the media and social networks, with a three-episode documentary, Master in Forbidden City, shown in 2016, becoming a national sensation. The curator of the National Museum attributes this success to the 'liveness of cultural relics' (Shan, 2017), while National Treasure, a large-scale cultural programme broadcast by China Central Television (CCTV), has become a hit since it debuted in 2017. It

exhibits 27 of the most precious treasures from nine museums, and the popularity reflects China's heightening interest in traditional culture and history. Furthermore, these shows have enhanced the cultural influence of museums and allowed more visitors to develop closer relationships with museums over the last few years. Nevertheless, as a 2019 online survey concerning this museum craze conducted revealed, 19% percent visited for study or work, while over 70% visited out of their interest or due to the special exhibition on display (MCT & GMD, 2019). There continue to be great efforts to encourage people to sample and enjoy the charm and value of culture in museums.

1.4 Aims of the study

As a history teacher, my primary concern is how to make the teaching more attractive to students and enhance their learning ability. Considering my interest in museums and the formative experience in Papplewick Pumping Station, I decided to collaborate with Ningbo Museum, rated as a national first-class museum by the State Administration of Cultural Heritage, which features a wide range of collections, particularly those related to Ningbo history and customs. Ningbo museum is located near Yinzhou Senior High School where I work, and it is approximately five minutes' drive from the school. Thus, there was seemingly great potential for the museum and school to work together on education.

I made contact with the director in charge of Ningbo Museum education in 2014, and I was aware that this exploratory study could be conducted, as I had received full support from the museum. The director was keen to develop an educational programme with a senior high school, which the museum had not previously worked with. Following several discussions, both of us gained a general idea of what the possibilities were. It was a positive starting point for the relationship, which will provide students new experiences that could improve their learning and understanding, namely helping the museum achieve the educational value of cultural heritage and facilitating the school to fulfill its mission of educating.

1.5 Significance of the study

Recent developments in museums have highlighted the necessity to enhance the museums' service, particularly in museum education. Large cities, such as Beijing, Shanghai, and Changsha, have partnered with museums and schools. For instance, the museum of the Western Han Tombs in Beijing designed a practical course for middle school history teaching in collaboration with the Beijing Institute of Education, and by the end of October 2004, 16 schools and over 3,000 students had participated (Su, 2005). Shanghai Museum and Shanghai Yan'an Junior School worked on a curriculum from 2007 to 2010, as reported on the Shanghai Yan'an Middle School website. From2007 to 2009, Hunan Provincial Museum developed an activity curriculum alongside the junior school affiliated with the National University of Defense Technology in Changsha.

Nevertheless, aside from the above exceptions, as far as I know, very few partnerships between museums and senior high schools have been established nationwide, and none exists in Ningbo. Thus, this research seeks to address this gap through an exploratory study in order to promote learning in senior high schools, together with the assessment of the MSC.

Therefore, my study, seeks to address the following question:
How can a senior school and a museum work together to improve students' learning?
To further understand this matter, the following sub-questions are given consideration as a result of planned collaboration:

1. What do the students who participated believe they have learned?
2. What do the teachers who participated believe the students have learned?
3. What does the museum educator who participated believe the students have learned?
4. What are the practical challenges and benefits of a school and a museum working together?

1.6 Structure of the thesis

This thesis is divided into seven sections. Following the introduction, the second section provides the literature review, which covers topics such as Chinese school education in transformation, and literature on learning in museums. A historical review of the literature on museums in China and MSC is also presented in order to acquire an in-depth understanding of the topic.

The third section outlines the design of the research, the ethical issues, the adopted methodology, and the proposed methods of data collection and data analysis, where the pilot studies carried out are also mentioned.

Based on the coding, Section four reports findings in themes. The following sections draw on theoretical ideas to elaborate on the findings of the study. The final section is the conclusion and makes suggestions for other MSC, and proposes areas for further research.

Chapter 2. Literature Review

2.1 Introduction

This chapter includes: (1) a discussion of the concept of museums and a historical review of the literature on the development of museums in China; (2) the literature on current curriculum reform in China; and (3) the issues related to MSC and the literature on the study of learning in museums.

2.2 Museums in China

2.2.1 The Concept of Museums

The word "museum" derives from the ancient Greek "Mouseion", and originally referred to a seat of the Muses, or "temple of the Muses" (Desvallees & Mairesse, 2010). In ancient Greece, the temple of muses held collections and objects of particular significance, while the first museum, the Hellenistic Museum of Alexandria, was established by Ptolemy Soter around 280 B.C.E, thus a "museum" was treated as a venue specifically catering for study and the arts (Liu, 2004). Previous civilisations had places similar to the "museum", which sought to preserve their treasure and cultures (Desvallees & Mairesse, 2010; Ambrose & Paine, 2006), yet not until the 17th century were museums in contemporary sense developed in Europe. Ambrose and Paine (2006) point out that the first use of 'museum' in English was in 1682. The Ashmolean Museum, established in Oxford in 1683, was believed to be the first public museum, which presented private collections to the public at the University of Oxford. In *Learning in the Museum*, Hein (1998) states that the public museum was originated in the 18th century, and describes education as a crucial function of public museums, hence it is generally believed that public museums appear in the 18th century at the latest.

"Museum" is a commonly used term, yet there is no consensus regarding the concept, as both organisations and nations have provided various definitions. The International Council of Museums (ICOM), an organisation of museums and

museum professionals with a global scope, was created in 1946, and it updated the definition of "museum" in accordance with developments in society and museums alike. In a detailed study of ICOM definitions, Du (2006) concludes that prior to the 1970s, the function of a museum was emphasised. Subsequently the connection between museums and society received greater attention. The 2007 revision, one of the widely recognised definitions of the term, demonstrates the increasing importance of this association. In the Statute, a museum was defined as:

> A non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates, and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study, and enjoyment (ICOM, 2007).

The view of "**in the service of society and its development**" has been widely accepted, which captures the social movements in relation to museums that have occurred for centuries (Yan & Liang, 2001). In comparison to the 1974 definition used for over 30 years, Desvallees and Mairesse (2010) point that a reference to the intangible heritage was added while "education" was listed before "study", thereby upgrading the list of the purposes of museums. Moreover, the authors criticise the definition for being too prescriptive, as it excludes profit-making museums, while they have challenged by asserting that it does not surpass the limited nature of traditional museums. The cultural traditions and economic and political systems of nations are never identical, hence they describe museums in line with their circumstances and requirements (Yan & Liang, 2001). Conservation, research, and communication have been identified as the fundamental activities of a museum, yet the British Museums Association and the American Association of Museums have both offered definitions that differ somewhat from that of ICOM (Ginsburgh & Mairesse, 1997).

This study uses China as a context, and the original image of a museum is a big room with a great many objects. Varutti (2014) examines the meaning of bo wu guan, which is the term of 'museum' in Mandarin:

> … Which is composed of three characters, referring respectively to a large number (bo), of things or objects (wu) placed in a large room or house (guan) (Varutti, 2014, p.10).

Mostly used for conservation and research, the term "bo wu guan" became a social education institution when it was opened to the masses in modern times (Han, 1984). Since modern museums were introduced into China, the idea that museums could assist school education has been recognized and advocated by people of insight, and the concept of museum has been constantly updated (Li, 2014). Museums were clearly identified in 1979. The *Working Regulation of Museums at Levels of Province, City, and Autonomous Region*, issued by the government, regards museums as the leading institutions for conservation, education, and study of specimens and artifacts. They are essential parts of the national culture (Wang, 2001, p.40). Yan and Liang (2001) note the "enjoyment" function is underappreciated, and Du (2006) further indicates that Chinese museums take on some of the duties of the government. With the significant development of museums, the State Council issued new *Chinese Museum Ordinance* in 2015 (SOC, 2015). The cognition and understanding of "museum" have evolved, and stated that:

> A non-profit organization that collects, preserves, and displays to the general public the evidence of human activities and the natural environment for education, research, and appreciation, and is legally registered at a registration authority (SOC, 2015, Article 2)

This definition is relatively close to that defined by ICOM in 2007, and neither of them includes the profit-making museums in the definition. What is worth mentioning is that as Li (2015, P.2) observes "for the first time, the purposes of running a museum are made clear, and they are education, research, and appreciation. 'Education' is placed in the first place". It is a big step toward the comprehension of the cultural connotations of museums (Liu, 2015).

In align with the changing of times, a new definition is approved by the ICOM in 2022. Some of the major changes in the role of museums are identified, such as recognising the importance of inclusivity, community participation, sustainability, and knowledge sharing. "Education" is still the primary function of museums, which receives growing attention and researches in China. Quick research in CNKI,

which has built the most comprehensive system of Chinese academic knowledge resources, for “museum education” or “educational function of museums”. During the last ten years, there has been an increasing amount of literature covering the key words with the progressing trend of museums.

2.2.2 Literature on the development of museums in mainland China

- Museums in the ancient period (prior to the Opium War of 1840)

From the perspective of preserving cultural relics, the ancient museums of Chinese characteristics can be traced back to the Shang or Zhou Dynasties. Zhang (2008) states that the collection and conservation of objects in China began early, and Lu (2014) supports this view, asserting that museums in China may have a history of approximately 3,200 years, if collections are deemed within the definition of a “museum”. Chinese museum academics believe that as early as the Zhou Dynasty (BC1046-BC256), places known as “Yu Fu” or “Tian Fu” (the collection of cultural relics and treasures, where a full-time official is in charge of its management) were established (e.g., Liang, 1986; Wang, 2001), which were not made available to public.

When museums are regarded as institutions, it is generally agreed that the Temple of Confucius in Qufu, Shan-dong Province, composed of the three rooms where Confucius resided, was the inaugural Chinese museum, established in B.C.E. 478, year after Confucius’ death. Its artifacts, such as clothes, books, and vehicles, which Confucius used were maintained as sacred objects in the temple (Wang, 2001; Wang, 2005).

Compared with early western museums, Professor Wang Hongjun asserts that the purpose of Chinese museums was more for remembrance, and they functioned primarily as places for gathering cultural relics, while they were less focused on academic research, particularly in natural science (Wang, 2001). During the Qing Dynasty (AD1616-1911), some collectors and connoisseurs achieved distinguished attainments, yet the collections were not freely used by society (Liang, 1986).

Nevertheless, according to the original meaning given to Western museums, there were no equivalent places in ancient China. Ptolemy's museum (circa 3rd century B.C.), the first museum, acted as an academic institution and featured an extensive library, laboratories, and housing for philosophers, theorisers, and with a priest at the head (Friend, 2011). Varutti (2014) states that museums did not make an appearance in China until the second half of the nineteenth century.

- Museums in Old China (1840-1949)

Many studies (e.g., Liang, 1986; Wang, 2001; Li, 2015) have found that modern Chinese museums do not stem from their ancient counterparts. Influenced by Western civilisation and introduced by Western missionaries and researchers as a sign of "modernity" (Varutti, 2014), museums underwent significant development and transformation during that period, when mainland China remained a semi-colonial nation with many concessions.

There has been a debate around which the first modern museum was in China. Zeng and Li (1943) agree with Chen (1936), who claimed that Siccawei Museum (a natural history museum, originally named Musee Heude) is often considered as the first modern museum in China. It was established in 1868 by Pierre Heude. A French Jesuit priest and one of the many foreign scholars and missionaries that travelled to China during the mid-nineteenth century, and it broke through the museums' conservation function limitation for a certain degree of public properties (Song & Sun, 2014). Hence, Su Donghai, a leading Chinese museologist, identified the establishment of the Siccawei Museum as the dawn of the first period of development of China's museums (Su, 1995). Nevertheless, Li (2015) argues that the most recent studies reveal that the British museum constructed in Macao in 1829 was the first one in the modern sense.

These museums, regardless of which one was first, brought new ideas and visions to China, with foreigners founding several modern museums in the late 19th century and early 20th century, which were categorised such: natural history museums, and science and technology museums (Li, 2015). Liang (1986) holds an unparalleled

view regarding these museums, namely they contributed to the introduction of western science and technology and ultimately helped Chinese people gain more knowledge about modern museums. Despite westerners often taking Chinese cultural relics and natural specimens from China for their own collections, these western museums motivated some Chinese to seek to establish modern museums by themselves.

Mr. Zhang Jian, a pioneer of modern Chinese enterprise and influential politician in the late nineteenth and early twentieth centuries, was an early founder of modern Chinese museums. He opened Nantong Museum in Jiangsu Province in 1905, which came to known as both the first Chinese-sponsored museum and the first Chinese public museum (Liang, 1986; Wang, 2001). Varutti (2014) describes the objects the museum held: artistic, historical, and natural specimens, and it also included a botanical garden and zoo, which were designed to serve an educational and didactic purpose. Zhang Jian was not particularly concerned with remembrance, instead he attached great importance to the social role of museums and deemed them to be crucial educational institutions that accelerated "knowledge of the local people" (Liang, 1986, p.74). Song and Sun (2014) state that Nantong Museum was constructed next to Nantong Normal School, to assist the school education. They claim that the idea and practice behind Zhang Jian's "museums for education" was a typical symbol of the beginning of museum-school cooperation in China. Furthermore, following a comprehensive study of Zhang Jian's opinions on museums, museums' service to society has also been emphasised (Jin, 2006). Therefore, Yin (2015) concludes that the ideas of the scholars and consequently museum practices in the early modern period tended to highly value the educational function of museums.

Nantong Museum evoked a trend of establishing museums in China. The National Museum of Chinese History was founded in 1912 and Nanjing Museum in 1915, and these were followed by more at the provincial level (Varutti, 2014). Chinese museums witnessed a period of growth during the 1920s, with the Palace Museum, transformed from the Imperial Palace into the most prominent public museum in China, founded in 1925, which is particularly noteworthy for its nationalisation of

the royal collection. Lu (2014) states that the Institute of Antiquities Exhibition (IAE) was established and open to the public, and drawing on a range of sources, she concluded that between 1928 and 1937, museums and museology in mainland China developed substantially with increasing influence on society (Lu, 2014). Nonetheless, museums experienced severe setbacks due to both the Sino-Japanese War and the civil war between the Kuomintang and the Chinese Communist Party (CCP) (Wang, 2001). According to statistics, there were 250 museums in total (Fu, 1987), yet in 1949, only 25 museums remained in mainland China (MOC, 2012). However, some researchers disagree with this figure, with Su (1995) claiming that the number was less than 25, and Liang (1986) arguing that only 13 museums were left in China by early 1948. Similarly, An (2001) finds identical data to that of Liang (1986). Even though the data is disputed, there is an agreement that a marked decrease occurred in the number of museums during the 1930s and 1940s.

Liang (1986) points out that throughout this period, museums operated by the CCP in revolutionary base and liberated areas played a productive role, largely serving to provide education on ideologies and political propaganda on behalf of the CCP (Liang, 1986; Lu, 2014). In addition, Liang (1986) indicates that Old China's museums evolved and developed as unprecedented changes took place in the nation within around 50 years (since the establishment of Nantong Museum), and around 100 years (from the creation of Siccawei Museum). The role, development, and management of museums have transformed, and its educational function for society greatly appreciated.

- Museums in contemporary China (1949-present)

The development of museums was given particular attention by the government of "New China", founded in 1949 (Su, 1995; Shen, 2007). On the one hand, the collection of cultural relics was highly valued, and many new museums were established (Shen, 2007), specifically, the total number of museums rose to 72 in 1957 when the First Five-Year Plan was completed (Su, 1995). On the other hand, the core and essence of museums were extensively studied, with a consensus reached in the National Conference on Museum Work held in 1956. The theory of

the “Three Natures and Two Tasks” was presented, which stressed that “museums have three basic natures: scientific research institutions, cultural-educational organisations, and main agents for collecting and preserving spiritual-cultural relics as well as natural specimens. Thus, a museum is made by combining all these three natures. A museum also has two fundamental tasks: to provide scientific research services and serve the broad mass of the people as a whole” (Su, 1995, p.32). Scientific research services have been given particular attention with the theory guiding the practice of museums for years until a reconstruction took place in the late 1970s. Despite that, the development process was interrupted. Suffering from the intensifying political struggles of the 1960s, particularly the Cultural Revolution (1966-1976), the development of museums was almost prohibited, thereby endangering the very essence of museums, while even the basic function of museums, collections, and exhibitions could not be guaranteed (Su, 2005).

There is a consensus in the field of Chinese museology that since 1978, when the government’s Reform and Open Policy was announced, Chinese museums have experienced unprecedented development and transformation (Lv, 1994; Su, 1995; An, 2001). The policy significantly impacted mainland China’s economy, society, politics, and ideology. Approximately 365 museums existed in China by 1980 (Lu, 2014), and the past 40 years have witnessed the dramatic growth of museums, with the number of registered museums reaching 5,132 in 2019, most of which are open to the public free of charge. Museums held 334,600 educational events and received almost 1.2 billion visitors in 2019 (Figure 2.1 and 2.2), according to the National Bureau of Statistics. On average, in 2020 there were 243,900 persons to every museum, as revealed in the Blue Book (Qian et al., 2021), hence China has four museums per million inhabitants. The number remains small in comparison to Western European nations, which has over 50 museums per million inhabitants (UNESCO, 2021). However, in the forty years since 1978, particularly in the last twenty, the development of museums has expanded significantly, which has created a positive external environment for MSC.

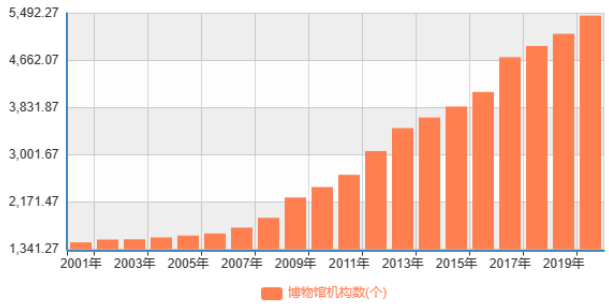


Figure 2.1 The number of museums in China (2001-2020). National Bureau of Statistics

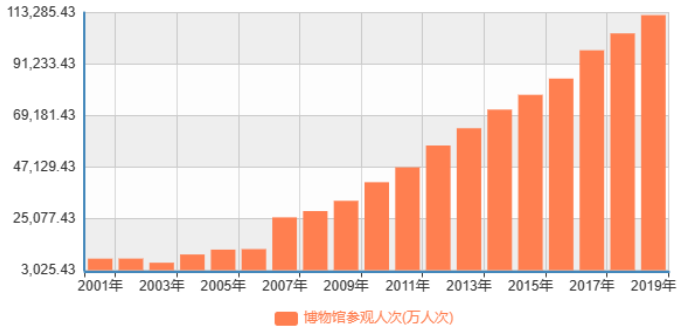


Figure 2.2 Museums' registered visitor entrances (2001-2019). National Bureau of Statistics

As the number and type of museums increase, the understanding of museums' educational role has deepened. Varutti (2014, p.159) concludes: "post-1949, museums became key institutions in the process of nation-building… … museums were designed to fulfill the requirements of the new ideology. Providing 'political education was the primary function of museums". Despite the collection and preservation of cultural relics and specimens being prioritised in the 1979 regulations, the regulations indicated a growth in the recognition of the essence of museums. Until the 1990s, when international exchanges began to flourish, the awareness of the educational role of museums was high. Abasa and Liu (2007) assert that China has made considerable efforts since the early 1990s to develop museum education through national policies promulgated by the government. A wide array of moral, political, ideological, civic, and psychological education policies may be referred to as 'moral education' or 'citizenship education', while Abasa and Liu claim that museum education in China is currently in transition.

Museum education in China has been highly valued. Shan Jixiang, the former curator of the Palace Museum, states that the governmental policies enabled museums to integrate successfully into the general public's social life, while laying a solid foundation for museums to incorporate into the national education system (Shan, 2013). In 2008, the Ministry of Culture mandated *Free admission to museums and memorials*, which has greatly facilitated Chinese people to visit museums. The number of visitors has increased significantly as shown in the Figure 2.2. In 2015, the State Administration of Cultural Heritage and the Ministry of Education jointly promulgated the *Guiding Opinions on Strengthening the Combination of Culture and Education and Perfecting the Educational Function of Museums for Youth*, further clarifying the use of museum resources in national, local, and school-based courses, and attaching importance to subject teaching. In 2018, *Several Opinions on Strengthening the Reform of Cultural Relics Protection and Utilisation* issued by the Central Committee of the Communist Party of China and the State Council stressed that the common sense of cultural relics protection and utilization should be incorporated into systems of primary and secondary education and cadre education. Meanwhile, the long-term mechanism for primary and secondary school students to use museums for learning should be improved. In 2020, the Ministry of Education and the National Cultural Heritage Administration co-released a document to guide better introduction of resources of museums into education at school. Schools nationwide are urged to design new activities related to history, natural science, and technology, based on collections in local museums. Under this circumstance, Chinese Museums meet unprecedented challenges. Concerns about enhancing cultural satisfaction have been raised. A solution often proposed is to improve the quality and services through museum education (Shen, 2010; Shan, 2013).

2.2.3 The conventional understanding of museums

The understanding of museums evolves over time mainly in response to the changing societies. Based on the previous section (2.2.2), literature on the development of museums, the roles have undergone a notable transformation. They were traditionally treated as repositories of artifacts and cultural relics during the

ancient period. Gradually, they embraced a more multifaceted role under the introduction of modern museums from the west. Besides protecting historical remains and collecting cultural relics, museums have been platforms for education, study, and social engagement. Over more than 20 years, the expansion of museums in contemporary China reflects a deliberate effort by the government to promote museum education, a state-centered patriotism, as most museums have been officially designated as "bases for patriotic education" (*aiguo zhuyi jiaoyu jidi*) since the early 1990s (Vickers, 2007). The situation has persistently continued. By September 2019, the total number of national patriotic education bases reached 473. Besides, there were also provincial and municipal bases. Museums and memorial halls accounted for over 85% of these bases (Yin, 2020).

Museums play an important role in promoting patriotic education and fostering a sense of national identity. Vickers (2007) holds that there has been a shift in emphasis within state ideology from socialism to patriotism, though the content of the 'patriotism' remains in many respects vague or problematic. Still, patriotic education is conducted and constantly pushed forward. In 2016, "patriotic education" was called for to be included in Chinese school curricula and university teaching. Students were required to learn to "always follow the party" and "constantly enhance their sense of belonging to the Chinese nation" (Buckle, 2016). History museums, public monuments, and theme parks are highly suggested to be regarded as extra-curricular extensions of the patriotic education delivered through lessons in schools (Vickers, 2007; Vickers & Kumar, 2014). Through the expansion, museums contribute to the preservation of Chinese culture and the promotion of a more interconnected society. It is acknowledged that designated as bases for patriotic education, A great many museums' efforts in promoting patriotism fall short and not fully realize the educational function of museums (Yin, 2020; Yin, 2018).

Propaganda and Education (P and E) Office of Chinese museums, also known as Group Work Department, in general, takes the responsibility of Education. The traditional view is that "it is mainly responsible for visitor services, audience coordination, exhibition interpretation and other forms of educational activities"

(Wang, 2001). During the 1950s and 1960s, museums focused on explanations and interpretations of exhibits. This was done primarily through direct verbal explanations by museum docents. By the 1980s, with the advancement of technology, museums started integrating new forms of education. Lectures and presentations were offered by experts and scholars, as well as digital education methods (Li, 2021). The Chinese Museum boom and the patriotic education campaign since the 1990s indeed has presented new and huge challenge for the work of P and E Office. The 2004 decision to make entry to most museums free was intended to promote and encourage visits. However, there has still been a lack of in-depth understanding of educational work, and the methods and approaches remain at a traditional level. In terms of educational content, most of the educational work focuses on explaining exhibitions and the displayed artifacts. Regarding the ways, providing explanations to the audience, that is "listen and speak" approach, is mostly followed. As a result, the work of P and E Office falls short of the desired effect, and the effect of patriotism education in museums limits (Yin, 2020; Hong, 2020). Hence, suggestions have been put forward, such as establishing collaborative relationships with schools, communities, the internet, and Apps. P and E Office is urged to collaborate with schools to take advantages for better patriotism education (Tao, 2012).

2.3 Chinese school education in transformation

The 21st century has seen curriculum reform take place worldwide, as education is deemed to be the core of national prosperity (Zhong & Tu, 2013). China officially initiated a new National Curriculum Reform (NCR) in 2001, with the "*Basic Education Curriculum Reform Outline*" issued by the Ministry of Education. Seven rounds of curriculum reforms have been conducted in basic education since the establishment of the People's Republic of China (PRC) in 1949. Current reform has systematically reformed the curriculum of pre-school and kindergarten, and primary and secondary schools throughout the entire nation (Guan & Meng, 2007; Jin & Li, 2011). The education system is displayed in Table 2.1: in China, primary and secondary education lasts 12 years, and is divided into primary, junior secondary, and senior secondary stages. OECD (2016) states that curriculum reform

includes educational philosophy, objectives, content, method, and the evaluation system at every educational phases.

Table 2.1 – China's educational system

Age	schooling	
25-27	20-22	PhD programme
22-24	17-19	Master's programme
18-21	13-16	University (Bachelor's degree) and vocational college
15-17	10-12	Senior secondary school
12-14	7-9	Junior secondary school
6-11	1-6	Primary school
3-5		Pre-school and kindergarten

Source: OECD (2015), OECD Economic Surveys: China, OECD Publishing, Paris.

2.3.1 "Quality education" is sought after

Six objectives are specified in the *Basic Education Curriculum Reform Outline*, while, six problems have been identified. They are: 1. A narrow perspective of knowledge transmission in classroom instruction; 2. A subject-centred curriculum structure; 3. Partially out-of-date and extremely abstruse curriculum content; 4. A passive-learning and rote-learning style; 5. The function of curriculum evaluation being a narrowly summative assessment; and 6. centralised curriculum control. Moreover, China has heavily put emphasis on standardized tests, notably "*gaokao*", or the National College Entrance Examination, which students take after completing secondary school, while admission to higher education is based on students' examination (*Gaokao*) grades. In the report *Curriculum reform and 'Quality Education' in China*, Dello-Iacovo asserts that China's examination-oriented education has been widely criticised for a lengthy period of time (Dello-Iacovo, 2009). The key issue in education is that it "overlooks students' learning habits, practical skills in real-life experience and healthy views towards life" (Guan & Meng, 2007). Furthermore, students' overall development is "neglected in the narrow focus on exam achievement" (Dello-Iacovo, 2009).

There is a consensus among academics that curriculum reforms generally occur in the context of profound socio-economic, political, and cultural changes (e.g., Guan & Meng, 2007; Dello-Iacovo, 2009; Jin & Li, 2011; Yin, 2013). Reforms seek to overcome the challenges and opportunities in this era of globalisation. The reform in PRC featured '*suzhi*' eduction, namely "Competence-Oriented Education (素质教育)", which is commonly translated as "quality education" (Dello-Iacovo, 2009; Guan & Meng, 2007). The vagueness of the term "quality" (*suzhi*) is such that considerable divergence of interpretation appears. In China, "quality" often refers to notions of social class, with sentiments such as "this person lacks quality (*suzhi*)" commonly used. Those who pass the National College Entrance Examination will not be described as "lacking quality", yet some *Gaokao* winners who do grow up to become uncreative, not well-rounded, and "low quality" adults due to their sole focus being on passing examinations (Kipnis, 2001). Therefore, "quality education" focuses on developing well-rounded individuals in order to cultivate "high quality" people who possess creativity and well-roundedness, which is proposed in the "outline" as the principal purpose of this NCR, thereby reflecting the concern relating to the disadvantages of the present examination-oriented education (Dello-Iacovo, 2009).

2.3.2 How to attain "quality education"

Researchers typically agree that curriculum is at the heart of the "quality education" steering system. The outline explicitly requires the adjustment and reformation the curriculum system, structure, and content of basic education, as well as building a new education curriculum system that satisfies the requirements of quality education (MOE, 2001). Moreover, curriculum reform is critical to promoting quality education and improving talent training (He, 2002). Zhong and Tu (2013) note that the "curriculum change is the core of education development", while the philosophy underpinning the new curriculum is for the development of every student (Zhong, Cui, & Zhang, 2001). Zhou et al. (2007) echo this when stating that the transformation seeks to promote all-around development of students, while curriculum reform has been deemed as a holistic approach to education (Dello-Iacovo, 2009).

The word “curriculum” means more than just subjects or knowledge, instead it is acknowledged to be a dynamic and generative process and related to the students’ experience (Wang, 2004). The curriculum balance has improved, as pointed out by Zhong Qiquan, the “Consultant Expert Team of National Curriculum Reform” leader, which is classified into two-course categories, namely the current discipline-based curriculum, and the “comprehensive practice activities” centred on student activities related to social life. The latter offers a fundamental learning experience framework for students, while the two-course categories constitute a milestone of curriculum development (Zhong, 2005). Furthermore, the curriculum is a three-tiered curricular, administrative system that involves the State, the localities, and schools (MOE, 2001),

Catering to the diversified learning requirements of students in varied socio-economic and cultural settings. A curriculum that transcends “subject-centredness” has developed, as concluded by Zhu Muju, former Deputy Director-General of the Department of Basic Education (Zhu, 2007). The curriculum structure design has been deemed by all relevant parties to contribute to “quality education” (Zhong, Cui & Zhang, 2001). By constructing this new curriculum system, the fundamental notion “for the development of every student”, which suggests the principal value of the change is capable of being realised (Zhong & Tu, 2013).

Concerning senior high schools, the outline implies that schools offer various selective subjects in addition to compulsory subjects. The selective courses featured in the new curriculum for senior high schools have been universalised nationwide by 2007. According to the *Basic Education Curriculum Reform Outline*, the curriculum reform stresses:

> Under the prerequisite that all students should achieve the basic requirements, the curriculum for regular senior middle school has been arranged in several optional levels to give students more choices and development opportunities and to lay a solid foundation for them to cultivate competencies in life skills, hands-on practice, and creativity (MOE, 2001).

The curriculum reform of senior high schools was extended to Zhejiang province in 2006, while new systems such as class-selection-system teaching and credit

systems are currently in operation. In 2009, the reform of *Gaokao* and the enrollment system was rolled out across Zhejiang and the other nine provinces (Zhong & Tu, 2013). Given that it is an ongoing process, curriculum reform is emergent and constructive, and continues to evolve and be formulated (ibid.). The *Plan of Deepening the Curriculum Reform in Senior High School in Zhejiang Province* was approved by Department of Education (DOE) and implemented in 2012. The courses are divided into required course and selective courses. Students can arrange their own learning plans. The two reforms are closely related and share the same objective of "selectivity", which offers students opportunities for selective study and individualised development in line with their capabilities, which conforms to the notion of quality education (Hu, 2017). Moreover, electives courses are mainly developed by schools. Cui (2018) points out that it is the long-term goal of curriculum reform that senior high school teachers become curriculum leaders and each senior high school constructs its own curriculum system. It is the curriculum reform and the setting of selective courses that offer a valuable opportunity for the development of MSC.

2.3.3 Progress and challenges

Evidently, there have been positive changes since the implementation of the NCR, even after only two years of the new curriculum's implementation. An investigation of compulsory education in forty-two trial experimental areas, as reported in 2003 by Yu Wensen, a leading scholar of the MOE's task force found this to be the case. Guan and Meng (2007) assert that it has "achieved a series of conceptual innovations and gained a breakthrough in practice". Ma (2009) finds that the NCR has brought changes to administrators' and teachers' concepts in relation to curriculum, teaching, and student learning, with most schools having set up mechanisms for school-based teaching research and curriculum. Guo (2013) states that students have become active participants in learning.

Nonetheless, problems and challenges have been encountered. The Chinese government recognised some of these and subsequently developed the revised edition of the national curriculum standards in 2004, which sought to enhance the

flexibility of the curriculum standards, with the outcome widely discussed by scholars. Dello-Iacovo (2009) asserts that the reform has inspired innovations in schools, while the implementation has been met with obstacles. Among them are examinations, which play a vital role in Chinese society, and are considered the major obstacles to curriculum reforms (Guan & Meng, 2007; Dello-Iacovo, 2009). The prevalent examination–driven practices conflict with quality education objective of the curriculum reform, and the dominant role of tests and rote learning methods, which signifies the essential nature of Chinese schools, remains unchanged, particularly at the secondary level, have significantly undermined the reforms (Dello-Iacovo, 2009). Guan and Meng (2007) point out examinations are a significant challenge to NCR since *Gaokao* focuses on academic performance rather than all-round development. The washback of the examination culture is a material issue.

Teachers, the ultimate implementers of all curriculum reforms, must overcome considerable challenges caused by the reform. Urban and rural teachers, particularly in rural Western China, find that the large-scale curriculum changes bring new yet also tremendous pressure, ambivalence, and psychological issues (Guo, 2010; Guo, 2013). Yu Wensen (2003) asserts that the majority of teachers only possessed a superficial understanding of new teaching approaches, such as cooperative learning and inquiry-based learning, hence they were not as effective as they potentially could have been. Dello-Iacovo (2009) concludes that teachers are divorced in spirit from curriculum objectives, while the selective courses that teachers develop at the school level have been in great demand. Several studies on reform implementation have concentrated on the problem of overload for teachers (Feng, 2006; Zhong, 2005; Guo, 2013), with Guan and Meng (2007) stressing the contradiction between the heavy burdens placed on them and their demands for continued learning. From the teachers' perspective, the lack of support from both the education system and schools is seemingly the primary obstacle to the utilisation of the teaching methods required by the new curriculum (Yan, 2012).

The transition of students from a passive learning style to an active one seems to be a challenging one. Research results indicate that considerably fewer students

reported boredom at school in 2007 than in 2000, which could be considered a notable success of the reforms (Sargent, 2011). Nevertheless, following a one-year investigation into the transformation of learning, Sun et al. (2011) find that inquiry-based learning and cooperative learning had not been implemented full in the NCR. Sargent (2011) arrives at similar findings, namely that despite some positive changes in students' learning, student participation remained highly constrained and limited.

Few rigorous evaluations have been conducted to determine whether the reforms are successful in accomplishing their desired outcomes (Dello-Iacovo, 2009). According to Yin (2013), who has reviewed the implementation over many years, evaluation in China focuses on what is visible. Nevertheless, the impact is understood to be more invisible given that the NCR seeks more than "just changing the curriculum, methodology, and student achievements". Hence, in Yin's view, it is "not wise to make a rash judgment on the reform outcomes of the NCR". The ultimate objective of the NCR, as Zhong (2004) has pointed out, is to reduce the impact of "examination culture". In this context, schools are a "learning organisation" and a "community of learners", with teachers serving as "models of lifelong learning", and students being offered diverse spaces for their development in various ways.

While the above challenges constrain curriculum reform, questions regarding the development and expansion of educational resources, and the relationship between education and society must be addressed. Both matters affect the implementation of selective courses, and inevitably impact the reform.

2.4 Museum-School Collaboration (MSC)

2.4.1 How can museums and schools collaborate?

Literature concerning museum-school relationship makes frequent mention of collaboration and cooperation. Collaboration entails the "mutual engagement of participants in a coordinated effort to solve a problem together" while cooperation

"… is accomplished by the division of labour among participants, as an activity where each person is responsible for a portion of the problem-solving…" (Roschelle & Teasley, see O'Malley, 1995). Despite Lai and Viering (2012) arguing that the distinction between these is not necessarily clear, participants in collaboration work are together on the same task rather than in cooperation on separate aspects of the task. In this research, collaboration is preferred and therefore adopted as improving students' learning and promoting their development are the objectives and tasks of museums and schools.

Education is the common basis on which museums and schools collaborate, and is defined as the process of experience, generally called learning, which brings about desirable changes in human behaviour in relation to knowledge, outstanding skills, and attitude (Singh, 2004, p.71). Education has been considered as a crucial museum function since the advent of public museums (Hein, 1998), and in the context of museums, education is the "mobilisation of knowledge stemming from the museum and aimed at the development and the fulfillment of individuals, through the assimilation of this knowledge, the development of new sensitivities and the realization of new experiences" (Desvallees & Mairesse, 2010). Moreover, museums have played a vital role in improving children's knowledge of nature, history, and art by enhancing their observational skills, imaginations, and creativity; providing opportunities for cultural perception and aesthetic appreciation; and by advancing their moral accomplishments and spirit of teamwork (Abasa & Liu, 2007). Singh (2004) stresses that the importance of the educational function of museums has been increasingly acknowledged in many nations since the early 20th century. Moreover, there has been a growing emphasis on museum education since the latter half of the 20th century, as exemplified by two publications of the American Alliance of Museums (AAM). Firstly, *Museums for a New Century*, published in 1984, states that the educational function of museums should be deemed highly important, while the 1992 booklet *Excellence and Equity: Education and the Public Dimensions of Museums* asserts that museums place education "at the center of their public service role" and assures the commitment to serve the public is "central to every museum's activity (p.16)". These reports regard museums as possessing rich collections and offering education to the public.

It is a common belief that museums significantly contribute to education in the broadest sense (Hein & Alexander, 1998). Xie (2000) further examines the possibilities for MSC, specifically noting that they have common goals, educators, objects, and pedagogies. Firstly, objectives in school education consist of three major areas: cognitive, psychomotor, and affective. Museum education focuses on the cognitive and affective, and is designed to provoke learners to explore, which is consistent with the aim of schools, particularly their recent focus on "learning how to learn". Secondly, museum educators and school teachers play the same role in facilitating learning and understanding. Thirdly, school students account for a substantial portion of museum visitors, hence they cater to similar audiences. Finally, pedagogies could be applied through a series of museum education activities to promote learning. These similarities lay a solid foundation for a collaborative relationship.

As well as the commonalities, museums have brought various learning experiences in comparison to those provided by formal educational institutions. When compared to education in schools, which are taken for granted to be the venue people received an education, Singh (2004) seeks to identify the distinction between them, as set out below in Table 2.2.

Table 2.2 – Comparison of learning in schools and museums (Singh, 2004, p. 74)

Subject	School	Museum
1. Free choice	No	Yes
2. Instruction based on	Text	Object
3. Senses most used	Oral	Visual
4. Syllabus-Oriented	Yes	No
5. Formal assessment	Yes	No
6. Time Schedule	Yes	No
7. Learning	Linear Non-Spontaneous	Multi-Faceted Spontaneous

Due to the dissimilarity, the collaboration could complement their mutual focus on education (Nam, 2009). Museums have offered flexible education, which is rather

unusual in schools, and they could provide some teachings that schools find challenging to deliver. In museums, choices regarding what to learn could be made, while it is unlikely that students are able to freely make choices in schools, where instruction is based on text, and teaching is accomplished primarily through writing and speaking. Museums focus on objects and 'stuff' of the world (Hein, 1998), while spoken and written words are supplementary (Harrison & Naef, 1985). Visual, rather than oral sense, is primarily utilised in museum learning, and there are no schedules, formal assessments, or syllabus-oriented courses. Museums offer a flexible and pleasant learning environment that facilitates multi-faceted spontaneous learning, as opposed to linear non-spontaneous learning.

Museums and schools are engaging participants in a coordinated effort in order to promote education, thus museums and schools work together is feasible, and worth developing and sustaining. Currently, the curriculum reform necessitates a large number of selective courses, and MSC is treated as a cooperation of curriculum resource. The subject knowledge of the teachers and the expertise of the museum staff are combined through the exhibitions. As Sheppard (1993) states, MSC "gives students an enriching immersion in ideas, discovery, challenge, and enjoyment" (see Nam, 2009, p. 27).

2.4.2 The history of MSC

Museums in western nations have a lengthy history of working with schools to exert influence over education. Early in 1851, the first World Expo, held in the United Kingdom, sought to employing objects exhibitions for education purposes (Su, 2011). In 1894, an Englishman, Thomas Horsfall, who considered museums to be capable of facilitating social progress and spiritual enlightenment, obtained an amendment to the *Education Code of Manchester*, thereby permitting school children to visit institutions such as museums, and art galleries during school hours as part of their education (Eagles, 2009). Thus, Thomas Horsfall was deemed to be the pioneer who introduced museums to school education. Since then, museums and schools have often worked together and this has been followed by other nations. Chen (2007) asserts that MSC has been a concern since the 19th century, and up

until the 20th century, MSC was promoted, researched, and advocated by museums and research institutes. It was not until the 1990s that the contribution that museum education could make to school education was recognized (Hein, 1998; Hooper-Greenhill, 2007). In 1988, connecting museum education with school curricula was elaborated in the UK's National Curriculum (1990) (Liao, 2004). Due to effective plans, the MSC in the United States entered a stage of rapid development from the late 1980s (Liu, 2017). According to the survey, museums spend over $2 billion a year on education activities, while the typical museum devotes three-quarters of its education budget to K-12 students (AAM, 2009). In France, elementary and middle school students do not have classes on Wednesday afternoons, instead they usually visit museums or participate in other activities (Yang, 2014). Other western nations, such as Denmark, Holland, and Spain, also pay great attention to the role of museums in education (Lu, 2014). Following a thorough study of the MS collaboration history in western nations, Song and Sun (2013) summarise the MSC development, and the detail is outlined in Table 2.3:

Table 2.3 – The characteristics of MSC in western nations in history (Song & Sun, 2013, p. 106)

	Time range	Characteristics
the beginning	1895-1960s	Museum as educational resources
the developing	1960s-1980s	Designed for service to education
the mature	1990s-present	Education as the core function of museums

Song and Sun (2013) conclude that MSC was in the initial state for a relatively long period of time, until the end of WWII, which was primarily in the form of field trips and loan services, yet there was a lack of detailed communication. During the second period, museum educators continued to treat museum education as a subsidiary of school education, which led to ineffective application among many MSC. Taking the US as an example, based on a three-year study, in 1984 AAM reported that many teachers and museum educators still viewed MS relationship as an "us and them" situation due to the dilemma caused by the lack of quality of communication between both sides concerning their aims. Hicks comments that the relationship was replete with dissatisfaction and frustration (Hicks, 1986). Since the 1990s, a mature partnership of MS has developed, with the practice fostered by the nation, a third-party organisation, co-curricular, and teachers' professional development (Song & Sun, 2013).

There has been significant progress in the partnership between museums and schools since the 21st century in East Asia. In South Korea, museum education has experienced rapid expansion, which can be attributed to a shift in government education policies, from a focus on formal education in schools to promoting "STEAM education", emphasising informal and object-based learning to foster creativity among young learners (Bae & Kidong, 2011). In Japan, the education reform implemented nationwide in 2002 promotes increased emphasis on experiential learning and offers institutional-level support to teachers. Museums increasingly recognize their roles in education and teachers are encouraged to enrich the curriculum by incorporating museum resources (Moore, 2002). The number of students participating in "comprehensive learning" activities in the museum has been increasing year by year (Li D.Y., 2021). Collaboration between museums and primary and secondary schools nearby has been deepening, offering services such as free visits, or giving lectures (Zheng & Lu, 2012). According to the survey done by Masayuki (2017), 34.9% of museums have implemented "setting up a commissioner to contact with schools" or "trying to cooperate with schools under the cooperation of the Board of Education", which is very high compared with other educational projects. Children and students' museum visiting is considered as the most common situation, with 40.7% responding "often" and 50% responding "occasionally". Hands-on learning, provided by museums, is increasingly recognized as essential, while it is possible to simulate various experiences through computer programs (Furihata, 2008). Various activities have been designed and organized. For example, The National Museum of Science in Tokyo arranges monthly events, including museum classroom activities, nature classroom activities, natural history lectures, and science and technology lectures. Moreover, the museum frequently extends invitations to educators and researchers from local universities, high schools, and research institutions, facilitating a range of inclusive sessions. In addition, Japan has incorporated volunteer activities into its innovative learning guidelines. In some high schools, students get credits for being museum volunteers through the "substitution of duties" system (Zheng & Lu, 2012). Li (2021) notes that there is a lack of effective MS communication mechanism and schools face a shortage of personnel who could facilitate MS connection and coordination.

The MSC In China has been classified by stages (Song & Sun, 2014). MSC began prior to the foundation of the PRC, and the practice of the Nantong Museum, founded in 1905, is an excellent example. Nevertheless, MSC was restrained largely due to economic development and continuous wars. The second stage was from 1949 to 1978, which preceded the execution of the Reform and Opening-up policy. Field trips, organised by schools, were the primary form, while mainstream education was pivotal. MSC did not reach a practical scale, and the effect was influenced by the mismatch between the content and forms, with a primary form being school visits to museums, during which ideological learning was emphasised.

Along with museum development, educational reforms, and institutional support, MSC has undergone a period of rapid transformation since 1978 (Song & Sun, 2014). Throughout the late 1980s and 1990s, the museum educational function has been highlighted by the Chinese government, while it has become more specialised and professionally focused, as Abasa and Liu (2007) claim. They further point out that since the 1990s, the Chinese government has extensively developed museum educational activities, which promulgated a series of national policies, that has been described broadly as 'moral education' or 'citizenship education'. Therefore, the MSC in China developed in light of the reform of quality education as advocated by the national education department at the end of the 20th century (Liu, 2017).

Contact between schools and museum education has been encouraged by China's Central Government. Notwithstanding, the Chinese K-12 education system did not fully utilise museum resources to support the curriculum. Numerous academics (Kang, Anderson & Wu, 2010; Song & Sun, 2013) indicate that "strongly entrenched cultural views and long-standing practices are obstacles to meaningful collaboration". Moreover, there remains an imbalance in the layout between local areas, the internal collections, operating mechanisms, and professional capabilities of different museums, which have made it challenging to provide MSC. In a follow-up study, Song and Sun (2014) state that there has been a bias in terms of supply of the education system. Political ideology education is appreciated in MSC, with several nationwide government-led projects, such as the National Patriotism Education Bases and Red Tourism, being primarily concerned with patriotic

education (Abasa & Liu, 2007). Song and Sun (2014) state that it is difficult to assess effectiveness, as the programmes are borne out of the willingness of the government and agencies. Furthermore, the primary motivation for Chinese MSC was top-down, rather than the demands and claims of museums and schools.

In terms of historical context, the MSC in China, similar to that in the West, has existed for almost a hundred years. In her book *Research on Cooperation Mechanism between Museums and Schools*, Song (2016) points out that practical problems persist. A systematic analysis and theoretical construction is necessary to address the lack of localised research in practice. Under the current development situation, Wang (2018) also deems the MSC status quo not to be promising. The departments responsible for MSC have not received sufficient attention in China. Additionally, the departments perform a variety of work, such as open reception, social education, external promotion, and marketing. Despite the forms of collaboration, no clear independent purpose in learning exists. Most collaboration is directed by external instructions, while the internal demand is not activated. In summary, both Song (2016) and Wang (2018) believe that the long MSC has not yet constructed a mature education system.

2.4.3 The types and models of MSC

Since the 1990s, six types of MSC have been identified in the west (Hannon & Randolph, 1999). In their investigation, Song and Sun (2013) categorise them into five, namely field trip, outside service, professional development, museum school, and regional collaboration.

Field trip

Many (Wu, 2011; Song & Sun, 2013) have stated that field trip has been viewed as the most traditional type, which is the most common and frequently used. Song and Sun (2013) suggest that the effect differs due to the variances in museums' condition, environment, and the implementation of the educational activities. Compared to the other types, field trips can take maximum advantage of the

museums' resources, and it requires the effort of museum educators and school teachers alike (Song, 2016).

Outreach

Outreach, service outside museums, originated in the 1960s, and museum educators typically dominate the collaboration. It extends museum space, and there are primarily two forms: school expansion and fixed-point service. The difference lies in the length of time, either short-term or long-term. Unlike students' visits, outreach is located within the school, which extends the traditional museum space and reflects the radiation effect of the museum's education function. Nevertheless, outreach is subject to the limitations of museum's funding and often requires support from others, such as schools. Therefore, it is challenging for outreach to popularise (Song & Sun, 2013).

Professional development

This type is aimed at school teachers, thereby affording gives them an opportunity to become familiar with museum resources and build a good relationship with museum educators. Thereafter, teachers could explain and analyse the collections and displays in museums for students, while pedagogies of practice and application could also be transferred to classrooms. This type not only causes museums and schools to work together, it also enables universities and research institutes to get involved in the cooperation. The collaboration highlights the role of teachers, while professional development for teachers supports school education (Song, 2016), and curriculum building is strengthened during it. Clark et al. (2002) state that among the MS projects they investigated, some are core subjects-centred, some combine core subjects with other subjects, and others are cross-curricular projects. Wu (2011) states that it could be a form of MSC to realise regular, continuous, and systematic museum learning.

Museum school

Song (2016) points out that museum school is a unique form of MSC in the USA, and is an integration of museums and schools. In this relationship, schools are transformed, and museum learning is maximised. Museum schools require students

to engage in three activities: object creations, exhibits, and museums. For instance, a programme named Peaceful Warriors: Aim for change invited students to take photographs and write essays on a social issue, with their works were displayed at the museum, and some uploaded to the Internet. The collaboration benefited all participants (Bobick & Hornby, 2013). Museum schools may constitute the most radical form of MSC, while the effects are more in the form of "claims" and limited by conditions. It remains under exploration, but deserves more attention (Song & Sun, 2013).

Regional collaboration

It is a new type of MSC that has emerged in recent years. Song (2016) argues that some districts begin trying to integrate and 35inimiz regional resources as they are not effectively involved in MSC. "Urban Advantage" was a case launched in 2004 in New York City, in which collaboration saw urban public-school systems and science cultural institutions such as zoos, botanical gardens, museums, and science centres contribute to improving students' understanding of scientific inquiry (Song & Sun, 2013). In the opinion of Bao (2013), a key feature of the collaboration is its efficient use of resource, which facilitates regional replication.

MS collaborative projects in China have been expanding in the 21st century (Song, 2016; Wang, 2018). Song (2016) explains that with the shift of curriculum management power, school teachers are now curriculum designers and developers. Furthermore, museums have gained the educational foundation for intervening in both local and school-based courses. According to the data (Table 2.4) gained from 112 valid questionnaires from schools with technology characteristics in Shanghai, Song (2016) finds that field trips were the most, reaching 87.5%, while both educational and extracurricular activities reached approximately 40%, which was like joint courses. Overall, the main type was field trips, while none of the other types constituted over 50%. Nonetheless, researchers (Bao, 2013; Wang, 2018) contend that most field trips are chaotic, as there are no teaching objectives, the contents are fragmented, the methods are inappropriate, and the logic is confused, and the responsibilities are blurred.

Table 2.4 – Percentage of MSC types in Shanghai (Song, 2016, p. 73)

MSC programmes	Percentage (%)
A. field trips	87.5
B. teacher training	23.2
C. educational activities projects	37.5
D. extracurricular activities	42
E. outreach	21.4
F. others	9.8

There have been models of MSC, given that museums and schools are two different institutions with varying positions and ideas, which require coordination and cooperation from both in the collaboration process. Taiwan scholar Liu Wanzhen studied the models of MSC in North America, which is famed for its museum education (Su, 2011). She proposes six models:

1. Affiliated Museum school: The school system was like local schools, while museums developed the curricula.
2. Provider-accepter model: Teachers and students in schools accepted what was provided by the museums.
3. Museum–oriented interactive model: Museums were the leading party, while also offering training to teachers.
4. Teacher–oriented interactive model: In contrast to model 3, teachers took the leading role, while museums collaborated.
5. Community Museum school: The schools fully incorporated the resources of community museums.
6. Third–organisation model: a third party facilitated the MSC.

(See Chen, 2007, p.107)

Among these models, Liao (2005) states that Model three, museum-oriented interactive style, and Model four, teacher-oriented, are considered more promising in Taiwan. Numerous small and medium-sized museums have paid increasing attention to museum education, and schools have focused on the integration and application of social resources. Thus, there is the possibility of developing and implementing Model three and Model four in Taiwan, which is initiated by

museums first, where school teachers are invited to plan together, or is triggered by schools to cooperate with museums for curriculum design. Yang (2012) establishes that if schools and teachers both take the initiative and mutually engage in the partnership, it would achieve an optimum result. Liu (2002) agrees with the joint effort, adding that museums and schools collaborating to develop curricula would be the most suitable model (see Zeng & Lin, 2014).

The outcome of MSC will be directly affected by the selection of the model. Recent research by Song (2016) supports the view that during the collaboration, museums and schools should take the initiative to utilise both strengths. Among the 112 schools that completed the questionnaire designed by Song, almost half (46%) of the MSC was led by schools, less than a quarter (21%) was deployed by higher authorities, only 15% was led by museums, and the rest was unclear about the leaders. This data demonstrate that schools have a more positive attitude than museums towards MSC, which may cause poor integration between museums' resources and schools' requirements. MSC arranged by higher authorities can undoubtedly lead to a situation in which museums and schools work independently. It's important for museums and schools to choose a proper model to facilitate effective collaboration, so as to foster a deep learning about the world.

2.4.4 Factors contributing to the success or failure of MSC

MSC has been increasing globally for years, and considerable amount of literature has been dedicated to it. Some cases were successful, such as 15 partnerships that were confirmed in 1994 in the US, which received the Institute of Museum Services (IMS) Museum Leadership Initiatives grants. 12 conditions have been suggested that must be satisfied to ensure success, with each condition becoming "part of an overall institutional strategy for educational collaboration":

1. Obtain early commitments from appropriate school and museum administrators.
2. Establish early, direct involvement between museum and school staff.
3. Understand the school's needs in relation to curriculum, and state and local education reform standards.

4. Create a shared vision for the partnership and set clear expectations for both partners in terms of what they hoped to achieve.
5. Recognise and accommodate the different organisational cultures and structures of museums and schools.
6. Set realistic, concrete objectives through a careful planning process, and integrate evaluation and ongoing planning into the partnership.
7. Allocate sufficient human and financial resources.
8. Define roles and responsibilities clearly.
9. Promote dialogue and open communication.
10. Provide real benefits that teachers can use.
11. Encourage flexibility, creativity, and experimentation.
12. Seek parent and community involvement

(IMS, 1996, p.50)

Having researched several successful educational programs, Wojton (2009) asserts that all these MSC have five features in common: mutually agreed goals, clear communication, trust among partners, collaborators with varying strengths, a desire to improve efficiencies, and ongoing evaluation. Johnson and Rassweiler (2010) identify shared objectives, communication, and evaluation, while also referring to mutual outcomes, which benefit all involved. Bobick and Hornby (2013) point out that mutually beneficial matters and meaningful partnerships could be developed through careful planning, establishing clear guidelines, and efficient time management. Time is regarded as a vital component if designating it to work on a project.

These studies highlight the importance of goals, communication, and mutual benefit for MSC. Following a study of the successful experience of western MSC, Song (2016) notes that close attention is paid to the involvement of universities and other educational institutions and researchers in MSC, while great importance is attached to museum curriculum design. Multiple factors are known to play a role in long-term and stable relationships, such as mechanisms of communication, planning and evaluation, and feedback emphasising the participation of parents and students.

Researchers have found several factors responsible for the failure of sustainable collaboration. School teachers are a critical link for effective MS collaboration (Hu, 2017), yet Zeng and Lin (2014) identify that most teachers in China are discouraged by the complicated formalities, such as scheduling, insurance, logistics, catering. Bobick and Hornby (2013) concur that teachers can play a vital role in fostering a positive relationship. Examination stress is viewed as another challenge for museums that often "struggle to develop and maintain effective partnerships, especially with urban schools that are focused on student achievement as measured by high-stakes test scores" (Wojton, 2009). In accordance with Chinese national conditions, Song (2016) arranges and lists seven major aspects, namely objective issues, such as safety, distance, and the number of people; interest issues; lack of financial support; personnel and professional shortages; pressure from the entrance examination; managing issues; and the traditional concept of education. Moreover, the relationship is likely to be erratic due to the changes in personnel and the competition for resources (AAM, see Li & Wei, 2012).

2.5 Literature on learning in museums

2.5.1 Theories on learning in museums

The focus of museums has shifted from the historical collection, preservation, and research to public education, as stated in the booklet *Excellence and Equity*. Public education is "a term that in its broadest sense includes exploration, study, observation, critical thinking, contemplation, and dialogue" (AAM, 1992, p.10). The fundamental characteristic of museum education is objects, experience, and informality (Zhang, 2015), with objects providing an opportunity to gain first-hand experience (Singh, 2004). Regarding the relationship between education and experience, John Dewey, a preeminent educational theorist and one of the most critical forebears for museum education, proposes that genuine education is gained through experience (Ansbacher, 1998). Additionally, Dewey stresses that every experience has two aspects. Thus, Ansbacher develops a theory of experience applied to study learning in museums, as displayed in figure 2.3.

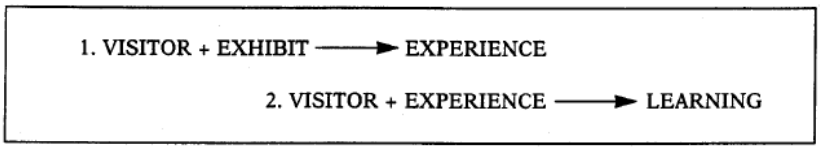


Figure 2.3 – Dewey's theory of experience applied to museums (Ansbacher, 1998, p. 39)

In the first case, visitors interact with the exhibit and gain an experience, while in the latter, visitors assimilate the knowledge to ensure that subsequent experiences are affected. In this instance, learning is used in its broadest sense. As Ansbacher (1998) suggests, learning is "any lasting outcome of the museum experience and is the result of the combination of whatever takes place at the exhibit and what the individual visitor makes of it". Museum learning leads to an "acquisition of knowledge or the development of skills or attitudes" (Allard & Boucher, 1998; see Desvallees & Mairesse, 2010). The emphasis on museums has transitioned from education to learning (Ambrose & Paine, 2006; Yin, 2015).

Since the 1980s, "learning and experience" has gradually been mainstream paradigm of museum education, and has become the consensus of various regions and types of museums (Yin, 2015). As Zhang (2000) states, a museum provides a place to learn, and visitors play an active part in the learning process, rather than simply "being educated". Theories on museum learning have been developed by many authors, such as Hein (1998), Falk and Dierking (2000). In his book, *Learning in the Museums*, Hein (1998) proposes the Museum Education Theories Model (METM), as exemplified in figure 2.4 below.

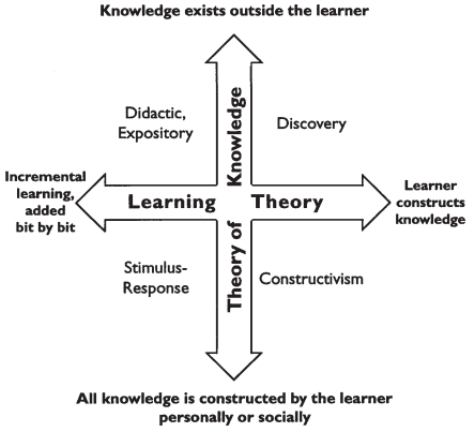


Figure 2.4 – Museum Education Theories Model (Hein, 1998, p. 25)

Four domains are created, each describing a type of educational theory, and any two theories share a standard view on either epistemology or learning theory (Hein, 1998). “Didactic, expository education” is how most people described learning happened in school, with lectures or docent-led tours constituting typical examples. Stimulus-response primarily concerns the learning method for the “didactic, expository approach”. If one believes that knowledge can be taught by learning from objects and experience, discovery learning seems natural in museums. The final quadrant related to the learning theory of constructivism, which “postulates that learning requires the active participation of the learner”, and the conclusion is validated by “making sense within the constructed reality of the learner” (ibid.). Hein favours a constructivist approach to learning in museums, while the individual aspects of the experience and the visitors’ learning are also significant (Insulander, 2005).

Traditional educational research seldom pays attention to the social and emotional aspects of learners’ development and learning process. Museums offer opportunities to watch, ask, experience, and compare. Most importantly, various social interactions are involved. In view of the considerations, Contextual Model of Learning (CML) is appropriate to study the learning in museums. Falk and Dierking attach importance to the socio-cultural context and proposed CML in the study of learning in museums in 1992. Time, a fourth element, is included due to the model being revised in 2000 (see figure 2.5).

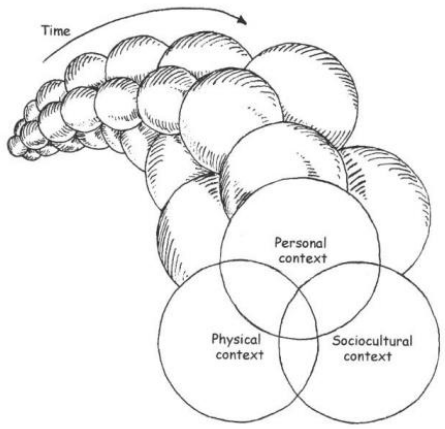


Figure 2.5 – Contextual Model of Learning (Falk & Dierking, 2000, see Wojton, 2009, p. 61)

In the CML, during a period, the interactions between the visitors' "personal context", the "social context", and the "physical context", contribute to learners' experience in museums. CML displays the complexity of the learning process, and within the three contexts, learning could also be influenced by the factors displayed in Table 2.5. Meaning-making would be more challenging if any of the eight factors are neglected, while studies by other researchers have also identified individual issues (see, for example, Csikszentmihalyi and Hermanson, 1995; Griffin and Symington, 1998).

Table 2.5-Eight factors influencing learning within three contexts (Falk & Dierking, 2000, p. 137, see Cox-Petersen et al., 2003, p. 202)

Personal context
Motivation and expectations
Prior knowledge, interest, and beliefs
Choice and control
Sociocultural context
Within-group sociocultural mediation
Mediation facilitated by others
Physical context
Advance organizers and orientation
Exhibit design
Reinforcing events and experiences outside the museum

2.5.2 Factors that facilitate or hinder learning in museums

Museums provide visitors places to learn, and objects, experiences, and situations that facilitate learning. The museum environment seemingly provides stimuli to comprehend and bring students new insights and experiences. Furthermore, museums are treated as "unique and dynamic places" where students can "share their thoughts, feelings, observations, and understanding of ideas inspired by objects and exhibition" (Bobick and Hornby, 2013, p.82). The interaction with authentic artefacts is widely considered to be key to museum learning (Wishart & Triggs, 2010). The real objects displayed offer forms of knowledge at varying levels of sophistication, and enable students to absorb new information and relate the latter to previous knowledge and experience. In terms of original artworks, they would increase the possibility of arousing an interest in art (Xanthoudaki, 1998), while exhibitions and visits embedded in the daily and everyday socio-cultural context facilitate learning. Anderson et al. (2002) propose that plays and stories in museums would significantly influence learning. Furthermore, Hooper-Greenhill (1991)

asserts that preliminary preparation, visits, and follow-up work, which is a "three-part unit", contribute to enhanced learning (see Xanthoudaki, 1998).

Franco (2010) analyses the factors concerning the disconnection between museum educators and school teachers. Specifically, high transportation costs, language barriers between classroom teachers and museum educators, and difficulties in justifying the museum school partnership's impact on student achievement constitute obstacles to the relationship and ultimately hinder museum learning. Moreover, conversation elaboration does not always perform a positive role in museum learning. Cox-Petersen et al. (2003) point out that a study of docent-led school tours indicated that tours organised in a didactic fashion led to low levels of science learning. Additionally, after interviewing 178 groups of visitors, Leinhardt (2014) contends that not all conversational behaviour is conducive to learning, while actions, such as making frequent personal connections, are detrimental to learning.

2.6 Summary

In this chapter, three components of the main research question are reviewed: museums, Chinese school education ("Quality education"), and Museum-School Collaboration, as well as literature on learning in museums. The review facilitates me with ideas to conduct an attempt of new model of MSC research, which appears to be of contribution and significance under the current curriculum reform in senior high schools in Ningbo.

Chapter 3 Research Design

3.1 Introduction

This chapter consists of three sections: the philosophical rationale for the methodology used in this study, the methods of data collection and analysis, and the credibility of the research, while the two pilot studies that informed the design that were conducted prior to the main research period are reviewed.

3.2 A qualitative action research

Whether quantitative or qualitative research is used in education research, it seeks the truth behind the phenomenon (Zhang et al., 2015). This study focuses on exploring learning under MS collaboration, hence a qualitative approach has been employed. The concept of learning is situated within the foundational disciplines of education and psychology, which reveals how people learn, whether they have learned, as well as how much and what they have learned. Numerous techniques, such as tests, examinations, and other performance measuring tools, are developed to discover and study learning. These techniques are widely utilized, yet only partially reflect learning, and insufficiently measure more intangible elements and subjective aspects, such as preference, motivation and feeling. Moreover, students have a multitude of experiences and thoughts, which must be listened to and studied.

Human learning is also a social activity, and based on Jarvis et al. (2003), it takes place in social situations. Assessment in schools has typically focused on decontextualised knowledge without stressing how they apply it in authentic contexts, while learning entails an active engagement between the learner and what is being learned. Learning occurs if the learner engages with it, and thus the learner's role is pivotal in learning. Moreover, the assessor must judge what levels of meaning or understanding are reasonable at each stage of the learner's development. Therefore, in this research, learning is deemed to be both constructed and founded on the reality of the world we experience, which not only signifies the

process by which knowledge, skills, or attitudes are developed but also stresses the role of the learner (Jarvis et al., 2003).

Informed by the understanding of learning and experience as a school teacher, a qualitative method design was adopted, which draws on the direct experience of the researched phenomenon and provides an intricate and deeper comprehension of non-observable intentions, attitudes, and behaviours (Gonzales et al., 2008, p.3), and helps to gain an understanding of the social world through human activities. The underlying philosophy of this research rests between the interpretive and pragmatic paradigms. A philosophy of qualitative research is broadly interpretivist, and interpretive researchers seek to understand individuals' interpretations of the world (Cohen et al., 2007). Furthermore, the pragmatic paradigm believes that the world is transformed through actions, which are pivotal in pragmatism (Goldkuhl, 2012; Morgan, 2014). Human thoughts are intrinsically connected to action, and all knowledge is socially constructed, and the social constructions may match some individuals' experiences more than others (Morgan, 2014). Hence, in researching how MS can work together to improve students' learning, the researcher took the stance as both a research designer and an insider learner, and employed a combination of pragmatism and interpretivism. The nature of the world, chosen in this research was subjectivist. Subjectivists view the social world as being more personally and humanly created (Cohen et al., 2007), which is consistent with pragmatism, and views the world as altered through actions, while human beings are regarded as being capable of shaping their experience through their actions and intelligence (Goldkuhl, 2012).

Action research, qualitative approach, is suitable as the methodological perspective of this research. As Mertler (2014) proposes, by incorporating change, action research improves education, which is echoed by Streubert and Carpenter (2002), who state that action research seeks to improve practice and study the effects of the action taken. Due to the purpose of the research begin to promote practical learning and teaching at a specific educational site, action research fits my intention, while it enables me to attempt to do some work, and make gradual changes, ultimately gain a more thorough understanding, and improve students' learning, particularly

in history subject learning. Many researchers (e.g., Griffin, 1998; Li, 2005; Blackford, 2009; Li, 2012) working on MS cooperation have opted to adopt action research. As Table 3.1 displays, the related studies in China suggest that action research approaches have been widely employed.

Table 3.1 – A review of recent Chinese studies on MS cooperation

Title of the paper	Methodology /Methods	Context
Research into middle school historical teaching of the combination between museums and schools, focusing on the subject of entering museums (Li, 2005)	Action research/ questionnaire	Junior middle school, Hangzhou
A study of the exploitation and utilisation of the museum curriculum resources (Cao, 2007)	Literature review, questionnaire, and interview	Secondary school, Beijing
Action research on museum-school cooperation on the subject of history in junior schools (Shanghai Yan'an middle school, 2011)	Action research/ document analysis, interview, questionnaire	Junior middle school, Shanghai
A study of the possibility of collaboration between museum and schools (Yang, 2012)	Case study/ observation, interview, document analysis	Grade three, primary school, Taiwan
The study of exploration and the utilisation of museum curriculum resources (Li, 2012)	Action research, survey/ interview, observations, object analysis, questionnaire	Primary school, Changchun
An exploratory study on school-museum art education collaboration (Chen, 2013)	Action research/ questionnaire, diary	Primary school, secondary school, Shanghai
Application of museum curriculum resources in middle school history teaching: a case study of Jianchuan museum (Yang, 2014)	Document analysis/ field observation, classification integration	Secondary school, Sichuan
Development and utilisation of museum curriculum resource for primary school students: a case study on Shanxi museum (Yang, 2016)	Case study/ questionnaire, interview	Primary school, Taiyuan
STEM project-based learning from the perspective of cultural-historical activity theory in Primary School (Shou et al., 2017)	Action research/ questionnaire, interview, observation	Primary school, Chongqing
The museum curriculum gets credits in famous senior high school (Luo, 2019)	Action research/ questionnaire	Senior high school, Guangzhou

Action research is seemingly more appropriate than other approaches, such as case study, for this research. Firstly, by comparison, the researcher has little control of events that are happening at present when using a case study (Yin, 1998), despite it allowing for in-depth examinations of people, groups of people, or institutions. The

biggest issue is that there have been no such cases in local senior high schools or museums that I was able to explore. Additionally, the results of case study research, like most forms of qualitative research, have been criticised for not being generalisable, and the case was not necessarily representative of similar ones (Hancock et al., 2007). Secondly, one objective of my research is to improve MS collaboration in NB. Action research is "a powerful tool for change and improvement at the local level" (Cohen et al., 2007), while the combination of action and research has met my requirements. Owing to the curriculum reform, the proposal of "developing and offering selective courses" has afforded me opportunities to bring MS collaboration to a senior high school in the real world. Hence, I have been able to "identify the things we believe in and then work systematically and collaboratively one step at a time, to making them come true" (McNiff et al., 1996, see Gray, 2009, p.320). Lastly, action research is appropriate given that the purpose informs the choice of the paradigm and the approach. Pragmatism is concerned with action and change, and is associated with movement, intervention, and constructive knowledge (Goldkuhl, 2012). The improvement of practice was the central focus of this research, and McAteer and Dewhurst (2010, p.34) identify the particular purpose of action research as being to enable "professionals to understand their practice better, and use that enhanced understanding to effect changes in practice". Due to the work and experience that action research empowers, it enabled me to connect theory to practice, improve practice, and realise professional growth. Furthermore, Cohen et al. (2007) assert that actions are meaningful only in terms of ascertaining actors' intentions to share their experiences. The sub-questions of this research were formed to confirm the researcher's intention and seek interpretations from the individual experience, which only lead to reflection and shifting to more appropriate activities.

In light of the above, action research provides me with a valuable opportunity to conduct on-the-spot action and analysis, thereby facilitating practical and theoretical improvements in education and teaching.

3.3 Lewin's Action Research Spiral

Action research is a planned, systematic approach, as Mertler (2014) explains, by which educators discuss and work with other educators and all participants in empowering relationships to explore and better understand learning and teaching from various perspectives.

Numerous models for action research have been proposed. Mills (2011) (see Mertler, 2014) points out that they share common characteristics, such as identifying a central issue, observing current practice, collecting, and synthesising data, and acting. In the action research process, planning, acting, and evaluating are indispensable. Kurt Lewin, credited with being the first to use the term action research, codifies the process into four key stages, namely planning, acting, observing, and reflecting (Cohen et al., 2007), and he also depicts a research spiral as presented below (Mertler, 2014, p.15), which includes the step of fact-finding prior to that of planning, with the addition of the step of amending the plan before moving toward a second cycle.

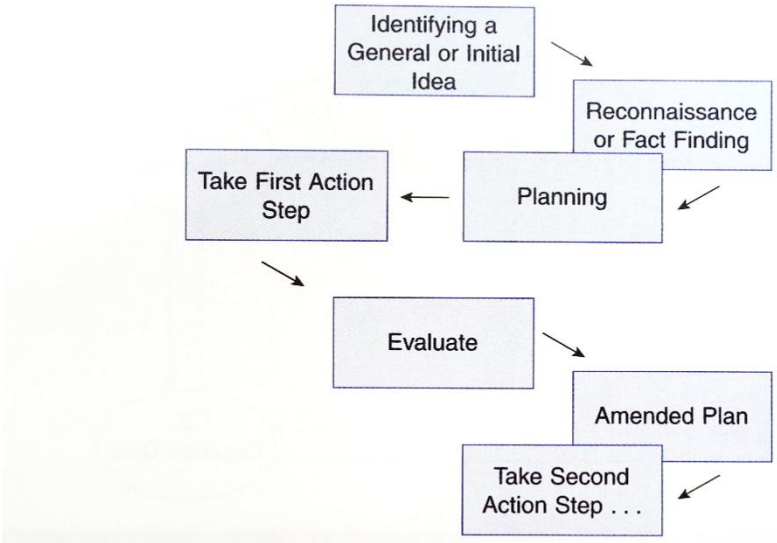


Figure 3.1 – Lewin's Action Research Spiral (Mertler, 2014, p.15)

Depending on the nature of the MS collaboration, there may be cycles in a study. The straightforward steps facilitate the conduct of my research, therefore it is appropriate to follow Lewin's spiral.

Identifying a general or initial idea – I regard the issue of students' learning as the primary concern of this research study. As a school teacher, I pay attention to senior secondary school students who deem learning, such as history, to be boring and dull. They primarily complain about the enormous memory task, partly due to the extensive and varied content, throughout ancient and modern China and abroad; partly due to the academic pressure and limited time, as senior high school students in Zhejiang province are required to complete their history studies in one year, within which students also learn the other eight subjects. Faced with such a challenge, my initial idea focuses on how to help students enhance their motivation and learning in history.

Reconnaissance or fact-finding – History, written by historians, is based on the available evidence. They used evidence to give order to the past, explain why events and processes took place, and produce accounts of the past. Therefore, evidence is critical to history as only through it does history become possible (Donovan et al., 2005). Aiming to support students' learning at schools, many museum-school projects, characterised as relics, a kind of evidence, concentrate on developing curricula (Clark et al., 2002). It is desirable that the collaboration between museums and schools makes advances in students' learning. Moreover, according to the literature review, the teacher-oriented interactive model, where schools and teachers collaborate to take the initiative, has been found to achieve optimum results (Liao, 2005). The reconnaissance stage, also known as information gathering, has a strong influence on the design of my research.

Planning – a basic qualitative research designed by a teacher-researcher was to be conducted with the other two teachers. I contacted the head of the school and museum staff. The both exhibited strong interest and provided as much support as possible. Following a thorough discussion with the museum educators, the theme was determined: celadon, a type of porcelain. Celadon is referred to in the textbook, while the museum owns an extensive collection of it. Other issues such as the content and form of collaboration, division of labour, and work schedules were all settled.

Take first action step – the museum and school developed a course together, which was to be implemented weekly for a total of 18 weeks. Lessons and lectures were given by museum experts and school teachers, and students were to go out and meet people. They were to learn by doing, talking, and role playing. The learning experiences contrast from those at school and the outcome was assessed by playing the role of docents' role and presenting short dramas based on the experiences.

Evaluate – prior to amending the plan, the course must be evaluated. Gray (2009, p.322) indicates that "identifying what criteria constitute evidence of change" is the prerequisite. Smith (2006) outlines four commonly used evaluation methods of MSC: questionnaire, observation, interviews, and viewpoint recording. Wang (2018) deems observation and interviews to be helpful in terms of obtaining participants' intuitive feelings about learning effects, and facilitate researchers to analyse the causes of learning behaviours. Thus, observation and interviews were adopted as the evaluation method.

Amended plan – to improve educational practice, action research encourages teachers to take risks and alter their instructional practice. What they learn from action research is transferable to daily teaching and learning (Mertler, 2014). Once the first cycle was completed, the plan with the museum staff was amended based on the evaluation and reflection in order to reach a preferable development when conducting a second cycle. Cycle after cycle, this action research is designed to promote learning and the development of museums and schools through a long-standing relationship.

3.4 Research Methods

This paper employs a qualitative action research methodology to explore how MS can work together locally to develop a deep understanding of the museum-school collaboration. The assumptions identified above have direct implications for this study's research methods, namely the instruments for data collection. According to Cohen et al. (2007), various devices, such as interviews, observation, photography, audio, and video recording, can be adpoted to collect data when conducting action

research. I adopted the methods mentioned above to obtain complete data due to it being the most crucial phase.

·Interviews

This research is a trial of the MS relationship, and interviews were adopted since they are regarded as one of the best methods, particularly when the research objective is largely exploratory (Gray, 2009). Secondly, I intended to find out information related to learning rather than establishing student scores, which does not provide sufficient information about learning. My personal experience suggests that many students are interested in learning history, yet they do not achieve satisfactory scores in school. My research explores the experience of learning in a museum-school course, mainly to discover the attitudes and thoughts of the students, museum staff, and school teachers. Given that interviews are capable of gathering information about persons' knowledge, values, preferences, and attitudes (Cohen et al., 2007), they are conducive to gaining a better understanding of learning. In addition, I am a school research teacher, and it is generally easier to build trust between the researcher and students, who are likely to engage more with persons whom they are familiar with. Considering this aspect, interviews satisfy the requirements of my research.

Feelings, attitudes, beliefs, reactions, and experiences of a subject "often emerge from social interactions with other individuals and groups", and conversations in focus groups "trigger ideas in other participants" (Gray, 2014, p.470). Therefore, individual and focus group interviews were carried out in-person following the completion of the course. All interviews were recorded with permission and accompanied by notes taken simultaneously. Subsequently, they were transcribed and translated into English by myself. Bailey (2008) suggests that the researcher should do the work since transcribing is not a straightforward and simple task, instead it necessitates a great deal of consideration such as judgment questions on the level of detail to include (see Lichtman, 2014, p. 339).

Semi-structured interviews and open-ended questions were conducted as structured interviews would give little freedom for interviewers or interviewees as the

sequence and wording of the questions were determined in advance (Cohen et al., 2007). In contrast, semi-structured interviews are suitable for the research as they enable the interviewer to clarify the questions with prompts, while allowing the interviewees to extend and elaborate on their answers. Moreover, open-ended questions are flexible, as Silverman (1993) argues that crucial but unanticipated issues could be raised by them (Cohen et al., 2007).

Cohen et al. (2007) propose that an interview schedule is necessary to translate the research objectives into the questions to pose. Silverman (1993) stresses that schedules facilitate interviews' reliability, if they have been carefully piloted. Below is the schedule for the interviews, which I piloted prior to the interviews commencing (ibid.).

1. Could you tell me what made you choose to participate in this course? [Any other reasons]?
2. Can you tell me a bit about what you have learned in the course? [Tell me a bit more about that… Did you enjoy the session about…What did you know?…]
3. Can you say a bit about what you thought of the introduction to museums?
4. What about visiting Ningbo museums? What were your impressions of the museum during the visit? Did your impression change over time?
5. Can you say a bit about the lecture the museum staff gave? What did you think about it?
6. Have the sessions on making porcelain improved your understanding of celadon? Could you say a bit more about what you thought of those sessions? [What made you think that …]
7. What do you think about the work the docents do in museums? Is this valuable work, in your opinion? Why?
8. How about your short play? Are you satisfied with what you did in the play?
9. Which session was your favourite? Could you tell me why?
10. Were there any sessions that you did not like? [Explain why]
11. Could you offer any suggestions for improving the course? Should we offer this course again?

12. Do you think working with the museum improved your learning? Are museums good places for learning?
13. What are the most important things you learned in this course?
14. What do you think about the partnership between our school and the Ningbo Museum?

Cohen et al. (2007, p.182) assert that the planning of the interviews is essential. For instance, timing, pacing, keeping the conversation going, and the opening and ending of the interview. On account of these, they must be appropriately and suitably prepared. People tend to communicate best in a relaxed atmosphere, thus I decided to conduct interviews in a quiet room with comfortable chairs, soft drinks on offer, and only after the final examinations had taken place, when students are in a more relaxed state. Participants do not get visibility of the questions until being interviewed, with each interview lasting around twenty minutes. Since all the interviewees are Chinese, it was considered reasonable to carry out the interviews in Mandarin, the national language of schooling of China, guaranteeing the interviewees' full understanding and precise expression.

Small-scale pilot interviews were to be held during the pilot studies, which enabled me, a novice researcher, to practice interview skills and increase my familiarity with the questions and prompts in order to obtain high response reliability (Robson, 2011) in the real study. During the pilot, I did not choose a random sample when forming a focus group. Instead, stratified sampling was applied to ensure the pilot data was more representative, with the sample consisting of boys and girls with various levels of academic achievement and characteristics. The pilot interviews went smoothly and proved to be an appropriate method for gathering data. I used audio recording, which facilitated the evaluation. Ultimately, as Robson (2011, p.272) suggests, the participants were encouraged to comment on the "interviewer's performance and the schedule". I was advised to pose questions in a flexible manner, and follow participants' interests and thoughts. By piloting interviews, participants' possible responses were checked, and my leading speech were consciously avoided.

·Observation

Observation can be employed to validate or corroborate the data obtained by interviews. Classroom observation is typically used alongside other methods when conducting action research, and it enables the researcher to make notes and continuously reflect upon the things that happen (Gray, 2009). Since the data the interviews provided was the responses after the course has been completed, the observation, by contrast, is on-site and more direct. It is a natural technique to study what the participants do, listen to, and what they say. “Saying is one thing; doing is another”, the well-known saying which indicates the inherent difficulties in the reliability and validity of data. Thus, observation was appropriate for the researcher’s aim of capturing ongoing behaviour as it occurs. Robson (2011) points out that observation is useful, even though it can be very time-consuming.

The observation in this research referred to participant observation, which is beneficial in studying small groups, or for events and processes that are short in duration, for researchers who wish to penetrate a situation (Cohen et al., 2007). Hence, the scale and timeframe of this research follow the requirements. As Robson (2011) points out, when conversing with participants, the basic task of an observer is to watch the people in the group, and the fundamental objective is to describe the setting, the people, and the events. As an observer, I spent as much time as possible with the participants, which helped the production of descriptions. My observation was guided by the following questions: What are the students’ behaviours in the museum? What are their responses? What makes them interested? What questions do they ask? How do they experience the sessions? What are their comments? To help “recall events during the research process” (Gray, 2014, p.340), I used field notes and photography, and audio-visual recording. Field notes contain the results of observations, which are utilised both in situ and away from the situation. Spradley (1980) states that space, actors, activities, objects, acts, events, time, goals, and feelings of the participants can be defined as the content of the field notes. Bogdan and Biklen (1992, p.122) add that reflection upon the issues may be included, such as the description, the methods, and ethical issues. I attempted to cover all the elements in the notebook after every set of activities during the course, which proved helpful throughout the data analysis stage.

·Photography, audio-visual recording

In my research, images, which may be used to "send powerful messages", were used to "represent a kind of reality" (Lichtman, 2014, p.302). Photos were taken to capture frozen moments of the process as it may be the most widely used form of visual material. The view "all photos lie" is a widely held one (Goldstein, 2007, see Robson, 2011), primarily due to photos being created to "reflect a particular stance or point of view" (Lichtman, 2014, p. 302). I acknowledged this and hoped that the photos would contribute to analysing and evaluating the participants' experiences. In addition, I asked for the participants' permission prior to taking pictures of them.

An audio-visual recording is a particularly useful device for collecting other forms of data (Erickson, 1992, p.209-10). Firstly, it is comparatively simple to collect data while activities are in progress by installing video cameras with the participants' permission. It was helpful for me in terms of recalling and analysing the process. Secondly, audio-visual recording broadly considers everything that occurs and is not limited to what the observer notices, thereby rendering the data more comprehensive and complete. Thirdly, it could reduce the dependence on prior interpretations by the researcher, specifically it may overcome the partialness of the observer's view (Cohen et al., 2007). Therefore, cameras were set up at the back of the class with the participants' permission, yet cameras may cause uncomfortable feelings, hence I had to approach audio-visual recording and photography in a sensitive fashion. Like interviews, these visual data had to be transcribed.

Data was collected in the forms of written words, texts, documents, and visual phenomena, which are meaningful in the social world. I had to treat with caution since, as Mason (2002) indicates, written words and visual data may not constitute direct representations or reflections of 'reality'.

3.5 Data analysis

An analysis is regarded as an ongoing process through the life of a project (Lichtman, 2014), and generally, once data has been collected, the subsequent stage is to analyse it. Most data were presented in texts, and content analysis was

undertaken, which involved transcribing, reading, coding, categorising, comparing, and concluding. The data analysis was inevitably interpretive, which Cohen et al. (2007) consider less accurate, but instead more of a reflexive, reactive interaction between the researcher and the data.

Prior to the empirical research and analysis, the initial themes came to me while reading the literature. I was seeking concepts and themes while conducting the interviews and making the observational notes. As Lichtman (2014) proposes, the analysis should begin at the point that the data is being collected. The research data I obtained was primarily audio and visual sources that were transcribed into words, which enabled convenient access and retrieval. Transcribing is not straightforward, it may include literal statements, non-verbal communication, and details judgement. Even though transcription is time-consuming, I found it worthwhile as it helped me to "develop a familiarisation with the data at an early time" (Gray, 2014, p.604). I sat in the office that I was familiar with and was able to concentrate on the transcription work. Meanwhile, I made some notes on events that appeared significant, or worth further investigation.

The objective of analysing is believed to be to "arrive at common themes or concepts", which frequently originate from the data "via a process of reading and thinking about the text material" (Lichtman, 2014, p.324). Therefore, I read all notes and transcripts and noted down my thoughts in the margins. Reading the data brought me back to the research project and enabled me to sort through the mass of data and identify initial categories, albeit the list of types required adjustments and had to be added to the subsequent analysis.

The data analysis strategies include coding and representing the data in text, tables, or figures, as well as preparing and organising the data (Creswell, 2013; see Mills & Birks, 2014). Coding is defined as the "labeling of a data segment", which employs a term that "captures the researcher's interpretation of its essential meaning" (Mills & Birks, 2014, p.43). Under the guidance of Harding (2013) and Lichtman (2014), I conducted the following coding steps: (1) Using the skills of summarisation, selection, and interpretation, I noted the codes alongside the

transcripts and notes. I sought to write as many codes as possible in the event of "missing an area of commonality" (Harding, 2013, p.105). Meanwhile, sub-categories and new categories were created; (2) As my thinking progressed, I reviewed the list of codes and categories based on the second reading and field observation (including interviews), with some newly generated, some removed to avoid the repetition, and some amended. Codes were placed in proper categories, and the list was refined into a table featuring five columns (see Appendix) that facilitates the identification of findings, which my main supervisor read through, and we discussed in detail; (3) Coding the data is a challenging task as it requires a thorough knowledge of the data. By listening to (watching), transcribing, reading, and rereading, I attempted to sort slowly and find similar words and the field notes were used to help identify them. I found this step difficult yet rewarding, and the themes and concepts are presented in the following chapters.

The process of choosing to code words, phrases, and segments ran seamlessly, yet I continued to worry that the translation may negatively impact the meaning; the paraphrases may mislead the data, and the analysis itself may be weak. I was suggested to enter data into a computer programme such as Nvivo in order to avoid the laborious steps of coding. Furthermore, Nvivo would enable me to "view all parts of a dataset very simply" (Harding, 2013). Hence, I invested time and effort in learning Nvivo and tested it, but finally I chose to conduct the data analysis manually. The first reason for this is that I spent a great deal of time exploring the software, but only gained knowledge of the primary function; secondly, it may "take the attention away from other more relevant parts of analysis" despite it studying the data from different angles (Boeije, 2010, p.147); and the final and most important one is maintaining the originality of the research. I aim to conduct a more complex analysis rather than a relatively superficial one, which the consequence of the software may bring (ibid.). Using paper and pencils facilitated closeness to the data and me noticing new things in the data.

Categories were constructed for analysis after coding, which Cohen et al. (2007) deem to be the key features of the text, thereby demonstrating the links between the units of analysis. The categories were derived from areas of personal interest and

modified by reference to the data, while some were inferred. I was aware that the more inference I carried out, the more reliability may be compromised. I attempted to identify the core categories as it could prove helpful in terms of explaining other categories (ibid.). The conclusions of the research were drawn by counting, patterning, clustering, relating variables, building causal networks, and relating findings to theoretical frameworks (Robson, 1993, p.401; see Cohen et al., 2007).

3.6 Credibility of the Research

The issues of validity, reliability, and generalisability are examined in this section. Concerning the validity of the research, it is a common belief that "as you prepare your qualitative study, you should not be overly defensive" (Silverman, 2010, p. 275). Since methods and findings are two dimensions used to evaluate the validity, and the findings may be biased if one method is adopted exclusively, triangulation is applied, which is defined as the use of two or more data collection methods in the study of an aspect of human behaviour (Cohen et al., 2007). Hence, methods including observation, interviews, and photos (audio-visual recording), thus three different data sets, present a more complete picture of the programmme being researched. They are designed to handle any issue in the implementation of the MSC. Observation witnesses both the course of the teaching and the students' response, photos depict the gestures and prompts, while interviews explain their feelings and perceptions. From the perspectives of students, school teachers, and museum educators, these three sets of data seek to prove the occurrence and progress of learning from three aspects, namely action, explanation, and body language. The pilot study contributes to the revision and understanding of the research design, to enhance its trustworthiness.

Reliability refers to the accuracy of both methods and data. In this study, the reliability is maximised by ensuring cautious practice. The data are collected by myself, with the assistance of cameras and recorders. The analysis and interpretations are also consistent, and such efforts and objective transcription could make the research more reliable.

Although the study is not generalizable, it can still provide close observation and an understanding of similar issues. The limitation of the research relates to the generalisability. The MSC is carried out in a selective course, which means that not everybody is obliged to attend, and only those who take the course can be researched. As Cohen et al. (2007) state, the researcher may have to rely on volunteers; they define this type as volunteer sampling and stress that it may occasionally be inevitable (Morrison, 2006, see Cohen et al., 2007). The volunteer sample method is the only sampling that is feasible in this case. The sample size in the research study is 15 students, two school teachers, and one museum educator. There are approximatley 1,200 students in my school, and around 400 per year group, while the selection of 15 students out of 400 is naturally biased. The school teachers and the museum educators occupy the roles of both organisers and participants, and while they have good intentions, they may not be representative of the general population. Therefore, the generalisability or representativeness of the findings is a drawback of qualitative research (Cohen et al., 2007; Hancock et al., 2007).

3.7 Ethical issues

Ethical issues must be taken into account from the outset as they occur at every stage of a research project (Cohen et al., 2007). Regarding ethical issues and in consideration of risks to both participants and partners, I followed ethical guidelines and the University's code of practice when conducting research.

The participants were museum educators, school teachers, and school students, who were over 16 years old and from the same school where the insider researcher worked. To protect them, the research was carried out with the following important criteria referred to by Plowright (2011, p.155) kept in mind:

Informed consent;

Right of refusal to take part, without penalty;

Right to withdraw without penalty;

Confidentiality and anonymity;

Deception; and

Security and safety to prevent any emotional or physical harm.

A Participant Information Sheet was presented to each correspondent in advance, who were able to make decisions for themselves prior to the research beginning. Competence, voluntarism, full information, and comprehension are four elements extracted from the definition of 'informed consent' provided by Diener and Crandall (1978) (see Cohen et al., 2000). It is widely believed that only if these elements are present are the subjects' rights fully preserved (Cohen et al., 2007). I sought to cover all four elements to ensure that participants fully comprehend the nature of the research, what it is about, how it was carried out, and what impact the research may have. I explained the details in relation to any risks the participants may encounter. Some remain confused about the research, and I made it clear that they could ask any questions and they would receive accurate answers in response. Finally, I obtained research approval from all participants.

Considering the participants may feel there was little scope for deciding whether to participate, in other words, they may be afraid and find it difficult to refuse to participate. I assured them that there would be no penalty if they did not participate in the research, and informed them that participation in the study was voluntary, as was the responding to the questions. I was a researcher with insider status. To ensure that their full rights were preserved, they could freely choose whether to participate in the research or not, despite they had already independently selected the course. During this research, they were entitled to decide whether to participate or to withdraw at any time. Given that I am the teacher of most of the students, they shared their worries with me in terms of any discomfort may have felt.

To protect the participants from any harm, efforts of confidentiality and anonymity were made to guarantee that the participants were not identified and or tracked. "Information on names, telephone numbers, email, and postal address and any other identifying features" (Gray, 2014, p.79) would not be included in the data. Anonymisation was applied to ensure confidentiality from the moment data was processed until it was stored. Given that photos and visual audio recordings of the participants have the potential to expose their identities, image processing would be

adopted to protect their privacy, except for those that already had their permission. In terms of confidentiality, the researcher was only able to ask the members of the focus group to keep the others' opinions confidential (Harding, 2013). All the data would be kept in a locked file when they not in use.

I had to be honest throughout the research process, and remain accountable to all participants. All participants would be given all information about the research and instructed that the findings would be used in a report, a paper, or a thesis that may be read or published. They had a general notion of how they would benefit from the research. As Cohen et al. suggest deception lies in not telling the whole truth, though it is not possible to gain access to the 'whole truth' (Cohen et al., 2007, p.66). On one hand, even when displaying the most sincerity, unintentional deception may be unavoidable in the interpretation of the data. On the other hand, participants' feelings may be disguised and inadequate feedback provided. The fact that the negative effect of deception is not completely eradicated should be acknowledged.

Security and safety issues were at the forefront of my concerns during every stage of the research. Though most social research is believed not to inflict physical harm to respondents, there may be dangers in relation to causing psychological harm (Gray, 2014). Therefore, trivial acts are were taken seriously to avoid harm. Initially, students were asked to visit the museum accompanied by three school teachers, while a school bus was used for transportation to ensure safety. During the course, the lecturers and the craftsmen were all professionals, and the research would not place student participants at physical risk. When collecting data, a list of times was offered for interviewees to select to minimise disturbance to them.

Given that unexpected ethical issues may arise in the process and evaluation of the research, I intended to maintain a high level of ethical awareness.

3.8 Pilot studies

Pilot studies were proposed before the reported research, thereby ensuring that the feasibility of the research could be tested and some problems could be revealed in

advance. Consequently, the researcher was able to make necessary amendments to the research design, and the research effect could be presented as accurately as possible. Two pilot studies were implemented in this study.

The first pilot study lasted for almost a semester, from October 2014 to January 2015. Early in August 2014, the researcher, the school teachers, and the museum educators developed a course together after many discussions. The celadon of Yue Kiln was targeted as the textbook that the students use in school covers the topic for one session, but not in detail. Celadon is highly significant to the study of Chinese history and culture, and exchanges between China and the west. Furthermore, the museum possesses various celadon collections and numerous experts. The structure and contents of the course were confirmed following in-depth discussion between MS. Moreover, the museum had experiences of collaborating with elementary schools, which made them more amenable to cooperation with the secondary senior schools. Consequently, the museum and the school were highly complementary in cooperating on this course. The programme was as follows:

Table 3.2 - The structure and contents of the course piloted

Session	Topic	Activity	Session leader
1	Introduction to the curriculum	Introduce the key idea of the course, and divide fifteen students into four groups and assign tasks	Schoolteacher (ST)
2	Basic knowledge about museums	Introduce the definition of museums, and students discuss some world-famous museums	ST
3	Visiting the museum with a worksheet	Students visit Ningbo Museum	ST
4	A lecture on the celadon of Yue Kiln	The history and the process of making celadon	Museum educator (ME)
5-7	Celadon making	Three basic steps to make celadon, and students learn step by step	Craftsmen
8	Experience docents' work	Docent shows students around the museum	ME

9	Tea making	Make and serve tea that with the celadon students have made during the course	Tea master
10	Serve the museum	Students serve as docents in the museum	ME and ST

In total, there were ten sessions, seven of which were about student activities. The intention was for students to have an experience of learning that differed from their usual classroom experience. The course was strongly supported by museums and schools. I owe special thanks to the museum, as it offers 80% of the funding, thereby solving the financial problem of the research.

In October 2014, 20 Grade one students (16 years of age and over) enrolled in the selective course voluntarily, and who previously had not had lessons on celadon. They generally displayed great interest and enthusiasm but found it hard to understand everything they were exposed to during the course. In January, when the course finished, pilot interviews were conducted with three students. These students thought highly of the course and reported that they had learned from it. However, they faced difficulty in comprehending or grasping the content of the lecture on celadon due to the professional terminology used. They described how they enjoyed the activities, while suggesting a new design for the museum worksheet. The first pilot indicated that the research instruments worked efficiently but it was suggested that the content should be revised.

The researcher ran the second pilot from March to June 2015 in order, to explore the outcome of the changes implemented following the first run-through. On this occasion, 20 Grade two students (over the age of 16) took the course, and compared with Grade one, these students possessed some knowledge about celadon. During the interviews with students, they appeared to be more inclined to affirm and I felt this was vital to pay attention to. There should be an in-depth introduction, with replicas, to museum collection of celadon and the production process. Aside from close contact with the replicas, the students expressed their desire to have additional time to serve in the way that docents do in museums. They wished for more activities to be included in the course. Meanwhile, Tea-making took up too much time and could not be completed within one class period, and only a few students

had a taste of the tea, so it was suggested to remove from the course schedule. I realized that interview questions should be mor open, thereby encouraging more free-talking. The museum educator recommended using short plays as the result or outcome of the course. The modifications and suggestions proved enabled the researcher to refine the research process for the third iteration of the course, which is the object (Table 3.3) of the research reported in this thesis.

Table 3.3 - The structure and contents of the course researched

Session	Topic	Activity	Session leader
1	Introduction to the curriculum	Introduce the key idea of the course, and divide fifteen students into four groups and assign tasks	Schoolteacher (ST)
2	Basic knowledge about museums, with replicas	Introduce the definition of museums, and students discuss some world-famous museums	ST
3	Visiting the museum with a worksheet	Students visit Ningbo Museum	ST
4	An in-depth lecture on the celadon of Yue Kiln, with replicas	The history and the process of making celadon	Museum educator (ME)
5-7	Celadon making	Three basic steps to make celadon, and students learn step by step	Craftsmen
8	Experience docents' work	Docent shows students around the museum	ME
9	Serve the museum	Students serve as docents in the museum	ME and ST
10	Short play	Students perform short plays in groups	ME and ST

The pilot studies help me gain a deeper understanding that being an insider researcher brings unique advantages and challenges. Insider research studies are frequently encountered in the field of research on work-integrated learning. Its specific knowledge and cultural background enable researchers' a profound understanding and interpretation (Fleming, 2018). In addition, it allows insider researchers to build a strong relationship of trust and rapport with the participants involved in the study. I have been familiar with these benefits during the research.

As a complete participant, I understood and went through the conflicts of being a teacher and researcher within the same context. Hence, self-conscious awareness has been in my mind all the time during the research process. After two pilot studies, I realized that Grade one students were deficient in knowledge of ancient handicrafts, especially celadon. Grade two students seemed proper as they have learned about celadon in the textbook. I chose the latter to participate the research. So did the deletion of the tea-making session. I have been aware that my feelings and actions may affect the research results, and have been very cautious when implementing the curriculum and interviewing with participants, and tried to embrace the insider-research challenges in a positive manner: reducing the likelihood of participants being implicitly coerced.

As a practitioner and insider researcher, I recognize, I, the researcher, was also part of the research, and reflexivity is vital in action research. The researcher's values, attitudes, perceptions, options, actions, and feelings contribute to the situation that is being studied (Cohen et al., 2007). What I felt, thought, and chose in and on the action were all needed to be studied and reflected on. In the paper, I reflected on the pilot studies and the analysis made much of the issue of reflection. Reflexivity allows me to recognize my own perspectives and biases, facilitating an enhanced comprehension of the action research.

3.9 Summary

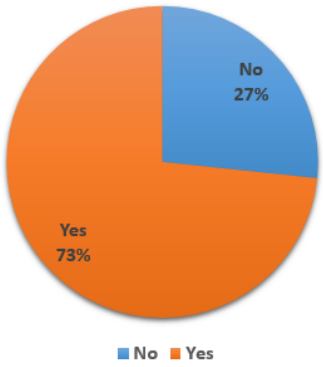
As a researcher and school teacher, I am inclined to adopt action research as the ideal methodology. I explained the reasons, as well as how data were collected and analysed. With consideration the rights and interests of participating students, ethical issues were always in mind, even during pilot studies.

Chapter 4 Findings

4.1 Introduction

The main study reported was carried out from September 2015 to January 2016. The participants consisted of one museum staff member, 15 school students, and three teachers from the same secondary high school. They were the primary target to be observed, interviewed, and recorded. Fifteen students, eight boys and seven girls, participated in this research study. Among the 15 participants, 11 chose History as one of their selective subjects in the *Gaokao*, while the remaining four did not. Under "3 + 7" model of Zhejiang's *Gaokao*, test takers have to take Chinese, mathematics, and English tests but can choose three out of seven additional subjects to be tested (including geography, politics, history, biology, applied technology, chemistry, and physics) (Zhan & Xiong, 2018). The percentage of student participants that took history as 1 selective subject is displayed in the pie-chart below.

Percentage of students that took history



Eight students were interviewed individually, four boys and four girls, which roughly reflected the gender division of those taking the course. These individual interviewees covered a range of types of students, namely those willing to talk who achieved a high score, a boy with a high score but not very forthcoming in conversation, a boy who talked a lot but did not gain high marks, and a boy who spoke infrequently and whose score was unsatisfactory. The four girls in the sample closely resembled these boys in terms of characteristics. Among the eight students interviewed, two (25%) did not select history, and this ratio was similar to the overall situation of the participants. As discussed in Chapter 3, the remaining seven

students were interviewed as a single focus group, while the teachers and museum staff were interviewed individually.

When reporting the data, to enhance the clarity of the presentation, the informants' actual words are quoted in double quotation marks within a paragraph. Indented quotations are presented in smaller font sizes as separate paragraphs. In order to ensure authenticity, my English translation sought to present the full meaning, given that the interviews were carried out in Chinese. The names of the participants were not used for the sake of confidentiality.

4.2 The idea of museums

I questioned the student participants regarding their impression of museums. For each participant, museums were not common in textbooks, and more than 80% of (13) participants stated that museums were places often visited for excursions. Following the MSC course, their impression changed.

Museums became special, including their buildings and design. One participant noted that, stating "Students could learn much from the museum, even from the building. The building itself is spectacular. I particularly enjoy the beauty of the architecture". Another participant shared a similar thought, and contemplated the entire course, insisting that "all the sessions should be held in museums". Upon entering the building and talking in the room, she felt "at ease and relaxed", and she recalled that "I hardly felt any homework pressure in that building". Over half (eight) of the participants expressed their admiration for the environment and atmosphere of the museum. Three participants recommended that students should be "taken to places such as museums and historical sites more often". The following comment was typical:

> The reason behind such an idea is that museums are enjoyable places. This sense is provided by the light, the colour and the layout. These features give you a fantastic time-space experience, as though you are in the river of history (Student 1).

Therefore, the notion that museums are effective places for learning became gradually recognised. Two participants loved the display as it presented real and concrete details of the past world. One participant followed the museum docent as "in such a situation, you were endowed with a very strong sense of history. History does not only exist in books. It becomes vivid and is right in front of you". One participant who took careful notes in every class stated that "it would be far better if all sessions were given in museums. History exists in one's mind, yet we were observing and studying the real objects".

Furthermore, visiting museums appeared to excite the participants. The idea was similarly appealing to eight interviewees, who found visiting museums interesting. They expressed their passion for them, particularly:

> …It was said that a trip to the museum had been organised. Great! I'd love to visit museums and study the cultural relics and know more about what is on display.

4.3 The experience of the selective course

4.3.1 Motivation to participate in the course

- **A new experience**

Students were asked about why they chose to participate in this selective course. For each, selective courses signified that they had a great deal of freedom to select what to learn. For most of the participants, there was a keen sense of lessons having been given in a different way from usual. Twelve of the 15 participants (80%) said directly "we heard that we could go to class outside the campus", and this was rather attractive. Over three-quarters of participants revealed that they thought it was more fun if they could learn off-campus, hence the opportunity to leave the classroom seemed to be pivotal factor in their decision making.

Noticeably, hand crafting was regarded as a great experience by some participants. "Creating a piece of porcelain with your own hands", was "hundreds of times more effective than simply listening to teachers speaking". Three of the participants had

a strong desire to produce things by hand. The result of the interviews revealed that almost all respondents remembered the production process, thereby implying that the hand-made experience was both unusual and that the teaching method had been retained in the students' minds. Hence, this experience was a crucial driving factor that prompted the students to make their decision.

- **The subject**

Five interviewees - all of whom had chosen history as one of their selective subject choices for the *Gaoka*o - regarded the subject as a motivating factor in their decision. The subject was seemingly very attractive for them:

> …I chose history as the selective subject as I hoped to learn something related to history, and wished to know more about everything related to it.

Another said: "I would like to learn and gain some knowledge through this selective course, which could lead to my performance improving". All these five students deemed the subject as a salient factor that they took into consideration.

Two participants were not concerned with subjects and scores; their immediate concern was their passion for history. "I was obsessed with history, and I was fond of everything about it. I thought that this course may satisfy my passion and curiosity for history". Therefore, "history" was a positive factor for these two.

- **The teachers**

Teachers were frequently mentioned when participants explained their reasons for attending the course. The teachers were popular and received significant attention, with one student reporting the following as his explanation for why he took the course:

> The course introduction stated that my classroom teacher was due to give lessons, which was a positive. I loved his classes and his teaching style (Student 2).

It seemed that their emotions for the teachers were a driving factor for them. Another student also mentioned about how teachers appealed to her and led her to

attend the course. She chose the course in line with the teachers who she found admirable and appreciated.

Thus, the teachers who would give the lessons was a notable element in respondents' motivation, with the data implying that teachers must develop a relationship with students in order to foster their growth.

- **The course title**

The title of the course was supposed to be a reason that should not be ignored. It was named *Reading Museums and Witnessing History*, which signified visiting museums to review history and this particularly attracted those with great enthusiasm for studying history. The title seemed to play a significant role, with the following being an illustration of the perception about the course title in terms of motivating participants…

> At first, I didn't know that we would go out. Neither did I know we would make things. Compared to the other courses, the course name sounded more profound and advanced (Student 3).

Another interviewee informed me that she chose the course solely due to its name as it seemed "attractive" to her. Therefore, some participants afforded more weight to the course, particularly due to its name, as it "drew her attention". However, two interviewees chose the course at random as it was the last one available, and did not think much about their choices.

Overall, participants' motivation to choose this selective course encompassed a variety of elements. Moreover, it was a combination of driving factors that motivated them, while the anticipated course experience was the overarching aspect attracting students to it. The following section reports the participants' experience of this selective course, which was predominantly the focus of the interviews.

4.3.2 Learning environment in the course

4.3.2.1 Lessons out of school

The interview questions did not directly probe whether participants had a wide-ranging interest during the entire process of the course. Nevertheless, all participants mentioned their interest in the interviews, with most expressing their interest in the lessons held in the museum, or out of school. The expectation of experiencing something special off-campus contributed to their growing interest as it was quite a rare occurrence that classmates visited a museum together on a school day. Two participants explicitly mentioned this, while this sentiment was also expressed by several others who felt that visiting the museum together was "amazing". Some found "the trip to the museum be like a journey", where they saw themselves "as tourists", which made them feel comfortable and relaxed.

There were many interactions while being out of the school in a group. Student 4 expressed his surprise when a scene of Zhao Dayou's pastry store appeared at the museum in front of him and his partner, and he could not wait to share his excitement with friends as he used to live near the store. They together found it was one of the time-honoured brand stores in Ningbo. This positive feeling was also shared by another respondent who stated that she had never felt so close to history. The extract below illustrates the resonance of the group experience:

> … I have visited museums with my parents, but we hardly ever had intense discussion of what we saw. However, when I was with my peers who I study with, we had a common language, and we walked, watched, discussed, and exchanged views. This interaction made us feel great (Student 5).

Three other participants all found that they gained more than they had previously. Student 6 explained that "we read the words on the label carefully and attempted to figure out the function and value of cultural relics". Therefore, visiting museums in groups was positive for participants in terms of thinking, asking, and learning more.

Leaving the school to study with a worksheet was very effective. Seven student interviewees spoke positively about the worksheet as it led to them observing the exhibits with great attention. One noted that "we were asked to complete the worksheet after the visit, hence I listened to the docents diligently. I still remember most of the docents' words". Furthermore, an interest for one aspect of the worksheet made one participant feel very "interested to investigate further". In the case of Student 7, he was fascinated by the Maritime Silk Road, and he decided to take charge of this part's explanation during the activity that followed. Student 8 found herself inspired to learn more about the folk customs due to the worksheet offering a lot of hints about it. The teacher participants both mentioned the worksheets, which "guided students effectively to appreciate the museum and the collections".

Lessons outside of the school provided the participants with a fresh environment and brought them opportunities to explore their own interests, communicate with their peers, and experience real life.

4.3.2.2 Lessons in the school

Interest varied from person to person in line with their understanding and cognition. The majority of the participants spoke of the little interest they had while listening to teachers in the classroom. Five participants expressed their feelings using the term "not impressed at all" and "teachers' preaching was boring". One interviewee made notes during class, and she also thought that she "had not gained much". The reason for this was suggested in the recount of the focus group:

> The teacher generalised about the introduction to the museum, so we did not know the details sufficiently. Also, the teacher spent an entire lecture talking and it was dull. We like lessons to be presented in diversified forms. There could be more pictures, and we also all love stories, especially those with meaning and connotation. We like to watch videos and documentaries with plots, which can provide us with a vivid description.

In terms of the liveliness and effectiveness of lessons in the classroom, Student 4 recommended that "local history and culture should be included more in the

content". Student 9, who was a friend of S4, observed that his peers were more interested in folk customs, hence things that are "closely related to social life" may attract students. In addition, one history lover mentioned "practicality" in order to "practice history in the future".

Nevertheless, one fourth of the students spoke positively about the school lessons, with references to professionalism when they asked about the lecture. A girl participant, Student 10, paid attention to the appearance and disposition of the museum staff, particularly "their business suits, white shirts and black skirts". She was highly "focused on studying" and found "the classes rather effective" therefore she even "remembered many of their words" when she worked as a museum docent. As a history lover, she "preferred to listen to the teachers, which is a good way to gain an understanding", and this is how she saw the lecture:

> …The lecture was filled with professional knowledge and I could easily access the scholarly information. I had seen the Dragon Kiln in the museum and was puzzled as to why it was designed in the way that it was. When presented by my lecturer, I realised the wisdom of the ancient Chinese. The specialised account dissipated my confusion…

For two participants, after being immersed in the shared expertise and the detailed introduction, they had different feelings regarding celadon and the world, as the following illustrate:

> … I was drawn to the celadon by the talks. They presented a splendid world of celadon. Previously, I knew nothing other than they looked good. Now, they are so special in my eyes (Student 3).

> … the lectures offered a chance to gain a knowledge of each exact step of making porcelain, and I understood how difficult the celadon production was, so I appreciated the craftsmanship (Student 8).

Lessons in the school were designed to offer basic knowledge about the museum and the celadon theme. Due to the single form of teaching, strong theory and contact with reality, respondents generally felt that the formal lessons were ineffective. The

following section reports on how the students reflected on the objects and practical activities that followed.

4.3.3 The objects and activities

4.3.3.1 The objects

The initial responses of both the individuals and focus group to the question (‘can you say a bit about the objects presented in the lecture’) were essentially identical: “the celadon replicas were remarkable”; “the replicas were very impressive” (by six respondents). The inclusion of objects, rarely done in history classes, was unusual to all the students. The unique experience of “being able to closely observe and touch” was mentioned by four participants who stated that this “enabled us to find more details”.

When discussing the replicas, the participants seemed to be ignited while they were happy to talk more about the topic. Five participants referred to the “three-legged toad Yandi”, followed by various comments. Three interviewees pointed out that they considered the shape of Yandi to be an “appealing design” and admired the craft-making technique. Student 11 added that “the toad standing on a lotus leaf, carved with slender leaf patterns, gave me a sense of beauty”. One girl, student 10, referred to a goat-shaped celadon, commenting that “these celadon were so beautifully shaped”, while she appreciated the “plump toad and the cute goat”. Furthermore, she “could not help touching them”. Another one, student 12, found the design to be an “ingenious combination; a toad with a lotus leaf reminded us of the natural world”.

Figure 4.1 Students get close to the objects during the course. Photo: Lucy Yu

The “three-legged toad Yandi” impressed some participants due to its symbolic meaning. An interviewee was touched by the “positive intent”, which was strongly echoed by two other respondents:

> I had no idea about a toad with three legs until that lecture, where I began to understand the intelligent design. We were informed that the three-legged toad only existed in the moon, and according to Chinese mythology it swallowed the moon during the lunar eclipse, and was the symbol of the unattainable (student 9).

> … The three-legged toad could help to make your dreams come true and you to attain your aims that were seemingly far away. It will bring you luck and happiness. What a good wish (student 6)!

Three participants were also particularly impressed by how the “three-legged toad Yandi” was used. They felt “curious and fascinated”, with one comparing it to how we do so nowadays:

> I was told it was used for adding water to an ink stone, but I wondered how to use it. There was a hole in its back and we could also see that its mouth was open. I just could not figure it out. Following the teacher’s vivid presentation, I ran to the toad and tried it several times. The ancients were more intelligent than one thinks. You had to put your index finger in the hole to prevent water from flowing out. In that case, the water could only come from its mouth. What a smart way of doing it! I was excited to find it out (Student 4,13 and 14).

The use of objects, particularly in a manner different than they currently are, succeeded in drawing the respondents’ attention. Two participants discussed the lotus leaf cup stand and “the decoction way of tea drinking” that attracted their attention. It was cogently expressed in one participant’s answer to the question of “what do you think of the artefacts?”:

> My father likes drinking tea daily, and I thought I knew tea drinking etiquette well. However, when I met the cup and the stand, it was not the case. I have never considered grinding and decocting tea with a small amount of salt. It was so strange, and so was the taste. The cup was designed to be shallow, with the liquid and the tea absorbed together (Student 5).

In general, participants' feelings about the objects were positive. After almost half a year, interviewees could still freely talk about the name of the artefacts that they thought highly of. As one participant put it: "these objects made the lecture more fun and engaging, and I got a lot from it. I liked replicas presented in the lecture, as it allowed let history and culture to speak to us".

4.3.3.2 The activities

In response to my question of "which was your favorite session", the answers overwhelmingly focused on sessions that included activities. Over half mentioned "making porcelain" while the others discussed "guiding tourists in the museum" or the "short play". Most interviewees vividly recounted their participation in the activities.

- **Visiting museums**

Visiting museums was an exciting experience for the students, a sentiment expressed by more than two thirds of the participants. They felt that visiting the museum was "amazing". Some respondents mentioned "wearing an automatic voice interpreter", which was a delightful experience allowing them to appreciate the display while walking. Visiting museums was particularly appealing to seven student interviewees. They expressed their passion for museums: "It is pleasurable and far better than watching videos in the classroom". Some participants had visited the museum with parents several times and they found visiting with peers was a different experience.

Figure 4.2 Students explore NB Museum with peers. Photo: Lucy Yu

The benefits of visiting museums were mentioned by both teachers and museum staff participants. Given that the classroom extends to the museum, the knowledge increases with the professional help of museums. Two teachers asserted that "it'd be nice for students to have a tour so that the real objects can easily arouse students' curiosity and interest". This was stressed by one respondent in the following extract.

> The reason why I support visiting museums is primarily due to my belief that reality speaks louder than words. Witnessing something with your own eyes or touching it with your own hands provides a different learning experience…partially due to the appliance of materials from books, which makes them come alive. I noticed that most students are quite fond of museums, and some even repeatedly asked for a second visit (Museum staff).

Comments from the other teacher respondent supported the notion as it "presented the charm of knowledge and culture". Arranging a visit after the introduction to museums enabled students to gain an understanding of them, as it "provided a chance to get close to museums". Even though the interpretation and explanation were recorded in words for the public, the museum staff found that visiting with museum docents "offered students close connection with culture". She found the students' "look of concentration" and "sense of wonder" in the photographs taken during their visit to be touching. In her opinion, the guiding work was generally positive: "they make your visit 85% complete; it would only be 20% of that value if you visited without docents". To illustrate this, she used senior high school students as an example, and stressing that even students with simple knowledge of the museum would only "get scraps of information by reading the plaques". Concerning the museum staff, the docents' role was treated as "indispensable", while visitors benefited from their "plain language", "clear descriptions" and "friendly service".

- **Making porcelain**

Making porcelain lasted for three sessions and was effective in terms of improving knowledge about celadon. When asked how the sessions worked, 12 participants indicated their love of them for the following reason: "I made the ware using my own hands". One stated that "hand-making was interesting"; another appreciated

"the precious chance of hands-on practice". All participants could clearly describe and recall the overall process, hence the steps seemed to be engraved deeply in their minds. One boy who was a little shy but gave a detailed description in his recount:

> … I was able to make porcelain and I found out how hard it was! Every step required a lot of practice, and it was hard to control the turning wheel. I failed the first and second times. At last, the ceramicist, who the museum invited, helped me finish the wheel throwing. It was a big challenge for me. The next step was fettling, where we were asked to remove the unwanted parts. The ceramicist gave me a cutting knife. I was intrigued by this and I carved a few lines on it, which I was happy with. After modification, I bluely glazed the ware in the third session. The final step, firing, was carried out by the ceramicists. We did not do that, which was a pity (Student 15).

Making porcelain not only increased their knowledge but also enriched their personal experience. Five participants discussed the difficulty they encountered, and they realised "how hard it was to make porcelain in ancient times without modern equipment". They regarded the craftsmanship as "unbelievable" and one stated, "It must have taken years and huge efforts to master these skills". Respondents generally felt challenged and were informed that "fettling required the cooperation of physical strength and angles" and "glazing should be evenly glazed". Two respondents, both had a deep impression regarding this:

> I thought I could manage it well. I had planned to make wares as high quality as the ceramicist made. I wanted to make something unique…in the end, yes, I made the smallest cup, which was indeed very 'special' (Student 12) …

> At first, I thought that anyone could make porcelains. However, it was not the case for me. I found that the device just did not listen to me…What a profound insight (Student 5)!

Figure 4.3 Students learn how to make porcelains at NB Museum. Photo: Lucy Yu

Another personal feeling was expressed by a girl participant, student 3, who had some experience in coiling. She directly expressed a preference for working with clay, commenting that "I felt great when using the cutting knife, there was an illusion that I was a master". A boy participant felt honoured while "praised by the ceramicists for glazing well". Alongside such inspiring feedback, one teacher was a little frustrated, concluding that "there was a gap between ideal and reality". A similar feeling was expressed by the museum staff, who found that "some students seemed not as excited as we had anticipated, while two students were concerned with their own business". Some participants also pointed out some shortcomings:

> The time was limited, we had no more time to make modification. The ware was not well made, and far from my original idea. We would like to have another try, but there was no time (Student 11) …

> I wanted to do it again! But I was told that others had not yet tried (Student 14) …

- **Working as museum guides**

All participants had received training prior to working as museum guides for the public. When discussing the training, for most of the interviewees, the training seemed to matter a great deal. Some considered it "helpful" and "useful", others found it "inspiring", "very professional", and "impressive". Two participants stated that "I learned a lot from the training"; and "I found out how to deliver a commentary on the exhibitions". One boy participant stated that he had listened carefully in the training and noticed:

> It was not as simple as thought it would be. When you speak, must know how to present before a crowd, and how to make visitors pay attention to what you are saying…you should interact with them. There were many other things that one should know. Of course, you should first work hard and possess great knowledge about the collections (Student 1).

The training improved the participants' understanding of the job. In response to my question of "is this valuable work in your opinion?", "It is meaningful" was the most common response. The role of museum docents was explained in two main responsibilites: enhancing the capacity of individuals and promoting the quality of

tourism. In the comments, museum docents were deemed to be “knowledgeable”, “articulate”, “polite”, and “patient and tolerant”. Five respondents mentioned “the cultural or historical information” a guide provided to visitors, and which was echoed by the focus group. The group regarded the job as “not easy to do”, and “fully knowing the information was the prerequisite”, yet “not enough”. One participant pointed out that “the guide must truly understand the collection, otherwise it is difficult to make a narration”. At the same time, remarks were made by one-quarter of the participants regarding the “eloquence” being “exercised and improved”; “tested” and “challenged”. One respondent elaborated more on communication skills:

> The job provided opportunities to meet different people, to speak in public, interact with a wide range of individuals and adjust to changing circumstances. You need to be well prepared to face these challenges. It was a role that enhanced communication competence (Student 4).

From the perspective of tourists, over two thirds of the participants held that they would appreciate the “experience” and “help” museum docents afforded. Three respondents believed that museum tours are more “attractive” and “pleasant” as they would not “have a look at some displays if they were not guided”. One participant described her own experience when guided:

> ⋯The docent stopped and asked us to guess what something was used for, and encouraged us to discover the carving and paintings, hence, we were motivated. I remembered that we carefully observed and had an intense discussion. What I saw, felt, and obtained was brand new. With the guide, I gained an unforgettable and rich experience (Student 2).

Thus, it is evident that museum docents help visitors to “know more about the collection”, “explore the value” and “open the eyes and minds of visitors”. One active speaker shared that “it was the first time he had heard of the olive-green porcelain under the Famen Temple”. He twice referred to the docents as “quite professional” and “still had a clear memory about the usage and pattern of the celadon”.

Overall, the docents enable visitors to immerse themselves in the museum, which could ultimately result in an engaging experience. One interviewee was quite interested in the topic, and firstly enumerated some disadvantages ("it is tiring that you have to guide several hours a day"; "each tour lasts for a few hours, and you should repeat every day"; "you go upstairs and downstairs and always have to smile") but subsequently arrived at a positive conclusion:

> Anyway, it was worthwhile. They devoted their time and knowledge to helping visitors. With their guidance, the museum tours were lovely. Through their daily hard work, the public's understanding of the cultural relics, the spread of culture, and cultural literacy are greatly improved (Student 11).

The group interviewees remained enthusiastic about the job, and their questions went on one after the other, which resulted in further conversation. Questions were largely about the details of the job and their lives. It seemed that being close to museum guides caused the students to give more consideration to their careers. Having asked the interviewees about their views on the work of museum guides, they were invited to share their experiences when they were docents for half a day. This question put most participants in an excited mood, and they seemed happy to discuss it.

Half of participants realised that "having completed this exercise", they were "more courageous and more confident in themselves". Those who felt no pressure speaking publicly were able to be more present and enjoy the moment. There was one boy participant who drew my attention because he accompanied his words with gestures and succeeded in gaining many "fans". He explained why he took pleasure in being a guide:

> ⋯I felt a little stressed when walking through the museum all day long. I also felt frustrated when I could not answer the questions posed but they did not mind. The tourists did not laugh at or and criticise me. I just did my best to be as good a professional guide as possible. The more I did it, the better I was (Student 7).

With respect to having the courage and confidence to speak in public, several respondents stated:

> As an introverted person, I was shy to talk to strangers. I must admit that I was very nervous while carrying out the job. Next time, I will be more willing to offer help to visitors (Student 15).

> At first, I did not dare to open my mouth. Subsequently, due to the influence of my peers, who did their jobs quite well, I felt that it was not such a big deal, and all I needed was courage. I thought that I became braver and more tactful (Student 6).

Thus, working as museum docents brought the participants close to the general public and won a lot of affirmation and support from both inside and outside the research group. One father joined the activity and commented that "it was a good chance for students to engage with the society". They met various people, regardless of age and sex, from local areas and from across China. The confirmation they got from the "encouragement" and "affirmation" increased their confidence. Two participants gave examples of how they were inspired:

> I once guided a young lady who came from Guangzhou. She was also a museum guide. I was very glad to receive her praise. Another time, there was an old grandma who listened to me very carefully and simply nodded and smiled. They both were very supportive and I became more confident as a guide (Student 1).

> I met a visitor who was not from Zhejiang province. After I finished my guide service, he offered me great praise and spoke highly of the quality of education in Ningbo. I gained the approval of others, and I was so proud of what I had done (Student 12).

Working as museum docents, almost half of the interviewees seemed sure about their change in identity, as they tended to see themselves not as "students", but as "guides", "presenters" and even "teachers". Moreover, several participants deemed sit "a chance to improve their communicative and interpretive skills". They learned to cater to visitors' requirements and consider issues from the audience's perspective. One participant who had primarily focused on this offered some insight:

When I was the guide, how to interact with guests was my primary concern. ⋯to give great tours, I paid attention to the visitors' responses, and then promptly adjusted my speaking. I used spoken language to ensure that visitors were comfortable in conversation. Also, it made me aware of the importance of tailoring the tours based on the audience. For instance, little children could not understand the meaning of 'wheel throwing', therefore I used 'molding the clay' instead. Initially, guiding a group of tourists in a museum was intimidating. Nevertheless, it was a positive learning experience (Student 4).

Figure 4.4 Students practice working as museum docents at NB Museum. Photo: Lucy Yu

- **The short play**

The experiences of short plays differed with a clear division: five participants spoke positively while the remaining ten did not. Interviewees found short play to be positive due to it being "fun", or their "the first-time trying it". Among these, the teamwork experience was the most vital factor. One respondent indicated that "without cooperation, there would be no performance". This sense of collaboration and teamwork was echoed by other participants, with one discussing it in greater detail:

⋯There were four of us in the group, with one in charge of writing the script, one casting, another as the director, and the fourth preparing stage props. We did not take it seriously at the beginning, aside from our "writer". She wrote and rewrote several times, and we strived not to disappoint her. Thus, we used our spare time to rehearse repeatedly, until we had no time left. Due to our group's mutual assistance and support, no wonder our performance was completed in one attempt. We achieved the highest grades and won the first prize (Student 5).

Figure 4.5 Students wrote, directed, and played the short plays. Photo: Lucy Yu

Nonetheless, almost three-quarters of participants candidly expressed varying different opinions. Some remarked “just so-so” with regard to their performance experience, partially because they “failed to learn all the lines”, partially because “the time for preparation was limited” (the short play took the form of the course examination, and the participants were required to perform in groups within two weeks), and due to “the stress of performing in front of classmates and others”. Time management was one salient factor. While two respondents revealed another factor: insufficient professional guidance and “there was a sense of frustration when you had finished the task”:

> The play could have been more professional. We could have presented more professional knowledge, such as the process of making porcelains, appreciation of celadon, and the way to drink tea in ancient times. Also, I had hoped to write plays like experts do and carry out our performance as actors and actresses do (Student 3).

With respect to unprofessional issues, the “stage” was also a “disappointing” to a few respondents. Even though the theatre on the campus was small, they nonetheless thought that it was a pity that they could not perform in the theater. One respondent stated, “There was an out-of-play feeling without an audience watching”.

The selective course ended with the short plays. The following section delves into how participants perceived the sessions and their suggestions for improving the course.

4.3.4 Comment on the Course

Many positive remarks were made about the course. One participant, who regarded it as “interesting and unusual” course, identified that “there should be more promotion of the course when the school enroll new students in the future”.

- **The favourite sessions**

I began by asking participants to identify the sessions they liked the most. The interviewees stated that they should be “fun” and “inspiring”. According to these criteria, I received quick responses and 80 % of interviewees chose the activities of “making porcelain” and “museum guiding”, which were largely about practice and aimed to mobilise learning enthusiasm, with them turning out to be the most popular sessions.

The “making” sessions occupied three of the ten sessions, and the museum staff members were concerned about the proportion being rather high. Nevertheless, over half of the student participants loved hand-making porcelain, and when I enquired about the reasons for this, “the passion and love for the hand-made” were most frequently mentioned. Five interviewees further elaborated upon this with one girl feeling that she “liked all the sessions held in the museum, and preferred hands-on ones”. Another one agreed, added that “there are too few opportunities for hand-made activities in class”. One girl emphasised that the sessions were “incredible as they turned what I had learned into something real”. One respondent provided further reasons why the sessions were so well accepted:

> ⋯Without any pressure, we were all by ourselves, we designed the shape, did the fettling, decorated the surface, and chose the colour. Making porcelain was a relaxing experience. I could hear laughing from my peers from time to time, and I witnessed students helping one another. I enjoyed this atmosphere. At last, I got what I has made. It was far from my original idea; but it was my DIY after all (Student 13).

Therefore, it is evident that the experience of hands-on and independence were cherished by most student participants, which left one teacher with the impression that "the majority of the students had a good time and the sense of class participation was enhanced". The teachers regarded the making process as learning, and explained why it was "liked so much":

> Generally, students were in favour of experiments, operations, and fieldwork that involved the chance to practice. They found this was exciting and interesting ….. the process of making porcelains, or anything else, is also a learning process. Making things improves learning by enabling students to practice on their own (Teacher 1).

Meanwhile, the opportunity to "approach society" drove around one-third of the interviewees (five out of 15) to thoroughly enjoy their work as museum docents. This work experience was "treasurable" and "valued", as the extract below illustrates:

> If it had not been for this session, I would never have had an experience as a guide. I tried my best to serve visitors. I was happy to be a guide, which afforded me a sense of success that I had never had before. Also, I learned to adapt to changes. Some visitors wished to have me guide them throughout the entire museum. My first reaction was to quickly review in my mind the words that the museum docent spoken to us, and I attempted to speak them as fluently as I could. I informed the visitors when I had forgotten the words. I was proud that I ultimately won praise (Student 6).

This joy of success that came through social tests was expressed by several participants who "felt like trying different things, and obtaining diverse experiences". There were two remarks illustrating contrasting opinion of these sessions, which are demonstrated in the extracts below (by a boy and a girl participant):

> We spent a lot of effort and time on the "short play" session, and it occupied too much time. I even sacrificed self-study time and exercise time. On one occasion, I failed to finish my homework. If I was given more time, for example, during summer vacation, I think I would accept this session more, but I would still not love it (Student 3).

> The time each participant had for wheel throwing was too short, and the session was not utilised as well as it could have been. Since the number of devices was limited, everyone had only about five minutes to do it. I only had two minutes as students were waiting behind me, and I was in a hurry, with little assistance from the craftsman. Thereafter, I hung around and had nothing to do. I wanted to do it again, but there was no time left. Very few participants were able to do it a second time (Student 11).

For some participants, "time" was a significant concern. They required more of it to prepare and practice, which they thought directly influenced the quality of the sessions and would lead to negative reactions. In general, this negativity related to two aspects, namely the place where the lessons were held and the allocated time to be spent on the activities.

- **The unpopular sessions**

When I questioned whether there were any sessions they did not like, the participants were very polite and many stated "the sessions were all helpful" while a few spoke highly of them, saying "they were excellent". Once I managed to persuade them to speak candidly for the sake of the research, accurate perceptions and opinions were elicited.

Sessions that induced students' active involvement were popular. In contrast, the majority (over 85%) of participants considered the sessions that were "held in the classroom" to be "rigid and static" and unpopular. As well as a lack of interaction, one interviewee believed that the course arrangement and academic pressure led to feeling of boredom:

> This sentiment was partially caused by the arrangement of the course. We have long known that we would visit museums, yet the first sessions concerned the introduction and were held in classrooms, hence they immediately did not meet our expectations. We were quite disappointed. In addition, my own experience led to my assumption that this was partly due to the burden of homework and assignments…in school and the classroom, which was present all the time, thereby distracting me and I found it difficult to enjoy what the teachers said during the sessions (Student 1).

Nevertheless, the teachers and museum staff alike regarded it as necessary and unchangeable. The original intention of the sessions was to “provide preliminary knowledge”. One teacher recalled and stated “the introduction of museums was crucial, despite the result not going as well as we anticipated”. Through classroom observation, it was also apparent to one teacher interviewee that students exhibited “little interest in the sessions taught in a common fashion”, namely teachers speaking at the front of the class while students sat and listened. The other teacher felt similarly, suggesting that “the class should be made more interactive”. She provided a specific example, whereby the students’ responses were markedly different at the sight of the replicas, with “their eyes widening and their passion being aroused”. The same sentiment was referred to by the museum staff with there being “room for improvement”. She thought that “museum resources should be given greater consideration to”, and “dynamic and creative ways of teaching should be adopted”. Therefore, one teacher turned to pedagogy for support and suggested “exploratory learning” and “group work”, which would hopefully inspire students. This idea was suggested by the other teacher, who addressed the proposal with confidence: “students may receive pleasure and fulfillment from doing the introduction in front of others, rather than teachers doing the job from beginning to end”.

- **Suggestions for the course**

The question regarding suggestions sought to ascertain how to further improve the course, and the participants were the best candidates for offering suggestions. They provided useful and pragmatic information.

Curriculum design was one aspect that participants paid attention to. Preference for “lessons in class with more forms” was expressed by almost one-fifth of the interviewees, and this idea was similarly appealing to another interviewee, who perceived the importance of “a course introduction to ensure” so that she would gain a general impression during the in-depth learning.

There were suggestions to increase the amount of content. Since this course revolved around celadon, and enthusiasm for the "folk customs, the lifestyle of the ancients, and the other collections" caused 6 respondents to contemplate expanding the content, most of them selected History as the subject of their *Gaokao* examination. Four student participants wished to explore "the story behind the celadon" and "the role celadon played in various times". One student interviewee noticed that "as Ningbo was famous for its harbours in the maritime Silk Road", she "wanted to discover more about it". Both teacher participants also concentrated on the content that the course covered, and pointed out that "there could be more than just porcelain and celadon in the course". Concerning the use of more museum resources, one teacher's key concern was having "more fresh and attractive objects and replicas". An interdisciplinary programme then drew the museum staff's attention. The museum had pursued "close and in-depth collaboration with schools", which should "involve numerous disciplines", such as geography, arts, and chemistry. It was noteworthy that interdisciplinary cooperation was also recommended by two students, who perceived insufficient explanation in some parts. They explained why that was "called for":

> What we witnessed and learned related to many subjects and specialties. The colour of the porcelain I received was not like when it was dyed. It must have something to do with chemistry. The Dragon Kiln takes advantage of the air pressure, which belong to the subject of Physics (Student 9 and 11) ……

Regarding the activities of the course, the "visits" and "practice" issues were mentioned by five (31%) participants. They stated that "there should be more visits to museums"; "we should go to different kinds of museums"; and "field trips could be organised on Sundays"; while one also thought about "learning more about museology and museums", and that they "wanted to watch hundreds of documentaries on museums both home and aboard". Two interviewees sought "more practice after school" and "more opportunities to make things by hand". The two teacher participants directly pointed out that "several students did it very quickly", and "they did not show as much interest as others". Two complained to teachers that "there were insufficient instructions and operating time".

As the teaching time issue became more prominent, a teacher interviewee proposed a constructive solution that seemed feasible, which concerned "the extension of the course time…from one semester to two semesters", as well as "keeping the content consistent".

The following part examines whether the collaboration between the museum and the school improved learning, and how the participants understood the relationship between them.

4.4 Learning under the MSC

Working with the museum, the course differed significantly different from the others, which utilising both the resources of the museum and the school. It was primarily aimed at enhancing students' learning by providing various types of experience.

Therefore, I asked all participants whether the MS collaboration had improved their learning, and the student participants seemed to struggle with the meaning of "learning". According to their social values, the majority of participants identified the evidence of improvement in learning as the increase of achievement or grades. "It was hardly good for learning" or it "only released the stress experienced when learning" were the immediate negative answers from the first three respondents. With an awareness of this, I made deliberate effort to offer explanations to all the interviewees, aside from one respondent who had already noted that he had new findings concerning learning methods. As thoughts about the course were not the same, the understanding of this question varied.

4.4.1 Learning about knowledge and skills

When asked "do you think working with the museum improved your learning?", as expected, most participants mentioned porcelain. Among them, four participants, who focused on the acquisition of knowledge, deemed the course to have "expanded their knowledge on porcelain", "deepened their understanding of that period of

history" and helped them "visualised the cold words they had read in the textbook, and made it easier to comprehend". One participant described the sense of intimacy that occurred when celadon was discussed in class. Two out of four, who had not chosen history as a selective course, found that it would help to "enrich their extracurricular knowledge" and "provide material for future writing".

Another point relating to the skills and capacity they acquired, was mentioned by seven participants who benefited from the practice sessions, which were designed and offered by the museum. Participants learned to be craftsmen and museum docents and they considered their "skills to have been improved". One mentioned that he "knew how to make porcelain", while the other two had similar thoughts. They stressed that they were happy to "learn the history of porcelain", and that they would never forget the process of porcelain making:

> It was far more exciting than I thought. When I took my piece of work from the teacher, I recalled its shape and how the lines were carved. I was happy with it and it made me proud (Student 13).

Social skills were significant by most participants, who believed that social skills contained elements of "being free to communicate" and "expressing oneself precisely and clearly", but also "being mindful of others' responses". Working with the museum offered them opportunities to get close to society, and this could prove a big challenge to some who were shy to express themselves in public. One participant realised the course had helped trained and practiced their social skills. He recalled the scene when he met the first visitor, commenting:

> I was nervous to introduce myself to the visitor, even though I have a good knowledge of the exhibits. Nobody believes that if you do not verbalize it…With the teacher's encouragement and the examples set by the classmates, I took the first step, then the second, the third (Student 2) …...

Others added that "expression skills were improved, whether in public speaking or acting". Another two had similar thoughts and informed me what they had learned:

> I came to highly value the importance of clear oral presentation, which was due to the experience of being a museum guide. What I explained to tourists was the production process of porcelain. The experience taught me how to make a good speech. Now, I pay special attention to making myself understood (Student 4).

> ⋯I thought that my coping skill to communicate with others had been developed. The experience in public speaking was fantastic, which required me to listen, communicate, and work with numerous people. It enabled me to interact with them as well as helping to improve my communicative and interpretive skills. Moreover, taking the initiative to greet strangers was not particularly challenging (Student 9).

Two participants who felt that "it was good to learn to take care others' response" both discussed their experience when guiding tourists in the museum. One of them, who had been guilty of hurting the feelings of others before through her words, began to consciously pay attention to her way of speaking. Following the course, he stated that he "learned how to interact with others, and how to be understood by various people". Furthermore, he would be attentive to others' feelings and responses when communicating in the future.

Seven participants found changes in their learning, and three of the seven spoke of learning skills when asked about a change in learning. One spoke a significant amount about the skills that she had acquired. She was impressed by the experience of "visiting a museum", which entailed "reading the plaque, listening to the guide or machine and understanding the history behind the objects". She added that "I have become a museum lover", and she viewed this as having given her a "significant learning skill" (Student 3). The skill of information processing was emphasised by the group interviewees:

> I learned many skills in terms of collecting and sorting out information. There are multiple ways to gather information, including working with the museum. A museum is also a place where you can find information and study.

> It is necessary to compact a significant amount of information into a simple answer.

> You must give the appropriate information, not everything that you have.

There was another finding concerning learning skills that are considered to make learning easier and more relaxing, which the interviewee was pleased with, and felt was “quite useful” and that it “could be applied to any subjects”. The following conversation (with Student 11) demonstrates how the method originated:

> Interviewee: …When I was a museum guide, I found it hard to learn the commentary by rote.…
> Researcher: Yeah, recite word by word, again and again. That is hard, particularly if you do not have the real object in your sight.
> Interviewee: Exactly [big smile].
> Researcher: So, how was your explanation when doing it for the first time?
> Interviewee: As I predicted, I failed to attract tourists. I know that I need to improve my method.
> Researcher: Which method did you use then?
> Interviewee: I contemplated how the professional guide did it and how I felt like a visitor, then I had an idea. What matters is the key points, not every word. So, I focused on the key points. With an understanding of these, I used my own words to explain and answer questions.
> Researcher: It seemed that the method of grasping the key points worked well.
> Interviewee: Yeah! The method is great! I attracted a lot of tourists! I also use the method to learn physics, chemistry, and the arts, and it has proved effective.
> Researcher: Great! You have already put into use what you learned from practice.

4.4.2 Learning about learning

Learning experience under MSC enabled the participants to gain a deeper understanding of learning. There were “some changes” to the perception of learning. Even though almost all student participants considered working with museums to be “hardly helpful in getting better grades”, learning simply happens without notice. It was not an easy task to depict learning issues. I was surprised when discovering that more than one participant found changes and they regarded them as the foremost thing they had learned on the course.

Working with the museum, which brought **real objects** into sight, helped to enrich the learning journey and foster interest. Real objects "motivated me to study" and "enhanced my understanding". The museum, where students had classes and social practice, was conducive to the issue of school education deviating from real life. "Learning should not be confined to schools", and "social participation learning should be vigorously advocated" were sentiments proposed by two group interviewees. A small minority of interviewees admitted that their understanding of learning has been updated. One participant initially believed that there had been "no obvious sign of progress", but then spoke positively: "traveling and visiting contribute to learning and problem-solving. I realised learning means more than reading". Also, one participant repeatedly stressed his finding that he believed was crucial, insisting that learning must "maintain a close relationship with real objects, real life", "other activities", and "different styles", and "not be restricted within textbooks". Despite this view being voiced by only one participant, it mirrored the researcher's thoughts.

As the understanding of learning continued to deepen, their learning **attitude** ascended to a new level. When it came to "attitude", it was a state that required them to "adapt", "have **confidence**", and "take initiative". Student 14, who had struggles with adjusting herself to specific circumstances, reflected on her involvement in the course, and realised that she was capable of "adapting to the environment quickly". Given that many of the sessions were provided in the museum, she was concerned that she would have a challenging time committing to studying once she had returned to school. "Things turned out to be better than I had anticipated", the participant stated, "I could continue doing the exercise. It seemed that these frequent ins and outs of school trained me to adjust to conditions". Approximately one quarter of interviewees, having reflected on the whole experience, repeatedly mentioned the "self-confidence" they had gradually gained. The fact was that these participants were not pleased with their school performance, hence they did not have such a high degree of confidence in themselves. Nevertheless, they expressed a certain level of confidence when discussing overcoming the challenges in the course:

> I was so glad to find that I had completed the tasks, such as guiding the visitors and performing a short play. These were once missions impossible for me. This gave me a sense of confidence (Student 2).

> I gained considerable confidence from the course, and I found the more that I enjoyed it, the more confidence I had (Student 13).

"**Confidence**" is a key issue in learning, particularly for students aged 16 - 17 years old, who face many new challenges in senior high school. Some were excellent in junior high school but started to lose confidence when they encountered setbacks and frustration. One participant stated that she felt "confident" when she explained the museum objects to tourists, thus "Being a museum guide and talking in public" gave her a sense of confidence.

"**Initiative**" is a term that the Chinese often use to assess learning attitudes. Though the demands were not greatly emphasised, quite unexpectedly, two participants found that their inspiration for the study had been ignited, and discovered that their understanding of learning had improved; both referred to "being brave" and "taking initiative", as they felt that during the course "the more proactive you were, the more sources you would get, and the better the results would be". They expressed a high degree of eagerness to "study and explore". Perhaps less demand stimulates participants to take the initiative more. Spontaneous learning was typically expressed in the other participant's answer to the question and he seemed as sured about his feeling, with a specific example to illustrate:

> I was perplexed when ultimately, I was about to conduct a tour on my own. I arrived there earlier than asked, and I decided to "shadow" my classmates as they did their tours. The visitors enjoyed hearing short and interesting pieces of information. So, my classmates refined their speeches to the most essential information and sought to share the most appealing details. What I learned from the shadow experience helped me gain a lot of tourists. I think I did a good job. It boosted my confidence and reminded me to always take initiative at any time (Student 8).

For a few others, the learning style was clearly acknowledged and highly valued, even though the selective course would not significantly enhance performance in a

short time. Student 5 stated, “It was fabulous! **Educating others** is, in my opinion, one of the best ways to consolidate knowledge that I have just received”. The only interviewee, student 12, who immediately answered “yes” to the question of ‘do you think working with the museum improved your learning?’, also shared the method he discovered: “I listened to the guide, and together I formulated my own understanding of it. It was an interesting method, and through it, I gained a comparison between what I am learning and what I have learned. Comparing teaches more than you know, I appreciated that …”

Cooperation was another style that one interviewee appreciated, with “the cooperative learning working well”, while the majority of participants pointed out that cooperative learning brought about “a sense of cooperation”. The feeling of “sharing” and “the group” made learning “more efficient and more fun”. Two interviewees firmly believed that and recounted:

> We made porcelain together. I did well during the first step and I shared my tips. Also, all the members made a great effort, and the short play was successful…Learning may be difficult, but cooperative learning can make it easier (Student 6 and 8).

The teacher interviewees increasingly favoured **learning over reading, doing exercises, interest in study and ways of thinking**. MSC could be “complementary to textbooks and classroom teaching”, while comments from the teacher supported the notion that MSC advanced learning through experience and practice:

> In visiting the museum, observing the relics, and making porcelain, the course provides students with brand-new feeling and an impression about learning. Learning happens anytime when you are interested in something. The course guided them to a broader concept of learning: learning that originates from daily life and experience also matters (Teacher 2).

When immersed in museums, learning may happen inadvertently. Being an outsider to school education, the museum staff pointed out that “the most vital aspect was that the course presented **another possibility of learning**”. Learning took place in “all sorts of ways”. The museum staff believed that student participants did learn,

as illustrated by the two occasions “receiving and delivering opinions” and “listening to others’ speaking” that students mentioned. To the museum staff, “they often asked questions”, hence there was eminent proof that “they were ready to communicate”, while the students’ performance attracted her attention, and she observed that “they were faster learners when they explore”.

One teacher interviewee stated that the recognition of learning “changed”. Under a deeper understanding of learning, most participants, to varying degrees, found that MSC improved their learning in many ways. The following section reports on the attitudes toward MSC from various perspectives.

4.5 Opinions about MSC

4.5.1 What the MSC has brought

I asked the participants for their thoughts on whether the MS partnership should be further developed, which was a question that put nobody into a mode of contemplation. Responses of “definitely”, “sure”, “of course” and “absolutely” demonstrated that they had reached a consensus. Participants were also invited to share their views on the MS collaboration. Most spoke in general terms, with positive comments given, such as “beneficial”, “useful” and “quite helpful”. A few spoke in detail, referring to “three levels”, which were the students, the school, and the museum. These thoughts led me outlining the impact of the collaboration.

- **Views from the students level**

MSC, in the opinion of all the participants, should be continued as it was “meaningful”, “reciprocal”, and “favourable”. The “meaningful” nature was articulated by the majority of the student interviewees. Half seemed sure after taking the selective course, and made commented on how MSC had “benefited students”.

They commented that the collaboration rendered their learning “more interesting” and “more inspiring”. The “space” was a primary aspect as they could enjoy a room that was “much bigger than the classroom”, where they had a “special spatial experience”, and could “learn freely” and “learn deeply”. Furthermore, a sense of “discovery” was repeatedly pointed out by several interviewees, with one answering the question with: “the expertise the museum staff shared with us, and also the replicas they brought, made me highly motivated to discover more about porcelain”. Student 11 stated that “being a docent in the museum helped me gain a better understanding of the porcelain”. Moreover, the collaboration provided opportunities for social practice, which some participants were fond of, while one insightful participant expressed a high degree of contentment, noting that it “contributed to learning through social life, and it could lead to more students becoming interested in learning”. Hence, student 4 concluded that “MSC stimulates our interest to study and narrows the gap between schools and real society”.

MSC also transformed “views on museums”. When it came to the image or the concept of museums, in the opinions of a significant majority of participants, they had viewed museums simply as “tourist attractions” and “places for intellectuals”. Six interviewees conceded that their original recognition of museums was “superficial”, and thirteen responses indicated an entirely new impression of museums. Four appreciated “the lovely environment and the collections” in the museum; seven found them to be a “good place for studying”, where they had the chance to “learn through objects and activities”. They were deemed to be “ideal places for everyone” by over half participants, while another had gained “more passion for museums”, which had not appealed to him previously. Student 3 identified that “the special feelings for museums” were due to “the knowledge they acquired and the interest they now had”, which made museums “not dull anymore, but cool”. Ten participants realised that how they visited museum had changed. “Taking a glimpse of the collections” or simply “hanging out” was how they described their previous experiences in museums, partially due to a lack of knowledge of “how to enjoy a museum”. MSC offered the ten participants a “brand-new way of opening up museums”, and a “curious mindset”. They spoke of their enjoyment of the “audio guides”: “The audio guide is amazing”; “Audio guides

help spread culture and knowledge." Student 14 stated that "audio guides enable me to easily access the collections, art, and historical value". Borrowing an audio guide and reading the introduction became a convenient and enjoyable way to visit museums. Two participants who paid particular attention to reading the details found that their visits to museums had "slowed down". They said:

> Reading the plaques was a great way of enjoying the museum visit. With the brief introductions on it, I was able to connect it to my historical knowledge, so I gained general information about the collection (Student 6).

> I think I may visit the museum for a second time. I would like to study the cultural replicas piece by piece. The details must be appreciated. They enriched my tour, and they deserve appreciation (Student 7) .....

Nearly half of participants used their visit to the Nanjing Museum, which possessed a rich collection, to illustrate their changes in visiting museums and subsequently shared their feelings when they are immersed in the museum. All student participants went on a trip to Nanjing Museum that was organised by the school following the course. For most interviewees, this trip was ideal for evidencing how much MSC has affected them, and made the visit more enjoyable. Over one third of them actively discussed the trip during the interviews, while others commented on it when asked. Three participants acknowledged that "it was much more fun when I visit Nanjing Museum". Three other participants shared information about their visit to Nanjing Museum: "we consciously observed the collections one by one, rather than idly wandering around". "Talking with peers while walking around" seemed quite pleasant to eleven participants who wished to "visit together again". Teacher 1 seemed more certain about the change in the students: "students had gained a more profound understanding of museums". He noticed that three students were "too interested in the museum to remember to have lunch", while some complained that "the visiting time they were given was too short". However, Teacher two interviewee sounded less certain: "the attitude toward museums varied from person to person". In general, MSC has altered the participants' impression of museums.

When adult interviewees discussed the purpose of MSC, they referred to "diverse learning experiences" and "literacy improvement", which was great in terms of the students' growth and development. Though Teacher 2 believed that some students selected the course merely for fun, Teacher 1 thought affirmatively about the perceived "fun". Specifically, that through the course, "students were asked to leave the classroom to see, to do and to ponder the real things, thereby seeking to widen their horizon and enhance their understanding" (Teacher 1).

- **Views from the school level**

MSC's provision of "extra spaces for the school" has been recognised by over one third of participants, who also asserted that MSC was "of great help for schools in fostering students' abilities". A similar idea was expressed by a student participant in a pilot study, who believed that it was beneficial for school education.

MSC extended to areas that schools were not able to cover. "Replicas" were a salient element, with Teacher 2 noting that "replicas were so attractive to students that most would approach to have a good look and touch them". "I witnessed students' big smiles and keen interest when the replicas were brought into the class", stated the museum staff, and "such facial expressions appeared in many photos when replicas were shown". Additionally, teachers were more familiar with the pedagogies and the learning theories compared to museum staff, who were more acquainted with the objects and exhibitions. Take me, for instance, I could not share the details of the usage, the value, the technological procedures, and how to appreciate a celadon in the same way that museum educators can. Teacher 2 spoke of "professionalism", indicating that "what I taught was from the information we gathered and it was a challenge to articulate and present that freely". A similar feeling was expressed by Teacher 1, who realised that "a wide variety of expertise and more specific analysis" enabled students to gain an in-depth understanding of what they have learned, which stimulated their further contemplation and exploration.

MSC is beneficial for schools in terms of carrying out career planning. Other than the role the guides play and the significance of the work, the two teachers commented on the qualities the job requires and the work experience it brings. Student 5 stated that being a docent was a "tough job", which demanded "lots of memory and physical work". "Capacity" was mentioned with particular emphasis by the other teacher, which was deemed to be vital for both the occupation and the activity.

- **Views from the museum level**

The museum perspective was the least referred to. On the one hand, due to "the small number of museum visitors", Student 1 felt that it was a pity that "so many collections in museums have not been adequately appreciated and the history and culture has not been entirely understood". He considered it "a great waste", hence he was a great supporter of MSC. From his perspective, "at least, it enables students to be nurtured in museums, and may drive others to visit museums more". Thus, MSC may "contributed to taking full advantage of museums". On the other hand, "advertisement for museums" was a focus, with Student 12 considering the collaboration quite useful in "bringing museum culture to society", through which "museums could be heavily advertised by participants".

From the museum staff's viewpoint, firstly, working with schools, particularly co-developing a course, "enabled museums to put ideas into practice". School course sessions are "successive", "systematic", while "courses last for a semester", all of which provided "space and time to promote the relationship", "give the room to develop", and "stimulate the creativity". The museum gained knowledge of the school through the course, and "secured a deep understanding of the public". Secondly, MSC "made the public increasingly recognise the educational function of museums". "More people have been signing up for activities on WeChat, a free messaging and calling app", advised the staff member, and this fact illustrates that it "has gradually changed people's impression of museums". MSC was regarded seen as another effective method of "informing the public" that "museums were not just a place to hold exhibitions, but also to learn and communicate".

The collaboration allayed the staff's concerns, who eagerly wished to find a way to be given "social existence" given that "museums are organisations". They complained that "there was not much recognition for museums in most previous activities". Therefore, it was deemed that MSC "reinforced the appreciation for museums and the thought of engaging with them".

4.5.2 Suggestions for MSC

Museums and schools were both appreciated as educational institutions, and this selective course constituted an attempt to encourage the museum and the school to collaborate. There remained numerous shortages and drawbacks, even though two pilot studies had been conducted. When questioned on whether MSC should be continued, the teachers replied "yeah, sure" and "certainly", while the museum staff member stated, "of course, this is exactly what we want to do". All student and adult participants provided their overall impressions of MSC:

> Impressive! I saw students' happy faces after class (Museum staff).

> The participants were given a questionnaire by the school after completing the course, and most questions were responded to positively (Teacher 1).

> It made good use of the collections and other resources (Student 13).

Suggestions for improving MSC largely focused on "fully making use of the resource", while museums have "abundant resources", "professional teams" and "academic research", which are capable of "enriching the content" and "diversifying the class". Schools have different disciplines and offer different courses, such as geography, linguistics, and chemistry. Teacher 1 and museum staff figured that the "sufficient use of both resources" already received great attention, and the promotion of in-depth MSC seemed "necessary and crucial":

> As the development of selective courses has been largely necessary, curriculum sources and support from both inside and outside the campus are required. It is vital to utilise social

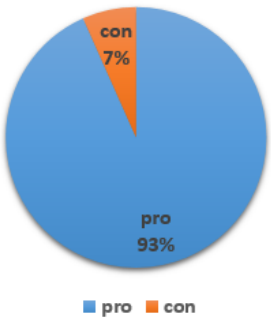
resources to ensure that we can expand the content, promote classroom dynamics, and provide quality education. Moreover, the social resources are well developed and employed. The collaboration will continue in the future (Adult participants).

4.6 Summary

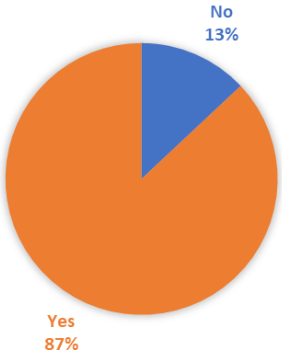
The exploratory study adopted action research approach for improving students' learning under MSC. The research conducted was based within participating students, school teachers, and museum staff. The outcomes and the process are shared in this chapter. The data reported is predominantly from interviews, with pictures and field notes as supplements. The information extracted from the video is highly consistent with the data that present, therefore I have not reported the video data again.

The findings reveal that as the pie-charts indicate below, the MSC course wins the approval of over 90% student participants, and less than 15% of participants find that learning is not improved as expected. A few questions are also raised, such as the tension between the "all-round development" and "academic performance". In this case, it seems that the exploratory study needs to amend in order to properly solve these problems.

Course evaluation



Learning improvement



Chapter 5 Discussion 1: Learning Experiences under the MSC

5.1 Introduction

In this chapter, I review the findings reported in Chapter 4 and discuss the issues alluded to and highlighted in the previous sections. The data is explained through the theories addressing the research question: how can museums and schools work better together to improve students' learning? It is also discussed based on the overview of the literature.

5.2 How did the experience help students' history learning?

In this research, MSC helps students engage with historical cultural relics and exhibits, and assists them in understanding history, culture, and the world, while the implementation of MSC in the form of developing courses meets great challenges, facing issues as time available, and exam pressure for senior secondary schools. In terms of history learning, there is limitation this MSC covers and students learns.

In senior high schools of China, history is an academic discipline and school subject. Chinese teachers give lessons according to the course standard and textbooks. The *History Course Standard of Senior High School*, formulated by the Ministry of Education of PRC (MOE, 2017), is designed to broaden students' historical perspective, develop historical thinking, and improve the core literacy of historical disciplines, with the aim being to establish a positive outlook on the world, life, values, and history, for the benefit of future study, work, and life. The production of textbooks, or their authorisation for classroom use, has also served to reinforce the state's control over knowledge. The government plays a significant role in ensuring the political conformity of teaching content, particularly when it comes to portraying the nation and its fundamental principles (Vickers & Kumar, 2014). Like everywhere, political consciousness of nationhood has been intimately associated with history.

Due to the fact, patriotic education is strongly encouraged to instill a sense of love and loyalty towards homeland. In history classrooms, China's achievements, and contributions to the world, such as China's ancient civilizations, dynasties, inventions, and major historical events such as the Communist Revolution are greatly covered and promoted. Certain sensitive topics in Chinese history are downplayed, which include the Great Leap Forward, the Cultural Revolution and so on. Also, textbooks that provide limited information about non-Han histories and cultures (Vickers, 2006). It's noteworthy that the latest edition of the textbook, published in 2017, has gradually improved and covered more non-Han histories and cultures.

Topics such as ancient culture and tradition have been popular in textbooks and museums, acting as a means of securing loyalty and reinforcing state legitimacy. The history and culture of "celadon", chosen to be the theme of this MSC research, mainly because it is discussed in the history textbook, as a prominent representative of handicraft industry in ancient China. Being one of the most distinctive manifestations of traditional culture of Ningbo, NB museum houses exquisite celadon artifacts.

In the context of history learning, matters that extend beyond textbooks ought to be given consideration. History textbooks present 'the past' and social development worldwide, from ancient to modern times, which leads to a common issue: the textbooks summarise too quickly, which makes accessing the past challenging (Kitson et al., 2011). That is also the writer's finding, who is a Chinese senior high school history teacher with almost 15 years of teaching experience, and has noticed that it can be difficult for students aged around 17 or 18 years to learn about and understand the past through textbooks. Gradually, this challenge becomes a tremendous pressure, under which students' motivation decreases, and some even lose interest in history completely. Moreover, a damaging idea has become popular: history means memorising the past, and all you have to do is to recite 5W: when, where, what, who (m), and how. For students taught in this manner, learning history is more like a mechanical practice than a fascinating journey that explores past

people, places, and events. Hence, I believe that a deep comprehension of history demands a careful and experiential approach to how history is taught and learned.

During this research, history was taught in the form of a MSC course, designed according to Museum Education Theories put forward by Hein (1998), which is reviewed in Chapter 2. The learning experience involved all four types. The introduction and lectures corresponded to traditional “didactic, expository” type while knowledge was organized and taught from easy to difficult. “Stimulus-response” type shared the same learning theory with the former, which was practiced in reciting the narrator's commentary. “Discovery learning” was widely applied in the course and activities such as visiting museums and touching objects allowed participants to have an impressive exploration and experience. “Celadon making” and “serve the museum” helped students “learn by doing”, which emphasized that learning is obtained by construction in a certain social and cultural background with existing experience. Basically, every learning type was included in the course, so that everybody’s learning need was met. Under the MSC course, history learning was gradually improved.

5.2.1 Interest in history learning increased

The learning environment under the collaboration of MS triggered interest in getting close to objects in order to appreciate the charm of history. Museums, which offer considerable learning potential, differed so greatly from what schools provide, and the difference referred to in Chapter 2 caught the participants’ attention. As reported in Chapter 4, “lessons out of the school” and “hands-on experience” influenced the participants’ pursuit of interest in history learning to a great extent. They deemed “engaging in various activities” with peers in museums as flexible and pleasant, while the participants found it a “rather comfortable and relaxing” experience when immersed in exhibitions and scenes. This research found that there was a growing learning interest in how museums could be used as learning environments.

Affective qualities were triggered by objects, and the activities, including the group work held during the course, which were essential factors, could lead to the arousal of a state of interest (Hidi & Renninger, 2006). The emotions and feelings which key findings (Chapter 4) presented were relatively positive. For instance, most participants were excited to create a piece of porcelain, curious about the museum collection, and enjoyed learning about celadon. Moreover, a passion for history and culture became a pursuit through their interaction with the team while taking up docents' roles and performing short plays. From my observation, the enthusiasm propelled half of the participants to delve further into history learning during their subsequent Nanjing trip.

The "selectivity" introduced by the Curriculum Reform enabled the participants to opt to attend the selective course freely, choose partners with whom to visit museums, select objects to explain and team up with peers for a short play. In these respects, the MSC course supported students to take responsibility for creating and studying through their own choices and decisions. I found that 2 student participants with low interest exhibited more interest in the topic that the course covered, with one student even conducting extended reading after the course. According to Falk and Dierking's CML (2000), from the personal context perspective, an individual's desire to have choice and control could influence learning. Choices, discussed numerous times during the student interviews in the previous chapter, allowed the students to decide their own learning and study, which influenced their interest and were conducive to students' active participation in learning.

Learning environment, positive feelings, and autonomy, help to develop students' interest, both situational and individual, which are the two forms of interest that educational research focuses on (Hidi & Renninger, 2006). They propose the Four-Phase Model of Interest Development, and stress that individual interest may also benefit from meaningfulness, external support, peers, and experts, which were all included, designed, and exerted during the research. It was likely to create an enduring tendency for participants to learn and practice, with both situational and individual interests promoted, even though it was not easy to transform from situational to individual.

The learning experience stimulated multiple participants' interest in history. The contribution of interest caused to a type of engagement, as found by Harackiewicz et al. (2016), whereby promoting interest can contribute to a more motivated and engaged learning experience for students.

5.2.2 The literacy of history gradually improved

History is often interpreted as memorising and reciting basic information about the past, such as historical times, places, characters, ideas, and events. In this thesis, learning history is understood more broadly. In the book, *Thinking History 4-14: Teaching, Learning, Curricula and Communications*, Bage (2000, p.12) asserts that "learning history is built from the interplay of five aspects: time and memory, historical knowledge and understanding, historical interpretations, historical inquiry, and organising and communicating". In China, this has been echoed to some extent by the *History Course Standard of Senior High School* published in 2017 and newly revised in 2020, which identifies five core qualities of history learning, namely understanding and explanation based upon historical materialism; fundamental view of time-space; analysis and application of historical sources; historical interpretations; and devotion to family and nation. Both opinions of history learning share many key features, namely time, understanding, and identifying historical interpretations. As *National History Standards* (1995, p.7) point out, these features are regarded as embodying *historical literacy*, which entails chronological thinking, comprehension and interpretation, issues analysis, decision making, perspective-taking, and research skills. Historical literacy provides a rationale for history education and aligns with the paradigm advocated in the curriculum reform in PRC, was emphasised and cultivated during the course.

Chronological thinking has been advanced significantly by being immersed in the museum on several occasions. Kitson et al. (2011) propose that a sense of chronology must be taught and built up through purposeful visiting and revisiting. All collections in museums carry human civilisation or scientific and technological development. Through words, audio-visual, interactive games, or scenes restored

and presented to display the production and application in chronological order, a stronger sense of historical space-time, and exhibitions are easy to obtain. Furthermore, the objects they touched and appreciated during the course left the participants with a reasonably vivid impression, and it is conducive to thinking in a chronological manner. Over two thirds of the student participants found themselves somewhat engaged with historical space-time ("the boat-shaped building and the layout in the museum were great. It gave you a fantastic space-time experience, as though you were wandering in the long process of history"). From primitive to modern, the exhibition in the museum signifies more than cold words. The architecture is also viewed as "a medium of spatial storytelling, specifically of historical time" (Lu, 2017).

In order to comprehend history, chronological understanding, empathy, and diversity are crucial (Kitson et al., 2011). Historical empathy, as outlined by Endacott and Brooks (2018), is a process of engaging with historical figures and events, which requires students to analysing and interpreting how people in the past might have thought, felt, and acted within their specific social contexts, and under the specific circumstances of their era. By touching the fragments of ancient celadon and making a piece of celadon with their own hands, it narrowed the distance between reality and history, which helped them understand and interpret both people and things in the past. At the end of the course, the participants were asked to perform a play based on the history covered by the course. The respondents found that they could truly appreciated the ancient craftsmen's unrivaled skills and highly valued the wisdom and ingenuity of ancient people. They discussed the past in a more nuanced and authentic fashion. Moreover, they empathised with the people at that time and attempted to make connections to local history. By offering such a prism through which to view the past, the course facilitated, deepened, and broadened their understanding, thereby encouraging historical empathy in support of transforming history into an engaging and dynamic subject. Furthermore, comprehension and interpretive skills were developed; approximately half of participants commented on this after having taken up docents' roles and interacted with visitors. In terms of text comprehension, thinking skills such as issue analysis, synthesis and generalisation are fully employed for text interpretation and analysis.

There were pages of words and sentences for a docent to digest, perceived complexity or jargon, which necessitated the participants employing these skills. Surprisingly, most respondents worked hard and overcame the challenge in a short period of time and actively applied thinking skills they rediscovered in a real-life environment.

As their comprehension became enhanced, they were increasingly aware that their appreciation of objects and history facilitated them engaging more in interpretations. McAleavy's definition of "historical interpretation" remains one of the most profound: "A conscious reflection on the past and the ideas and attitudes of participants in past events" (McAleavy 1993, p.10, see Kitson et al. 2011, p. 81). Using objects in museums as evidence, the participants gained an understanding of the relationship between historical interpretation and evidence. The complexity of history was conveyed: evidence is used to construct the accounts of the past (Kitson et al., 2011). The objects, real or fake, do not speak for themselves. Historical interpretation constructs and compares accounts. The three-legged toad inkstone and two-bird porcelain are filled with a strong sense of Chinese culture, and lead to a deep understanding that China is a great nation with an ancient civilisation. The ancient overseas ceramic trade made 3 participants realise that the One Belt, One Road (OBOR) Initiative policy was an apt case of deep and vital reflection on history. The docents' interpretation work and their own practice enabled them to recognise the nature of history: history is interpretation, and uses evidence, versions, and stories to develop an understanding.

As Nokes (2013, p.20) argues in his book, historical literacy is "not the possession of an encyclopedic knowledge of historical facts, but the ability to glean appropriate information about the past from resources of many genres. It is the ability to engage in historical processes - not simply to possess knowledge, but to know how to build it". I explored in Chapter 4, the participants made progress in terms of their knowledge and historical literacy - their ability to comprehend, analyse, interpret, and take perspectives on historical processes. Despite four participants having achieved little, their observation and understanding through objects (evidence) stimulated their historical thinking.

5.2.3 Ways to learn and present history diversified

The focus of the MSC course was on a unique historical experience, and it deployed resources not only through words and books but also through the museum itself and practical activities. A light has been shone on the methods of history learning, understanding how 'history' comes to be recognised, and what 'history' is, which led to a rudimentary understanding of how history comes into being.

The respondents greatly appreciated that the lessons took place outside the classroom, where they could conduct a vivid observation. Typically, in Chinese senior middle schools, history learning takes place inside the classroom. Out-of-school learning, where new surroundings are exploited in order to explore history, supports students' education and development (House of Commons Children, 2010). The course demonstrated that the visual and physical experience can make learning feel more alive and appealing. When interviewed, almost every respondent was able to describe the celadon's features and easily recall "the shape and the usage" of several pieces of celadon. Museum-based learning offered rich possibilities for studying history, while learning at historic sites, such as museums and residences, is currently a strong focus in China. Nonetheless, successful out-of-school learning demands more than just skillful planning; it demands contemplation of how it engages learners and how the focus of the learning relates to what has already occurred and what is yet to come (Kitson et al., 2011; Hopper-Greenhill, 2007). Otherwise, learning outside the classroom is less productive.

Learning by "doing" is also applicable to history, a typical humanities discipline, which is about what happened in the past and it is far from students' real life. As Bage (2000, p. 56) states, in traditional classes "listening to the teacher" is the activity that pupils cited most frequently, while it is a sensible assumption that teachers are the "richest historical resource to which most children have access". Given that the traditional manner, learning has been mainly through speech; particularly the teacher's talk. It is proposed that schools and classrooms should provide an experience that resembles real life, which allows children to participate in various kinds of learning activities within diverse social environments (Gutek,

2014, see Morgan & Williams, 2017). The course encouraged participants to "learn by doing", so as to experience history and get the perceptual and rational cognition of history. Visiting museums allowed the participants to see, hear and even touch the image of history and culture, and got to learn the relationship between history and modernity (the scene of Zhao Dayou's pastry store is a good illustration). Hands-on practice, considered one of the favourite sessions, enabled the participants to produce a real piece of porcelain and provided insights into what the related issues are. Over half of the participants had a feeling of "intimacy" of history and that it was "easy" to learn when questioned about the process. "Serving the museum" and "performing short plays" improved the knowledge and understanding of history when the participants were placed in real social life. Learning by "doing" gives us a reminder that learning can originate from books as well as real life, and social environments and real objects make learning more meaningful.

Culture is a medium that can also help students bring history to life and learn the "why" behind events, rather than simply memorising names and dates that they may thereafter forget. With the development of society and culture, objects are endowed with meaning and connotation. For example, the popular three-legged toad porcelain is made in order to save water, thus it is not simply a receptacle, it encapsulates Chinese style wishes and Chinese culture. In exploring the objects and life of ancient Ningbo, the participants can not help approach the depths of history. One-third of the participants engaged in trying to find out "What was Ningbo's social relationship with foreign countries during the Tang Dynasty?" or "How may overseas trade have impacted Ningbo's economy during the Song Dynasty?". As stated in the Chinese history curriculum documentation, history plays an indispensable role in passing on the legacy of culture and civilisation and enhancinig the cultural qualities of citizens (MOE, 2017). Embedded in culture, it helps to transform history from tedious rote memorisation into an active and intriguing exploration based on cultural anthropology.

All the above enhanced the participants' understanding of history. Time and space exist between us and history, hence museums, historical materials, documents, the production and culture, and docents' explanation are utilised to shorten its distance,

and conducive to comprehending how historians work: these resources are used as evidence to interpret and analyze the historical events and process, in which ideas about the past are built up. Hence, history is made up of competing analyses, interpretations, and perspectives.

5.3 Using Contextual Model of Learning to understand how learning is promoted

During this course co-developed by the museum and school, the respondents spent over half of the course time in the museum. Thus, the museum learning played a significant role in the learning experience. As a theoretical construct, Falk and Dierking's Contextual Model of Learning (CML) was of great assistance in the author's investigation and explanation of the students' museum learning by exploring four different contexts: personal, sociocultural, physical, and temporal. CML reveals that learning will be influenced by 8 factors, and to better understand or enhance the learning experience, Falk and Dierking (2000) suggest that each of these eight factors should be given consideration to. Therefore, I discuss each of them in turn below.

• Personal context of learning

The personal context that affords the foundation of this research is related to one's motivation and expectation; prior knowledge, interest, and beliefs; choice and control. The findings reveal that learning under this MSC was facilitated by expectations and experiences concerning going out, visiting museums and hand-making. The pleasure, and fun were explicitly noted and reported during the research. Falk and Dierking (2000) found that learning flows from appropriate motivational and emotional cues. I noticed that the motivations and emotions played a crucial role in what they paid attention to, what they did, what they learned, how they learned and how much they learned. When their expectations were realised, learning was strengthened correspondingly (learning about knowledge, skills and learning). As illustrated in this chapter earlier, the expectation fulfilment in turn increased students' interest in learning.

The ability to learn, according to Falk and Dierking (2000), could be constructed from a foundation of prior experience and knowledge, which proved to be applicable and convincing based on the findings of the research. The opinion that it is natural to connect with prior knowledge and experience in museums was referred to by the student participants several times. The pilot studies showed the importance of prior knowledge and a persuasive example was offered by a participant who performed quite well in explaining the overseas trade and the spread of celadon. He had previously learned about the maritime Silk Road, and he indicated great interest in the objects and displays. With this rich experience, it rendered his visit to the museum meaningful, while a guided tour prompted memories, thereby deepening their understanding. Another participant mentioned the exhibition reminded him of his childhood, which aroused the idea of studying. These examples demonstrate that what the following opinion from psychologists and neurosciences is reasonable: prior knowledge and understanding play a major role in human learning (Falk & Dierking, 2000).

An appropriate context appropriate for learning was successively created under MSC through broader rights and more freedom to make choices. Firstly, visiting a museum is considered to be one way in which free-choice learning is likely to occur. Most decisions during the course, such as what to see, discuss, make, learn, and know, were made independently by the students. With less academic stress, learning occurred easily and naturally. Secondly, they visited the museum along with friends and classmates, and the common concerns and topics they shared made the learning trip more interactive and enjoyable. Lastly, the needs of different participants were satisfied as much as possible. The museum offered various activities, such as objects and exhibits to observe, lectures and explanations to listen to, porcelain to create, and social activities to participate in. Subsequently, student participants largely focused on kinds of “practice” in their positive feedback, particularly “making things with one’s own hands,” “diverse experiences” and “being quite autonomous”. Thereafter, these provided a suitable physical and human environment, which fostered an appropriate context for learning.

- **Sociocultural context of learning**

Museums exists in the real-world and are characterised as facilitating sociocultural learning, hence, learning in museums is a fundamentally social experience and is inextricably bound to the cultural and historical context (Falk & Dierking, 2000). Moreover, the participants realised this when they found that sociocultural information was transmitted through what they saw, heard, and read. Their knowledge was built through conversation and social interaction with others.

Social communication guided participants and helped them learning about the world, which was a phenomenon stressed by Vygotsky, who studied learning that occurred within the "zone of proximal development" (ZPD), and suggested that ZPD was one of two different development levels, the other of which being the actual developmental level. According to Vygotsky, ZPD was "the distance between the actual developmental levels as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers" (Vygostsky, 1978, p.86, see Jarvis et al., 2003, p.37). It is widely believed that learning is advanced if given appropriate instruction and assistance within ZPD. Celadon is such a large and abstract topic that it was too challenging to manage it independently. Social communication was treated as a support system offered by the capable, namely school-teachers, museum educators, craftsmen, docents, friends, and even the listeners, thereby constituting more support than students received in school. During the research, it was primarily adult-teenager and teenager-teenager within-group communication and interaction that took place, which made the learning journey more akin to continuously climbing up ladders until the participants reached a higher point than they could previously have unaided.

Through both nonverbal and verbal communication, the teenagers were motivated to think and learn. On the one hand, the MSC taught them how to appreciate the socio-cultural world. Visiting a museum entailed more than aimlessly wandering around, with the teenagers appearing to be excited as a world unfolded in front of

them. On the other hand, profound cultural connotations were presented to the teenagers through a series of inspirations. From my interview experiences, it was challenging for student participants to contemplate the implications without the docents' hints. I often noticed the students' look of surprise and doubt, which indicated that they were stimulated, thus encouraging them to be more active in appreciating the world, which was socioculturally constructed, and helping most of them gain a profound understanding of it. Learning became seemingly more organic, real, and attractive for some participants. One student commented that "learning is to understand, not to recite"; another found that learning should be connected to life, not only through reading books. From this perspective, learning how to learn is a fundamental building block of education.

Learning further continued with confirmation from both within and outside the groups. Small community learning fostered within group work was frequently conducted. In their book, Falk and Dierking (2000) point out that individuals operate at various levels of the sociocultural context; the macro-level shapes the meaning of individuals' perceptions and concepts, while the micro-level affects perception and the processing of information. The teenagers were aware that group work propelled their interest and motivation in learning, with over one third of the participants expressing that they preferred the visiting experience as they could exchange views and communicate ideas. Two participants pointed out that they were encouraged to take on challenges by peers who already performed well previously. Their peers' perseverance and praise (as displayed in the pictures in Chapter 4) also inspired members of the group, which seemingly made the learning joyful and efficient. Most of the participants expressed their sense of learning achievement, while they learned a great deal from each other and won the affirmation of social groups. It was reflective of the large sociocultural function that places such as museums play in fostering an understanding of learning.

- **Physical context of learning**

Learning is guaranteed to take place within the physical environment of museums, as explained by Falk and Storksdieck (2005). The majority of participants expressed

great interest in learning in museums, which are unique and provide different environments compared to typical schools, with their large-scale properties and smaller-scale aspects, such as exhibitions and objects to view.

Exhibitions and objects gained increasing attention and ultimately exerted a profound effect on learning. Whether students or adults, the participants seemed to have been affected by the opportunity to view, touch, and interact with objects. Immersed in the rich collection, almost all were excited to discover a new world in front of them. The beauty and atmosphere of the museum grabbed the participants' attention, two of whom spontaneously discussed space and building design. More than five participants voiced their agreement with the idea that the course should be entirely held in a museum, which reflected that they were satisfied with this physical context of learning.

Objects learning was a crucial feature under MSC. The aspects of objects as shown in the below figure were sufficiently covered. Using the "three-legged toad Yandi" as an example (presented in figure 5.1), the ancient craftsmen's pretty design, aesthetic qualities, cultural meaning, and superb skills left them with a strong impression and inspired them to explore further. The interviews were held over half a year following the completion of the class, and the idea was influenced by Ansbacher (1998) discussed in Chapter 2, who applied Dewey's theory of experience to museums. Interviewees could describe at least on piece of celadon with ease and precision. One interviewee accurately stated that the objects made learning "charming", and he subsequently provided more details. Thus, the more they knew about the value of objects, the more they cherished and became obsessed with visiting museums and appreciating objects.

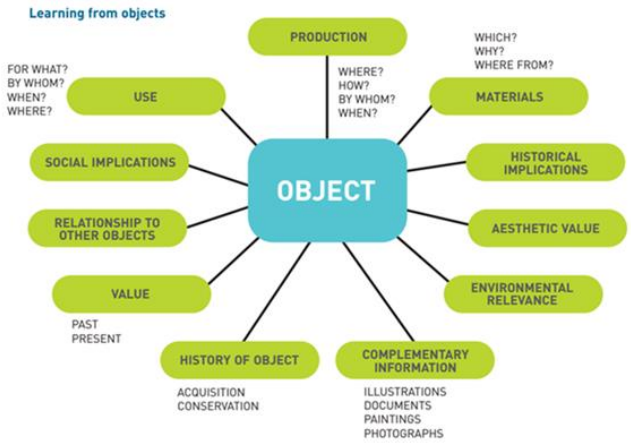


Figure 5.1 Learning from objects (based on Clark et al., 2002)

• Temporal context of learning

In light of longitudinal studies, learning resulted from a museum experience that evolved over time, while the participants were accordingly given a carefully planned experience following the course. As Falk and Storksdieck (2005) suggested, experiences frequently play a vital role in determining what was "learned" in the museum. Therefore, group activities and volunteer work were an output of what had been learned. Most participants demonstrated their willingness to engage in the job of docents as well as the short play. Moreover, narratives were largely adopted, which was thought highly of since it afforded opportunities for learners to converse, contemplate, and express ideas. Hence, what the participants had learned was applied most effectively in real life.

It was essential to take time to process the information received and learned in museums, which along with other institutions, provide valuable learning opportunities. The concept of "process" was explained as the tie between new and existing knowledge (Norman & Sandra, 2014). They believed a single visit or study would not have a direct impact on learning, with approximately half of the participants observing this. Although three museum visits were organised, a strong desire for more was expressed. During the visit there, they noticed that there was an abundance of opportunities for exploration in museums, and they discovered something new on every occasion that they visited one. In addition to seeking

information and connections, new insights into the world of culture and art were also sought.

The experiences outside the museum, similar to the activities inside them, were crucial to museum learning, suggested by Zheng (2012), who held that the knowledge and experience gained from museums are incomplete, as it requires context in order to be complete. Typically, these contexts take place outside the museum, and only once weeks, months or even years of museum visits. The trip to Nanjing Museum half a year after the completion of the MSC course, to a large degree, was an example of the idea of providing context in order to promote learning.

Linking constructivist tenets to museum learning, the CML model outlined how students' learning in museums took place, which allowed me to contemplate and analyse how learning happened and developed when students visited the museum and engaged in activities during the course. The four contexts, personal, sociocultural, physical, and temporal, influenced learning, with these not being independent of one another, but instead inextricably linked.

5.4 Summary

This chapter discusses the core of the research question: learning under the MSC. Influenced by Museum Education Theories (Hein, 1998), the MSC course attempted to meet every one's learning needs. The learning experience promoted interest in history increased, the literacy of history improved, and ways to learn and present history diversified. The framework provides by Contextual Model of Learning proved useful for understanding how complex combination of factors affected and enhanced learning. In the following chapter, the issue of collaboration will be addressed by aligning the findings explicitly with the philosophy of the national curriculum reform.

Chapter 6 Discussion 2: Collaboration between Museum and School

6.1 Introduction

This chapter addresses the collaboration between a museum and a senior high school in Ningbo by drawing on the literature to explore the value and potential of the collaboration. In Chapter 5, I reviewed the data primarily based on the learning model and subsequently presented how learning occurred under the MSC. In this chapter, the collaboration within the Chinese education reform framework is examined.

6.2 Which, if any, of models of MSC operated in this example?

6.2.1 Equal complementary model was employed

Regarding the collaboration in this research, it involves a more recently developed model of MSC, equal complementary model, which attaches importance to the communication and mutual influence between MS. None of the six models of MSC, reported in Chapter 2, namely affiliated museum school, provider- accepter model, museum–oriented interactive model, teacher-oriented interactive model, community museum school, and third-organisation model, are suitable for this example. The equal complementary model we developed in this case, originates from a concern that Erickson and Christman (1996) raise, specifically that collaboration entails sharing power across institutional turf, professional status, and personal identity. Therefore, it is critical to recognize that museum educators and school teachers alike belong to different institutions, hence they have their own specialised status and identities. If museums and schools are to collaborate effectively, it is essential to locate and adjust their roles and rights.

The advantage of the equal complementary model that this suggestive research adopted is that MS jointly take the leading roles and share rights as equal partners, which magnifies qualities of both and complements and promotes them during the educational process. Under this model, the school and the museum were both

providers and receivers, and played indispensable roles in this relationship. To a large degree, the model enabled both sides to satisfy one another's demands. The objective of MSC, learning and improvement, was discussed and developed in the early discussions and exchanges. The museum also adjusted to assist teachers in helping students perform well in examinations, while the school established a tracking feedback mechanism for student activity experiences in museums. The model allowed museums and schools to collaborate with equal status and power for reciprocal influence and mutual benefit The collaboration actively utilised both parties' unique resources and co-developed, co-ran and co-evaluated the course, which ran smoothly due to mutual communication, consultation, and sincerity from beginning to end. Without the initiative and effort of the school teachers, who took advantage of the curriculum reform, it would have been very challenging to implement the collaboration in senior schools. Without the abundant resources and guidance provided by the museum, such as objects, museum educators, a humanistic space, and opportunities to serve the public, school teachers could not have developed such an unusual course. Details such as financial issues, time management, and guidelines were also confirmed following a joint consultation, and both parties worked together to enjoy equal priorities, thereby ensuring a timely completion. Following the completion, the museum and school jointly reflected on the feedback provided by all participants in order to improve the MSC.

6.2.2 Equal complementary model worked effectively

As noted in the Literature Review, numerous factors have contributed to this successful partnership, three of which are highlighted: objectives communication, and mutual benefit. The equal complementary model is effective when it comes to accomplishing the three factors, and establishing meaningful and successful partnerships.

With a focus on "learning to learn", the goal of this research is to enhance learning. The equal complementary relationship brings the advantages of both sides to come into play, thus better achieving the goal. In view of the comparison of learning in schools and museums (Table 2.2), the model fully allowed the participants to gain

an understanding of the following: museums are ideal places for learning throughout one's entire life; reading books in schools is merely one form of learning; while museum visits and studying objects is another; and objects are ideal for learning at every life stage.

Taking a museum field trip as an example, museums and schools combined their efforts to demonstrate that learning can be both entertaining and challenging. A single trip was insufficient in terms of accelerating learning. Museums sent docents who left an impression on the participants when giving on-the-spot professional explanations. Sessions and lectures were given by school teachers and museum educators both prior to and after the field trip in order, to deepen and strengthen learning. Under the equal complementary model, different teaching styles blend, and the participants' comments indicated that the combination worked well ("…ignited by the museum experts' words"; "discover more than just what we see in textbooks"; "desire to learn"). It seems the utilisation of various teaching styles is helpful for understanding knowledge, developing aesthetic appreciation, and increasing the students' overall interest. The model facilitates MSC learning to become more complete as it helps museums play a complementary role in filling the vacuum that formal schooling has created (Falk & Dierking, 2000).

Under the equal complementary model, the museum and the school were both providers and accepters, while dialogues and communications between them were based on equality. They both took the leading roles, and any ideas and suggestions shared were valued. Concerning the museum field trip, NB museum and the school were involved in an animated discussion, which was because as Harrison and Naef (1985) point out, schools typically seek field trip experiences that are centred around facts, while museums offer higher-level interpretations. The teachers and the museum educators found the communications to be good and they "got a lot out of it, and quite a bit without even consciously realising it". After several conversations, a docent-led tour was offered by the museum and the school invited museum educators to give lectures using objects, which were popular among the participants. Thereafter, needs, facts and interpretations were considered and the museum field trip gained the affirmation of 14 (more than 93%) student participants.

Afterwards, a series of explanatory and practical activities were designed in a further attempt to incorporate facts and explanations. Hence, the model could properly promote dialogues and open communications, thus encouraging flexibility, creativity, and experimentation.

The equal complementary model effectively mobilised the enthusiasm of both partners and actively allocated both human and financial resources. The anticipated mutual benefits of MSC were accomplished, with the emphasis on students, whose learning about knowledge, skills and how to learn, as presented in Chapter 4, progressed significantly. The museum and the school benefited from their involvement in this model as they were afforded sufficient freedom and respect to conduct the collaboration. As far as the school was concerned, the selective course was recognised an outstanding one both at the city and provincial level and the research programme was embedded into school development plans. The research's success evidenced that a growing number of the participants now enjoy learning in museums, with many having changed their views as they became aware that museums are good places for learning. The image of museums and their primary function have been appropriately recognised. The museum was placed in the first batch of outstanding social practices among the city's primary and secondary schools. The museum proposed to continue collaboration in line with this model.

6.3 Did the MSC contribute to the objective of current curriculum reform?

The suggestive research I have shown that allowed student participants to gain a deeper understanding of history, and I would like to focus on the contribution that the research makes to the objectives of the current curriculum reform (reviewed in chapter 2). My key arguments are set out below.

6.3.1 MSC facilitated the implementation of a better selective course

Prior to the reform, senior school students in the PRC had to choose between arts or science as their subject. Following their decision, subjects would be determined, and the teaching organised around the *Gaokao*. Also, history became no longer

taught in science classes, even though typically students were interested in it. Since the implementation of the reform, both mandatory and selective courses have been made available to all students. All students have been empowered to choose the combination they like without any constraints, aside from the compulsory subjects of Chinese, mathematics, and English. Therefore, each secondary high school currently arranges selective courses within its timetable, and students have guaranteed access to them.

With the initiation of the curriculum reform in China, particulartly the *Plan of Deepening the Curriculum Reform in Senior High Schools in Zhejiang Province*, approved and implemented in 2012, the curriculum reform has necessitated the development of higher-level selective courses, which is regarded as a significant challenge, largely due to the lack of resources. With the idea of bringing together knowledge from within and outside schools, combining the information presented in textbooks with the museum displays, and connecting informal learning with formal education, MSC identifies a path to introducing social resources into courses, which is treated as an effective way to address the issue.

From my perspective, the term “cultural brokerage” is accurate in terms of describing what MSC achieves. Brokerage is often referred to as “knowledgeable, and usually, senior academics who mentor and support the young publication activities of younger colleagues” (Hall & Thomson, 2017), while the notion of cultural brokerage is “the act of facilitating interactions between actors across cultural boundaries” (Jang, 2017). In the context of creative work teams, Jang categorize cultural brokerage into two types: the extraction and incorporation of knowledge from diverse cultures.

MSC bridges the two institutions and facilitates their cultural exchange. The two types are integrated into a unified approach, which involves guiding and integrating knowledge within creative work teams, facilitating communication and collaboration among different cultures.

Under MSC, schools teach many subjects and young students are typically full of vigour and yearning for knowledge. Museums, particularly historical one, are characterised by their rich historical and cultural exhibitions, with the transmission of history and culture as their primary objective. MSC connects museums with schools, hence they can turn to each other for resources, inspiration, and creativity. Cultural brokerage supports the implementation of a better selective course in the following respects:

(a) actively engaged in history and culture

People from different institutions bring different types of cultural activities, which activated various social resources. The adults, school teachers, museum staff, docents, and craftsmen offered the opportunities to approach and comprehend history and culture. Via listening, visiting, touching, creating, interpreting, and performing, cultural activities were integrated into history classes, making history learning more exploratory and enjoyable, as opposed to monotonous and conventional in the case of history facts being repeatedly stressed in class.

What was also stressed students was the classroom, as mentioned by one participant who complained about the noise and endless amount of homework. As a cultural institution, the environment museums provide was “lovely”, a word often used by student participants, and positively led the participants to wander in the long river of civilisation. In museums, 70% participants found themselves feeling immersed in history and culture. Museum visits were emphasised as being of great benefit, and despite the limited time, 70% of participants expressed their intention to revisit the museum. The participants were encouraged to explore history and culture from different perspectives, whether to observe a cultural relic, listen to docents explaining exhibitions, or follow a historical trace. Gradually, by these means, museums became ideal places not only to visit for leisure, to see for excitement, but also to access history and culture.

Cross-border MSC surprised me during this suggestive research as it rendered one institution plus another institution greater than two, and it exerted a significant influence on history and cultural experience.

(b) improved the students' communication skills

The "cultural brokerage" led to the creation of history and culture experiences more than anticipated, and provided considerable space for practicing skills. Integrating the advantages of the two institutions, student participants' skills were fully engaged. Under MSC, students worked as museum docents for its visitors and performed for classmates during the course. They shared their knowledge of the collection with visitors and relayed stories of history and culture by performing short plays. Through interpretation and performance, students underwent a transformation in their perception of culture: from the abstract and dogmatic to the concrete and detailed. They gained a better understanding of the links between culture and ordinary life, history, economics, and aesthetic appreciation. Their insight was made explicit and they guided others to delve deeper into culture. In this way, museums were increasingly recognised, and the MSC course contributed to increasing interest in culture and history.

In summary, as a selective course that was developed following the curriculum reform, the MSC course exemplified the function of "cultural brokerage" in history teachers' classes. Seeking to compensate for the lack of curriculum resources, it successfully utilised resources from the school and the museum. The cross-border collaboration enabled the students to get out of their school, meet a range of people from various walks of life, and participate in a variety of activities both on and off-campus, which was also positive in terms of communicating across cultural institutions.

6.3.2 MSC helped prepare the students to become future citizens

In the face of unprecedented future opportunities and challenges, the function of education is to cultivate people's ability to adapt to change. Educational

programmes, such as MSC, does not aim to teach a specific knowledge point, but to "cultivate students' all-round quality (*suzhi*) during theme-based teaching" (Wang, 2018). Moreover, the "students' all-round quality" responds to the demands of curriculum reform. Known as "quality-oriented education", which aims to enhance "the fundamental qualities of all nation's people", current curriculum reform emphasises the service to all students and promotes "students' all-round development" (MOE, 2010) with the intention of fostering future citizens.

Against the backdrop of curriculum reform, schools in China must alter their teaching to accommodate cultural and social changes. MSC provides a rare opportunity and platform for realising the objective of the "all-round development of students" (Wang, 2018). The open learning is beneficial for their personality growth, thereby helping to nurture a positive attitude towards developing one's personality. MSC is helpful to students in terms of their preparation for becoming future citizens as it cultivates the ability of the four pillars facing the future.

As principles for learning and citizenship in the twenty-first century, the four "pillars of learning": learning to know; learning to do; learning to live together, and learning to be, as identified in the Delors' report (1996), focus on the international political, economic, and cultural background, and future development objectives. They complement and promote each other to satisfy the demands of a "learning society", which has come to fruition, as Delors' report and the Outline (2010) pointed out.

The participants learned to know. Learning to know signifies broad general knowledge and learning to benefit from the opportunities' that education provides throughout one's life (Delors et al., 1996). A high percentage of students stated that finding out new information about celadon "excited" them and they ranked it high on the list of "most important things gained from the course". The MSC allowed students to learn new knowledge and develop the ability to learn. Observation was one skill discussed by some participants who mentioned that their learning was enhanced through observation of the displays, the handicraftsmen, the museum docents, the short plays, and their peers. Synthesis and summary were thinking

skills that received particular attention. More than five participants referred to "getting the point" or "grasping the main points" when discussing the lessons, they had learned from the docent experience. As mentioned in the Delors' report, learning about history and culture helped connect various societies beyond time and space, thereby enabling the educated to understand knowledge from other fields (ibid.). The amount of information, resources, and knowledge in the future is infinite, and the MSC allowed participating thinking and synthesis skills training, which are demanded for lifelong learning.

The participants learned to do. As stated in the Delors' report, learning to do was entailed more than acquiring occupational skills. It also acquired the competence to deal with situations and work in teams, while learning to do in the context of various social and work experiences was highly valued. This collaboration offered the respondents the opportunity to be craftsmen, docents, players, and even qualified visitors. Through these experiences, participants became familiar with various jobs and roles, which they may take up when they reach adulthood or pursue as hobbies. Furthermore, the abilities of cooperation, communication, and creativity were improved, thereby enhancing their adaptability in a rapidly evolving world. The work carried out by the students was in pairs or groups, hence they learned from each other, "cared about others' feelings" and highly valued teamwork. "Social skills" were the second important aspect that they gained, and almost all respondents felt that working together increased their confidence. Also, their creative ability was tested when they engaged in celadon and script creation. Overall, the MSC supported young people in adapting to the changing future by learning to do.

The participants learned about living together. The Delors' report found that learning to live together is an essential skill given that conflict risks are on the rise. Subsequently, education should teach young people to live with others. "Others" may be persons, groups, communities, or nations. The collaboration gathered students from different classes, with the interviews revealing that 60 percent of participants could be broadly classed as arts students, while the remainder chose science-related subjects. The course enabled them to meet different people and

learn to work/live together. The serious or playful classmates, the visitors' tolerance and indifference, the museum educators' temperament and professionalism, and the handicraftsmen's ingenuity and patience resulted in the participants embracing the diversity, despite it being somewhat limited.

In a spirit of respect for mutual understanding, the teachers and students developed a good rapport, and shared a pleasant experience. After classes, it was common for almost every student to say "good-bye" to teachers, museum staff, and the handicraftsmen. Furthermore, the activities the students participated in helped them to delve deeper into different cultures and understand more about how the communities and societies work. Developing an understanding of others was beneficial in terms of striving towards common objectives and learning to effectively manage conflicts. The evidence showed that there was enhanced communication between the students ("During the rehearsal, we had to think about others and found a way that was applicable to everyone"; "We did not wish to disappoint her (scriptwriter). Thus, the 4 girls together, rehearsed repeatedly. With everyone's effort, this short play was successful for the development of mutual understanding and respect among team members. By working together, students found a way to handle conflicts and build relationships with others.

The participants learned to be. The core idea of China's ongoing curriculum reform is "everything is done for students' development", and it has entirely conformed to this fundamental principle which has been reasserted previously: "education should contribute to every person's complete development - mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality" (UNESCO, 1972). Education has been regarded as an indispensable asset that facilitates young person becoming good and productive citizen, with physical health, scientific and cultural attainment, and impeccable moral conduct. It is noteworthy that all aspects of a person's potential: memory, reasoning, aesthetic sense, physical capacity, and communication skills, must not be disregarded by education. Hence, a study of local history was covered in the selective course to enhance historical literacy, including memory, understanding, inquiry, and reasoning. Handicraftsmen were invited to teach the participants to observe, design, and create celadon to help gain a greater

appreciation of art. Social service and group collaboration were introduced to the participants to enable them to practice their communication skills. As the collaboration advanced, participants became more aware of the value of museums, which closely related to life and society and are deeply rooted in the community, history, and culture. Several participants noted that visiting museums "was much more fun" after their visit to the Nanjing Museum after the course had ended. They began to appreciate the collections and enjoy themselves in museums ("We consciously observed the collections one by one"; "so much meanings in such a small piece of a relic"). More than half of participants chose to spend Sundays and holidays visiting museums. Two respondents indicated their concern about the status quo of museums and suggested "advertisement" and the collaboration of MS for the sake of museums. One participant wished to interpret the culture in case others were unaware of its value. They became aware of the civilization and culture carried by museums and cultural relics. In this sense, their social responsibilities had been gradually fostered. Despite the small number of participants involved in the research, the findings imply that the MSC course had great potential in terms of development, as it enabled education to be conceived in a more encompassing fashion in order to prepare citizens for the future.

6.4 Summary

In conclusion, the MSC achieved successful collaboration in developing a course through its embrace of the equal complementarity model, which actively took advantages of both parties' unique resources and co-developed, co-ran and co-evaluated during the collaboration. The model evidently facilitated the implementation of a selective course, and helped students learn to know, learn to do, learn to live together, and learn to be. All these contributed to the objective of current reform: a well-round future citizen.

Chapter 7 Conclusions

The final chapter begins with my reflections on the objectives of this research, implications for school teachers, museum staff, and collaboration between museums and schools, followed by future research directions. At the end of the chapter, recommendations are proposed for further research.

7.1 Objectives achieved

Informed by the literature on museum-school collaboration both at home and abroad, I was curious and motivated to discover more about learning under the collaboration of MS. Museums have increasingly been recognised as educational institutions in PRC, and diverse learning activities have emerged. A convincing demonstration was necessary in terms of what and how the students learned in museums. In addition, the collaboration of MS included a range of experiences, more than a field trip to a museum. An exploratory study into whether these collaborations were meaningful was essential. Lastly, a series of sessions was co-led by the teachers and museum staff, and it was the first occasion whereby teachers collaborated with others from educational institutions. It was worthwhile to try out a model that is suitable for MS collaboration, for senior high schools in China.

By drawing on the theories and data provided by the 15 student participants and three adults, because of the findings, answers were found to the research sub-questions: what do students, teachers, and museum staff believe that they (the students) have learned, particularly in terms of contributing to a better understanding of learning under the MSC?

The researcher found improvements in students' knowledge, skills, and personalities, while an enthusiastic attitude was adopted towards museums, history, and learning. For most participants, celadon, the course theme, was better understood, the knowledge of which was beyond what is contained in textbooks.

The educational experience was lively and engaging for most participants. The multi-aspect presentation of celadon afforded the participants opportunities to discover both its past and beauty, appreciate the arts and crafts, and seek to ascertain the usage and implied meaning. With celadon having been brought to life, history appeared observable, touchable, and audible rather than only memorable. The various displays of celadon deepened their understanding of the knowledge and how history was organized, and opened windows for the participants to rethink and learn history. The participants tended to connect what they had learned with daily life. History and culture presented helped to illuminate how ancient people lived and how the world came into being. Ultimately, more interest, improved historical literacy and better at learning in history were found in the research. Regarding "learning to learn", they found themselves more confident and active in learning. Moreover, learning meant more profound: it is an activity that also happens in museums, over reading, when educating others, and cooperating with others.

Concerning the second question: *What did the teachers think the students learn?* This research identified the learning experience that underpinned the contexts and processes. Pieces of celadon told stories of the past, hence they were deeply rooted in culture and history. The students' acquisition of knowledge and capacity was improved as the MSC made history learning more tangible, which significantly enhanced their learning of how history was woven into the culture by understanding its essence. In addition, celadon's holistic presentation in the course prompted historical and critical thinking, including reflection on the relationship between past and present, the explanation made by textbooks and real objects. More importantly, many opportunities were given to practice their skills in expression, communication, co-operating with others, working with a team, and offering others constructive feedback. Meanwhile, their enthusiasm for culture and the sense of social responsibility constantly increased.

In terms of museum educators, the collaboration supported the participants in many ways, and it helped the participants to develop a more comprehensive view and a more in-depth understanding of museums. The role of museums was properly appreciated, as well as docents' work. Furthermore, the collaboration has affected

and modified the idea of "visiting a museum", with 13 respondents, almost 90 percent of the interviewees, stating that they knew a great deal about learning in museums. A different vision of a museum's purpose had been presented to them compared to what they had in mind. Museums became more than places to appreciate cultural relics and scholars to carry out research. The educational role of museums received increasing attention from most participants. Therefore, the MSC course gave the participants a "taste" while also "laying the foundation" for museums to play a vital role in lifelong learning following their graduation from school (Delors et al., 1996). Thus, museums should make extensive use of collections in order to expand their work and attract and stimulate the interest of young people.

The results indicates that the MSC supports students' history learning, facilitates the implementation of an enhanced selective course, and prepares the students to be future citizens. Nonetheless, the answers to the question *What are the practical challenges of a school and a museum working together* was not sufficiently clear, may be due to the smooth process of the research. Several years after the end of the research, the answer gradually becomes clear, and I will discuss it later.

7.2 Implications and recommendations

Looking through the research, I found myself in a position of multi-identities, which enabled me to learn things from different perspectives. I am a novice researcher who planned and conducted action research, yet I am an insider, as I provided lessons during the collaboration, and worked as a partner to the museum. These multiple identities elevated my perceptions and reflections to a considerably more profound level.

There is an implication for improving history education. The collaboration made history come alive via real objects, activities, and resources beyond what the school curriculum could offer. "The space, the objects, and the social practice" enormously stimulated the participants' motivation to learn as they found history learning "more interesting" than it usually is in school, which has great implications for

approaching and understanding history. On the one hand, history is not a cold and boring subject. It has a temperature, which can be felt through viewing the objects and visiting historical sites and museums. Thereafter, they could appreciate how ancients people felt, know how they lived, and learn to live with the past. One interviewee described the feeling of touching clay: “It made me feel pleased in a pure and calm state, and I had never been so proud of our ancestors that had made such a splendid piece of porcelain”. Historical empathy was naturally reached given that the participants could consider and appreciate feelings, thoughts, and events from the perspective of others, which is regarded as the most challenging yet a critical skill when students learn history. On the other hand, how to use sources and artefacts, how to think in a historical manner, and how to study a historical object or issue were all studied. The methods, other than the knowledge, are widely deemed as essential in learning and studying history.

Cultural implications arose from the findings as the discussion proceeded. The collaboration provided experiences, which subsequently led participants to contact cultural institution and workers. Museums are vital places for the propagation and dissemination of culture, where craftsmen, docents and performers working on what they know about the culture. Hence, cultural education has been implemented to facilitate the participants to witnessing and engaging in the culture. 7 interviewees mentioned museums “bring culture to people”, “bring a sense of pride” and “make them feel proud of the culture and history”. Some expressed their desire to be “nurtured in museums” and they positively advocated exploring museums. As a cultural and public venue, museums present an experience that everyone can enjoy, even if they may not know anything about the objects exhibited. Those engaged in culture-related work showcased the charm and beauty of culture by introducing and promoting objects and stories that most participants had never come to appreciate. The cultural experience developed our abilities to discover the connection between history, philosophy, politics, and culture, connect culture to life, and appreciate and create beauty in our own lives. Culture has provided a space for children that sits alongside formal education.

The collaboration implies the cultivation of productive citizens. Taken from the Delors' report (1996), four pillars (learning to know, learning to do, learning to be, and learning to live together), translated into good practices of quality education, were attained through collaboration. To prepare students for the modern era, they must enhance their overall skills. Education in schools has its limitations for reasons of history and reality. The introduction of social resources into schools makes the quality education more complete, thereby helping to cultivate qualified citizens with developed personalities that are suitable for future society.

Nonetheless, the collaboration gives rise to some concerns. One participant pointed out that there was no evidence of improvement in learning given that their scores had not increased. I admit that the application of CML to evaluate the outcome of the research seemed imperfect, and it is challenging to measure and illustrate the correlation of their achievement with the MSC, as for the course only referred a small portion of the content of the history examination. Nevertheless, this admittedly limited study provides evidence that the course enhanced their knowledge, skills, capacities, and most importantly their cognition of learning, including attitudes, initiative, confidence, cooperation, and ways to learn, which are vital for learning history and all other subjects.

In terms of **recommendations of MSC,** based on the research reported here, to provide better support and promote wider further collaboration of MS in China, I make the following recommendations:

1. For developing a practical MSC, it is crucial to fully exploit both advantages and embrace a human-centric approach. Establishing collaboration can be a complex and intricate process with numerous factors to consider. The research studied in the paper seems to achieve the optimal state after times of discussions and confirmations, by leveraging the unique strengths and resources of museums and schools. The human-centric approach emphasises the development of individuals. Cultural, artistic, and historical experiences foster personal growth, such as intelligence, skills, creativity, confidence and so on. The collaboration offers

opportunities to learn, communicate, work in teams, and solve problems, and Obtains affirmation and support from students, the school, and the museum.

2. Schools, particularly senior high schools, should be strongly supported to collaborate effectively with museums. Sufficient time and allocated space should be granted at the policy level, which will not be altered for a short period of time or due to a single incident. Moreover, financial, and human resources should be secured more conveniently for school teachers in order to plan and conduct MSC programmes.

3. MSC demands more training, support, and guidance. Despite museums and schools in China having developed collaboration, most remain in the nascent stages of research and experimentation. Teachers call for training on collections, while museum educators feel that pedagogy practice is necessary. Furthermore, higher education institutions such as universities could be liaised with to receive guidance and support from the perspective of theoretical exploration. In that case, frequent interactions between museums, schools, and universities could be realised, and educational resources and research institutions could effectively collaborate to help students' learning. Teachers' training could perhaps include practitioner and professional interactions and cooperation in a routine and required manner, which ensures that such interactions could be continued in teaching practice. Teachers can also benefit from such MSC.

4. Regarding course design, teachers and museum educators alike should find ways to better listen to the propositions of students. The design is often completed by adults, while little attention is paid to students. Their ideas are material and relevant for the improvement of the course, such as reorganizing the sessions, adding the ancient people's lifestyle to the content, and more activities and time for practicing. From my point of view, these recommendations are worthy of consideration. With social media, such as e-mails, blogs, Twitter and instant messaging, students are encouraged to communicate their opinions and perceptions and make their voice heard, which could enhance their learning experience and develop the MSC more in accordance with the requirements of students.

5. To be more persuasive, practical assessment is necessary, even though it is not that easy to evaluate MSC programmes. For most of the time, when students were asked how the experience was in museums, “I had a good day”, and “very well” were the responses often heard. These were not sufficiently persuasive to obtain strong support and extensive attention from schools and society. Therefore, it would be preferable to employ a more informed and scientific approach to assessment to elicit more affirmation on MSC.

6. Depending on the situation there could be diversified forms of MSC, while this suggestive research only explores one. Due to the limited course hours, it did not cover the other collection in the museum, which could have opened a brand-new world where students learned more about the development of human civilisation and the process of human history. Different ways and modes should be encouraged to be investigated and adopted in MSC in order to cater to other groups of students, in the form of long or short-term, temporal, or routine, or programmes or organisation.

7. P and E Office should adopt a more collaborative mindset to understand the needs and goals of schools, to promote museum education and contextualize book knowledge and stimulate motivation and enthusiasm for learning. The alternation opens windows for collaboration with universities, communities, and other educational institutions, and the service of P and E Office moves subtly from “objects” to “people” from different age groups, cultural backgrounds, and psychological needs. By fostering a spirit of cooperation and proactivity harnessing the power of modern science and technology, the scope and impact of P and E Office are amplified.

8. The support mechanism of MSC could be further enhanced. The suggestive research is completed, and the MSC is no longer pursued. A crucial factor is that I, the researcher, have been busy with teaching tasks, and there is no strong impetus, no more time and effort to promote MSC. It is therefore evident that there is a lack of systematic mechanism to promote, support or maintain collaboration between MS. A supporting mechanism has gradually been established with the state, society,

museums, and schools driving the mechanism to work (Wang, 2018, p. 27). With teachers and museum staff's working together, and the incentive and promotion of supporting mechanism, MSC could reach further.

7.3 Limitations of the study

These years, I have been thinking of the limitation of the research, for I hope to continue to carry out the MSC. One limitation is that the sampling and data for this study were limited as this research was conducted in a key senior high school[1]. Furthermore, those who participated in the selective course were inclined to affirm the MSC program. If I could conduct the research and collect data with different students at various levels of schools, the generalizability of the research would be further enhanced. Another limitation is that the course and research time were squeezed due to increased academic pressure. The course was shortened from 18 sessions to 14, while the participants had to use weekends and holidays to get involved in practical activities such as guided tours and performances. For instance, the short play took place during the self-study class, and the service to the museum was conducted on New Year's Day. The participants were burdened by the significant amount of homework they were generally tasked with, hence their available time was relatively scarce.

The limitation I discover years later is that the research was conducted without considering the cooperation mechanism. It was deemed as individual efforts of museums and schools. Nonetheless, without the supporting mechanism, the MSC became one project, or one activity. Wang (2018) points out that this is due to lack of mechanism between museums and schools to promote collation. In that case, MSC can not realise the objective of preparing students for the coming future. It is necessary to consolidate, maintain, develop, and expand a sound and reasonable mechanism supporting MSC.

[1] China 's key school system exists at all levels of Chinese Public educational institutions.

7.4 Suggestions for future study

As a teacher who has worked with the museum for over five years, I found that the research on MSC received strong support from museums and schools. To advance MSC in more schools, teachers and museums should collaborate to launch a series of studies and share experiences through forums and presentations, or a professional organisation could be formed to lead and coordinate MSC. Disciplinary or interdisciplinary studies are proposed to help students learn further and understand the world, which could develop learners' ability to solve practical issues, thereby being more equipped to meet the requirements of the modern world.

Research on MSC should be promoted and there are many social, educational institutions that could also work together with schools. These institutions expand "schools' development space", as asserted by one interviewee who found that they were not restricted in schools, and the gap between schools and society has been narrowed. Studies on introducing more social institutions into schools are in great need in the context of resources, policy, and practice.

Concerning further research on MSC, there is a requirement for more studies from multiple-angles. For example, there is a need for East Asian researchers and practitioners studying MSC to turn their comparative gaze more towards each other, as the cultures in East Asian countries, particularly China, Japan, and South Korea, share much similarities and these nations are widely recognized for their prioritization of education and academic accomplishments. Hence, exploring the following as future research areas may facilitate the achievement of the research objective: comparative study of MSC in East Asia; teachers' development under MSC; experiences of museum study tours in China; studies on MSC mechanisms in East Asia; integration of trips with school courses in East Asia.

7.5 Concluding comments

Since the beginning of the 21st century, Chinese school education has been in transformation, and the "quality-education" is sought after. Meanwhile, "museum fever" has been heated up everywhere during recent years, and museums as carries

of social education are being recognized. The intention of this research was to make museums and senior high schools work together to improve learning.

Based on the MS equal complementary model, a museum and a senior high school collaborated in the form of a 10 - session course, which was co-developed, co-ran and co-evaluated and actively exploited both unique resources. My study utilises Contextual Model of Learning theory with empirical data extracted from the action research, which was conducted three cycles, and the third was studied. As a researcher and senior high school teacher, I find that the MSC opens windows for students' learning, school development, and museum education, which is beneficial to all participants, as well as contributing to the current curriculum reform, to prepare students to be future citizens.

For students, learning is improved by the MSC, which introduces museums to schools and students, breaking through the situation that history study in senior high schools is often limited to classroom and textbooks. Affected by personal, sociocultural, physical, and temporal contexts, the collaboration not only enhances students' learning interest, historical thinking ability, but also helps them "learn about learning": real objects, confidence, initiative, cooperation, and learning over books matter.

Though the stress of the *Gaokao* that every senior high school must deal with, the curriculum reform remains room for the survival and development of MSC. The MSC ignites students' curiosity to explore and learn history and culture, and allows students to acquire knowledge, understanding, and skills in their engagement with the broader world outside of the classroom. Their recognition of museums has been renovated. The exhibits on display in museums show the rich and colorful world, and museums are public places in which students can learn about and get in touch with the real society.

Museums and schools share resources and complement each other's advantages under the equal complementary model. The model facilitates museums devote themselves to the educational function, and can fill the big gaps of working with

teenagers and senior high school students. The research indicates that a growing number of students enjoy learning in the museum,

Making museums and schools work together meets the requirement of the curriculum reform. For teachers, the implementation of the MSC can enhance teachers' enthusiasm for curriculum development, promote their professional development, and deepen their knowledge and understanding of education. For schools, the MSC course brings "antiques" and "cultural relics" into the school classroom, and students can get close contact with a series of social and cultural activities. These are conducive to promoting liberal education in school, which contributes to the all-round development of students.

Being an educator, I deeply feel that there is still a long way to achieve ideal collaboration between MS in Ningbo, China. Both museums and schools are making their efforts and I will continue to be a "pathfinder" with the purpose to encourage youth to explore and advance learning in MSC.

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Appendix: Theme-code

Theme	Category	Sub-category	Sub-sub-category	Code
1. reasons to participate in	motivation	people		HT-headteacher T-teachers they like
		things	activities	O- outside M- museums MP-make porcelain
			subject	SH-History as selective subject LH-like history
		issues		K-expand knowledge FC-few courses to choose
2. what have learnt in the course	knowledge	celadon	general	H-the history P-production U-the usage MC-know more about celadon
			artifacts	MSP-mi se porcelain LLCS-lotus leaf cup stand [cultural learning/beauty]
		museum		M-get to know/learn in museums I-Interpreting knowledge to help others understand
	skills	interpreting to help others		NS-narrative skills, explaining, adapting content to suit audience, oral confidence
		acting		A-act in short plays, performance
	personality	courage, confidence		C-have more courage
3. course experience	interest	lessons in class		N-not impressed at all / have no interest in listening to the teacher talking make notes and still did not get much
		lessons out of class	the way of visiting	L-have a good look at /identity R-research T-task-oriented I-interested
			impressed	F-full of fun while being out with a group /fun of like a journey/ fun of wearing an explanation device / fun of sense of history R-resonating-freely discuss and communicate
		the imitation		I-deep impression I-the imitation they can touch and observe the shape (beauty, cute and the combination) IM-the implied meaning U-the usage

Appendix: Theme-code

	situation- place atmosphere	professional (disposition) (knowledge) (approach to interpreting information)		D-disposition/appearance, different from teacher BF-be focused, detailed scholarly information/make their own connections P-puzzling over the design of the dragon kiln P-passion for celadon
		museum		SH-sense of history SC- sense of culture CD-display present concrete details BD- building and design R- relaxed
	practical activities	making porcelain	gain/positives	KP-know the whole process DI-deeply impressed / vivid in their minds LBD-have chance learning by doing RK-retained knowledge SEM-seem easy to make while not KF-have feeling while touch the clay and the porcelain CH-craftsman / feel hornored ET-experience the superb technique MP-would like to know more/experience about the process /how to fire them
			pity/negatives	NT-not enough time NW-not well-done NE-glazing is not easy C- curious
		museum guides	toward the docents' work (personal / visitor)	K-knowledgeable, DV-discover the value KMC-know more about the collection CS-articulate/ communicating skills CC-well prepared for the changing circumstances CD-communicating with different people
				AP-make the tour more attractive and pleasant MC-know more about the collection HW- a hard work CKL-spread culture, offer knowledge, and improve literacy
			experience as guides in real life	TD-got trained and developed CC-courage and confidence to speak in public TS-easier to talk to strangers LS-learning from peers POH-be proactive in offering help BS-be a better self
				CS-closer to society(father) PP-public places MDP-meet different people of different ages from different places ABP-gain approval by public / BT-being the 'teacher' rather than the student IP-express the idea to the public CS-communication skills/speaking skill/ enhanced communicating skills

Appendix: Theme-code

				/comfortable to speak socially IG-how to interact with guests PVR-pay attention to the visitors' responds
		short play	cooperation, division of work	P-spoke positively of cooperation HAT-like to have another try G-a group MF- make friends GC-get closer TAO-think about others MAS-mutual assistance and support
			time &professional	TL-time limited NWP-not well prepared; SP-stressed when performing in front of others NP-no professional story plot and content NS-no professional stage, theater PA-want to put on a play again
	comment	pro	practice	1. MH-make things with own hands / precious chance LNM- like DIY, no pressure, decide by myself 2. TOE-try different things, and obtained diverse experiences / ETV-the experience "treasurable" and "valued" SS-a sense of success never gain 3. E-quite excited
		con	lessons in class	1. B-boring/dull AC-arrangement of the course BH- burden of the homework 2. TK-contain too much knowledge /drone over S-suggestions: F-a variety of forms in class / IM- in the museum / R-reality speak louder than words 3. con (practicing lesson) TT-short play occupies too much time T-wheel throwing time too short NMT-not make full use of the time
		suggestion		1. OS-the order of the sessions (the interest) reorganize MB-go to museums in the very beginning of the course 2. ES-the effectiveness of the sessions MF- more forms / diversity 3. CS-the content of the course EC-an enthusiasm for the customs IL-more introduction of the ancient life LL-could last longer DS-different subject on the collection 4. CA-course activities MC- more chances to museums MP- more practice
4. M-S relationship	improve learning	pro	1. knowledge 2. skills and capacity 3.cognition of learning	1. AK-acquisition of knowledge EK-expanded knowledge DU- deepened the understanding VW- visualized the cold words SI-the sense of intimacy IE-ignited by the professional explanation KE-enrich more knowledge of extracurricular 2. SC-skills and capacity they acquired, PS-benefited from the practice sessions:

Appendix: Theme-code

				HMP-know how to make porcelain OP-clear oral presentation SC- skills to communicate with others SIP- speak in public SVM-skills of visiting museums SPI-skills of processing information 3. CL-cognition of learning ·CPL-some change to the perception of learning M-motivated NWS-not be confined within schools MR- more than reading ·AAL-learning attitude has ascended to a new level AS-adjust status GS-gain self-confidence TI- take initiative (GD-go deeper when meet a problem SS- shadow somebody) ·LS- learning styles CL-cooperative learning GP-grasp the main points
		con		NEL-no evidence of having improved in learning (marks)
	the most important things gained from the course			·P-porcelain MP-much about porcelain T-the way it was taught HM-handicraft making ·SS-social skills IO-interact with others MU-make oneself understood TP-talk in public ·L-something related to learning LI-learning initiative LC-learning confidence LM-leaning method LT-learning to teach C-cooperation MH- museum helps GP- get the point (synthesis and summary) UNR- to understand non to recite AMS- be applied to modern society
	MSC relationship	students		·LI-learning more interesting S-space RE-the replicas and the expertise SP- social practice ·VM-view of the museum IC-impression changed LE-lovely environment PS- good place for study LO-learn through objects PM-passion for museums ND-not dull and cool ·WVM-the way of visiting museums RT-read the tag INJM-illustration of NJ Museum experience AC-appreciate the collections AS- access to contact society KM-know more besides textbooks DL- desire to learn
		museums		·AM-advise for museums BC-bring culture to people PC-propagandize museums ·TAM-take full advantage of museums KFM-make people know the function of museums PCH-pride in cultural history

Appendix: Theme-code

		schools		·PES-provided extra spaces for the school NL-not limited in schools EE-enjoy the exhibition ·RIA-attend to the requirement of initiative thinking and active inquiry SIL-stimulate interest to learn NGSS- narrow the gap between schools and the real society SP&HE-social practice, hands-on experiences RS-being recognised by society