

The Chinese Diaspora in Australia: Identity and mathematics learning of Chinese living in Australia

Angel Mok, Macquarie University, angelmok.06@gmail.com

Abstract

This study explores diasporic identity and childhood mathematics performance in Australia. Chinese students outperform their Western counterparts in international mathematics tests such as Trends in International Mathematics and Science Study (TIMSS) and Programme for International Student Assessment (PISA). Results from these tests have attracted considerable attention from policy makers in the past decades. An extensive literature search has also been conducted to examine possible contributing factors such as the curricula, classroom pedagogies, assessment, motivation, parental expectations and practices as well as the Chinese culture (Stevenson & Stigler, 1992; Leung 2002; Li, 2004). However, these studies tend to examine the issue from an external, quantitative approach and clinical perspective in national level. Few studies have investigated the issue from the 'insiders' perspective.

It is the aim of this study to examine the phenomenon from the view of the insiders. As well, it looks for heterogeneity in a seemingly homogenous culture.

Identities are conceptualised as being multiple, fluid and socially constructed (for example, Hall, 1996). Hence the formation of cultural identity is not a prescribed process. Rather, it is a dual negotiation process in which subjects define the membership within the group (Chinese diaspora), as well as the 'others' in the context. There is more than one Chinese diaspora (Wang, 1999) and this study aims to look at how Chinese diasporic identity is constructed in the social, political and economic structures and power hierarchy in Australian context. Chinese immigrants' subjectivity, which is a function of how they interpret their Chineseness (Ang, 2001), will be analysed and deconstructed to explore any link to the children's maths performance. With different perspective and focus, this ethnographic study will provide some insiders' insights and new understanding to the issue.

Introduction

Research paradigm – researcher’s positioning in an ethnographic study

This study will be conducted by a researcher of Chinese background who migrated to Australia a few years ago. Her life story and immigration experience will be recorded and deconstructed in the report. Her story is a ‘reflexive ethnography’ in which her ‘personal experience becomes important primarily in how it illuminates the culture under study’ (Creswell, 2007, p.211). This research will be a journey of discovery of self for both the researcher and the researched. Stories will be told, heard and their importance interpreted. Personal stories, therefore, act as agents for self discovery both for the researcher, the participants and the readers.

Credible research requires researcher’s reflexive awareness of own worldviews and a commitment to constantly reflect on them during the research process (O’Leary, 2010). This research requires another level of reflexivity as reflexion on and understanding of researcher’s own cultural identity in this unique social context determines how she interprets the data. As a Chinese immigrant to Australia she may share experiences, attitudes and beliefs that are common with other Chinese immigrants. The insights derived from the deconstruction of her own identity may provide an invaluable mechanism to interpret the research data.

An ethnographic study adopts an ‘emic’ approach in both data gathering and analysis. Information is sought and examined from the insiders’ view. On the other hand, the researcher will contrast and analyse the difference from the ‘etic’ view (Wolcott, 1999). Ethnographers are ‘by definition ... always an outsider for whom virtually everything could be regarded as different’ (Wolcott, 1999). This has made the researcher’s position and role in this research very unique and yet critical.

What PISA and TIMSS tells us about Chinese students’ mathematics performance?

PISA is an international comparative study conducted by the Organisation for Economic Cooperation and Development (OECD). Its aim is to assess 15-year-old students’ knowledge and skills in a number of subject domains, with an emphasis on these students’ preparedness for life (OECD, 1999). PISA assessed reading, mathematics and science, with reading as the major focus. On the other hand, TIMSS is an IEA (International Association for the Evaluation of Education Achievement) study, which has an assessment framework based on (not solely though) the overlap of the curricula of all participating countries. Its aim is to identify any pattern that may emerge as a result of the scores obtained by the participating countries. The key difference between the two is that PISA has a ‘literacy’ based orientation and the emphasis on mathematics knowledge put to functional use in a range of contexts. The difference lies mainly in the emphasis of various skills and the manner in which questions are posed, rather than any fundamental differences in mathematics content. Most PISA items focussed on analysing, reasoning and communication ideas. In other words, instead of algorithms or computational procedures, it focuses on the

application of mathematics ideas and making sense of mathematics (Wu, 2006). PISA is age-based while TIMSS is grade-based. PISA was done in 2000 and TIMSS in 1999, so essentially they tested the same cohort of students.

HK, Japan, Korea and Singapore are the only East Asian countries participated in TIMSS but students from these places outperformed their counterparts. When examining the characteristics of these four places which might contribute to their outstanding performance, it was found that there was little commonality among them except they are all highly populated and have large class size in schools. Students do not share a lot of common attitudes which means we cannot draw conclusions on how their attitudes impact on their performance.

A post TIMSS student questionnaires were used to elicit information such as attitudes towards mathematics, time spent on mathematics and confidence in doing mathematics. Contrary to common beliefs, Asian students displayed negative attitudes towards mathematics and attach less importance to mathematics (Leung, 2002). As well, they lacked confidence in doing mathematics and their self concept in mathematics was lower than the international average. It was also found that they did not seem to spend more time in studying mathematics (except students from Singapore). Neither their families nor their governments spent a lot of money in their education. For example, Canada and Australia government allocate 6.9% and 5.5% of GNP while all Asian countries in this study are below the countries average (Leung, 2002).

Confucian Heritage Culture (CHC) learner's phenomenon

Hong Kong, Taiwan, Korea and Singapore are the only four Asian countries participating in TIMSS but students from these places outperform their counterparts. Despite their difference in social and educational landscapes as well as indigenous cultures, these countries share a commonality which is the 'Confucian Heritage Culture' (Biggs, 1996; Leung, 2002). The values and practices in these countries are, to a more or less extent, impacted by the Confucian values such as humility, perseverance, obedience and diligence. It is commonly believed in CHC that having academic achievements, which also results in greater capacity to climb the social ladder, is a means to honour one's family. In fact the Chinese proverb '光宗耀祖' literally means 'to honour your ancestors', which is often used as a compliment to students who have high performance.

Confucius (551-479 BC) believed that the only real understanding of a subject comes from long and careful study. In CHC learning context, diligence is encouraged because continuous practice (repetitive learning) is a way to bring deep understanding of the knowledge to the learner – 'Learn and practise your knowledge frequently' (Analects, 1:1 學而時習之, 不亦說乎《論語》1.1). However, Chinese students are sometimes criticised for a lack of creativity and problem solving skills as they memorise content and application of the knowledge is limited. Biggs (1994) defends this criticism by distinguishing rote learning from repetitive learning which is the technique Chinese

students use to enhance their learning. In fact, the importance of repetitive learning was advocated by 朱子 'Zhu Xi' (Neo-Confucian scholar, 1130-1200). 'The method to studying is, to read (the materials) once, (you) reflect on it; reflect on your materials, then study them again' (Juan / Volume / Book 10 讀書之法, 讀一遍了, 又思量一遍; 思量一遍, 又讀一遍《朱子語類》卷十). This practice reflects Chinese students' belief that learning is a serious endeavour which is a gradual process that requires dedication and hard work. Deep understanding is a process of thinking, reflection and practice rather than a sudden insight which American students believe to be (Li, 2004a). Interestingly, a study which aims to find out the perception and construal process of Chinese and US pre-schoolers (Li, 2004b) seem to echo these findings. It is found that Chinese pre-schoolers perceive the learner's efforts such as diligence, persistence and concentration in completing the task, whereas US pre-schoolers focus on the ability and task attempting of the learner. Since those are preschool children of age 4-6, it appears that family factors contribute significantly to the difference.

Confucius advocates for 'teaching without class (Analects, 15:38 有教無類《論語》15.38)'. As a result, instead of a privilege which only benefits the members in the royal family or the elite in the society, education has become available to the general public in China since then. Examination system has then provided a route for upward social, political and economic mobility for people from all classes (Riley, 1973, cited in Hess, Chang & McDevitt, 1987). In other words, besides the facilitation of intellectual development, education possesses a value to each individual. The function of education has been conceptualised by Sue and Okazaki (1990) in their idea of relative functionalism which argues that education serves as a means for upward social mobility. They point out that 'behavioural patterns, including achievements, are a product of cultural values and status in society (minority group standing)' (Sue & Okazaki, 1990, p. 917). Despite being criticised as 'misleading' (Lynn, 1991), as they did not include some large scale cross cultural IQ studies when grounding their proposition, Sue and Okazaki have, however, pointed out the complexity of investigating academic performance of minority groups in the host country.

What impact does immigration bring to immigrant children's mathematics performance? Hao & Bonstead-Burns (1998) argued that immigrant status increases both Chinese parents' and children's educational expectations in America. Fuligni (1997) also found that first and second generation immigrant children from Latino, East Asian, Filipino and European backgrounds received higher grades in mathematics and English than their peers from native American families. As such, it appears that besides their IQ, immigrant students' achievements in mathematics is also impacted by factors such as motivation, family beliefs and expectations, which are likely to be mediated by their immigration experience.

As discussed before, one commonality shared by the Asian countries whose students outperform in mathematics assessment is that they all share the CHC. Confucianism almost seems to be the answer to a lot of the questions. A number of researchers have examined the CHC and explore its link to children's academic performance (see, for example, Leung, 1999; Wong, 2004).

Wong (2004) has given a detailed account of the CHC Learner's Phenomenon. She has also reminded us not to 'over-Confucianise' the phenomenon as CHC is also affected by other ideologies and traditions such as Daoism and Buddhism. As well, the indigenous discourses in education cannot be overlooked. After all, learning is a social activity which happens in a social context which encompasses the culture of the people and place. Wong (2004) devises a 'CHC script' which identifies some descriptions of the CHC learning environment which demonstrate some fundamental differences from what can be found in the western classroom. It was found that teachers in the CHC learning environment are well prepared for their teaching, and students are obedient and attentive in class. The protocols and classroom culture are also different from that of the western classroom. For example, students seldom interrupt the flow of the teaching by asking questions and teachers do not attempt to cater for individual differences in class yet. However, they do provide students with a lot of after-class learning and guidance. Teachers also see the moral responsibility of providing individual care. In other words, they are teachers of the students both inside and outside the classroom.

These unique characteristics of CHC learners are also evident in Li (2004a) who pointed out the differences in cultural beliefs about learning between the Chinese and US students. It is found in his study that Chinese students see a set of purpose of learning which 'focus on perfecting oneself morally, acquiring knowledge and skill for oneself, contributing to the society, and obtaining social respect/mobility' (p.148), which can be achieved by acquiring learning virtues such as diligence, endurance of hardship and perseverance.

Detaching from the boundary of studying Chinese students' mathematics performance at national level, the CHC paradigm provides a more refined categorisation to understand Chinese culture. The similarity (Confucian heritage) in differences (nation states) in fact provides an overarching understanding of the cultural and family factors studied in search of an explanation to the phenomenon. It helps to explain why Chinese parents' expectations are so high, why they spend more time and resources in their children's learning, it also helps us to understand why Chinese students are so diligent.

Blind application of Chinese ways of learning in a different culture, however, is likely to be ineffective if not futile. Teaching and learning mathematics is a cultural practice. Embedded in this cultural practice are the language, history and practices of the 'people' and the 'place'.

Research on Chinese students' outstanding mathematics performance

Studies in mathematics performance often compare students' performance at national level. Otherwise they are studied as a homogenous group which share similar if not the same characteristics. As a result, findings are easily comparable and generalisation can be drawn. However, these studies do not allow much room for situated-ness of individual circumstances and choices in the learning of mathematics. Internal variations in beliefs and values within the groups are often omitted. As well, studies tend to focus on looking for the practices that contribute to their success (Hess, Chang, & McDevitt, 1987; Huntsinger, Jose, Liaw, & Ching, 1997; Stevenson & Stigler, 1992). Limited research has investigated what maths learning and performance mean for the families, the stakeholders who have not been given a voice in the search of understanding the phenomenon. How do they position themselves in Australia as a cultural subject, and how does this positioning impact on the children's mathematics performance?

It is crucial to distinguish between understanding Chinese families and studying Chinese family beliefs and/or expectations which has been well documented (Hess, et al., 1987; Huntsinger, et al., 1997; Stevenson, Stigler, Lee, & Lucker, 1985). Understanding Chinese families is not only about finding their beliefs and practices in education but trying to know other aspects of their life. It is to understand their life history, their family history, their aspirations and their concerns. In other words, the aim should be to understand them as subjects in this diasporic context, how they make sense of whom they are and what they are becoming.

Two 'points' were noted in the process of researching into this phenomenon. First, despite the continuous commitment of researchers from different disciplines who devoted themselves in investigating the phenomenon since 1980s (Dandy & Nettelbeck, 2002; Leung, 2002; Li, 2004c; Lynn, 1991; Lynn & Mikk, 2007; Stevenson & Stigler, 1992; Stevenson, et al., 1985; Sue & Okazaki, 1990; Wong, 2004), results are still inconclusive. Second, it has been found that most research was large scale and was done in the United States. Australia has contributed only a small portion to the wealth of knowledge derived from the investigation. Educational research is always contested but it would be timely for Australian researchers to investigate this phenomenon in the Australian context and provide research information to inform policy decisions. It is the aim of this study to provide an avenue for Chinese families to tell the wider community who they are. As well, it will provide a platform for communication between Chinese families, schools and the community.

Conceptualising mathematics learning - mathematics learning as a cultural practice

Mathematics ideas are often seen as 'universal truth' which is culture-free. This misconception can be explained by the versatility of mathematics in the sense that by using only the symbols and numbers, two persons from different cultural backgrounds are able communicate in a mathematics situation. It seems that mathematics ideas can be decontextualised and abstracted in such a way that they can be used and manipulated everywhere. In this sense Mathematics ideas do display

some universal qualities. However, this attempt to understand mathematics ideas as universal truth not only over-simplifies the discussion of the nature of mathematics, but is problematic in essence. Mathematics is a cultural product which is neither culture-free nor value-free (Bishop, 1988). Rather, it encompasses a range of cultural values and beliefs. Just like language, religious beliefs and rituals, mathematics ideas are sets of symbols, 'a technology', which engage people from the same culture to communicate with each other as well as the environment (White, 1959, cited in Bishop, 1988). Despite some of the overt similarities of mathematics ideas in all cultures (such as symbols), each culture has its own mathematics ideas and values which are unique to its people. Wang and Lin (2005) argue that mathematics is a 'culturally scripted activity whose outcome is a function of interrelated factors and environments'(p. 10). In other words, each culture generates its own mathematics ideas which are embedded with its own values.

As a result, cultural values are reflected in the language, pedagogy, curricula as well as the social dynamics between teachers and students in a classroom. A multi-ethnic classroom in Australia sees what Bishop (1988) called a 'cultural interface' in which different values are confronted by each other, and teachers and students are influenced by the value-conflicts on the mathematical learning experience. Values are being negotiated constantly by the individuals who participate in the process through a range of approaches, namely, cultural blind, assimilation, accommodation, amalgamation and appropriation (Seah & Bishop, 2001).

Research context

Minority groups residing in a host country are often seen as homogeneous. Wang (1999) reminds us to be extra careful and sensitive in using the word diaspora, to avoid the assumption that there is a single (Chinese) diaspora. There are many Chinese diasporas living in different parts of the world, which may share the same cultural origin but profoundly different experiences.

Diaspora can be understood as a people dispersed throughout the world, by force or by choice. However, this physical separation does not mean a disconnection with the homeland. In fact, diasporas try to connect and build the ties and attachment with their homelands (Ang, 2001). Curthoys (2001) defines diaspora as 'the development through migration of dispersed communities that relate not only to their nation of residence but also to a homeland or each other' (p19). She further suggests that the term has become more 'elastic' in the modern situation, which includes immigrants, expatriates, refugees, guest worker and the exile. What is important here is not the definition of the term but the understanding of the heterogeneity of the people in our discussion.

When discussing the danger of blind application of western concepts to children in a different culture, Li (2004) pointed out the different sets of values that may exist between the teachers and students. In Australia, the curricula and pedagogy employed in classroom reflect the Australian culture and values. They are meant to be the most suitable and relevant for the teachers and

students. However, it is not uncommon to find students from diverse cultural backgrounds in any Australian classrooms, who embody different cultural values and beliefs as well as practices and expectations. Poor performance of children from other cultures is often explained by the gap between the school and classroom culture and that of the families. In other words, this incongruence accounts for the low academic performance of some of the immigrant children. Chinese students, however, are found to outperform their peers in school, especially in mathematics and science. It seems that they are not much influenced by this cultural gap in school.

Theoretical framework

Identity is a temporary suture, a connection point, of self to discourses which flow and change continuously. Constructed across different, often intersecting or conflicting discourses and positions, identities are always fractured, fragmented and multiple (Hall, 1996). They are constantly challenged and being negotiated within, not outside, discourse. They are never unified or complete. As well, identities are constructed through differences – what we are not (Hall, 1996). As such, Interpretation and understanding of identity should be conducted at a historic and institutional site, and within specific discursive formation and practices. Cultural identity, therefore, can only be read against what the host identity is not.

In conceptualising culture, Lowe (2003) argues that it has to be examined both horizontally with the intersection of age, gender and national origin, and vertically through the transmission of cultural values through generations. As identities are constructed in the connection of self to discourse, individual's identity should also be examined both horizontally and vertically. Identities undergo constant transformation and position us in the interplay between culture and history (Hall, 2003). As such, in order to understand one's identity, the political and social discourses in a context should be interrogated and their intersection with the identities examined. Family narratives which are the important source for the transmission of cultural values should be also heard. Identity construction is not a one-sided process. Instead, we are not 'hailed' by but articulate to the discourses in the construction (Hall, 1996, p6). Construction of cultural identity can be seen as 'work-in-progress' in the process of acculturation for the diaspora.

The boundary and definition of diaspora is always unstable and blurry. Curthoys (2001) argues that diaspora communities construct and maintain their distinctiveness in the host country alongside with their accommodation of the local culture. Culture-maintenance engines such as ethnic language schools, ethnic shops and communities become the pivotal space for acculturation of the culture (Curthoys, 2001). However, it is necessary to clarify *which* culture diaspora are acculturating to. It is neither the host (eg. Australia) culture nor the original culture of the homeland (eg. China). It is a mixture of both. Diasporic culture is different from the original culture in the sense that it might have the shape of the original culture but not necessary the essence of it. As

Ang (2001) points out, there is a complex and blurred relationship between the diaspora and their homelands. Diaspora have the desires to build connections and attachment to the homeland. Bringing in cultural artefacts from the homeland is a way to build this emotional tie. Collective memory which is sometimes beautified and reconstructed reassures diaspora of their ties to their homeland. However, the authenticity of the artefacts is diluted in a foreign culture. As such, diaspora is not a stable but fluid construct which is being articulated by the people 'inside'.

When trying to understand diasporic identity, it is important to understand how Chinese diaspora interpret Chineseness in Australian context. Chineseness is not a pre-given. It is being articulated and renegotiated by people both 'outside' and 'inside'. Chinese living in China would have a different interpretation of what it means to be a Chinese. A lot of Chinese diaspora may be satisfied to keep the language and some of the practices in Australia (Ref).

Methodology

An ethnographic study

Adopting an ethnographic approach, this study aims to investigate an aspect of Chinese diaspora in Sydney. Ethnography is the study of a cultural group which, in this study, refers to the Chinese immigrants living in Sydney. Ethnographic research explores life from the perspective of the participants and interprets meanings from within a culture. The goal of ethnographic research, however, is not simply the collection of data to understand, discover and describe what the experience is, but explore and interpret why it is (O'Leary, 2010). In order to seek knowledge and understanding of how participants interpret a way of life, researchers have to gather 'thick descriptions' from the group by immersing themselves within the culture (O'Leary, 2010, p.116).

Case study research

Case Study research is chosen as the method to investigate the issues in this study because the phenomenon being studied is not 'readily distinguishable from its context' (Yin, 2003). Case study has been widely adopted as a research tool in different disciplines as it has the advantage of providing a naturalistic and holistic view between the individuals, groups or organisations in real life situations. In the context of this research, participant's perception of own cultural identity is a function of the interactions in the matrix of his/her life experience, cultural heritage and the local context. In other words, both the self and the context become very significant parts of study, which often creates some technical challenges in data collection and analysis.

One of the challenges will be the range of variables exists in the context which may diffuse researcher's attention on the focus of the research. Each individual family is a case in this study. Researcher has to gather information from this complex entity which consists of a few people, with each of them holds different ideas and subject position in the discourse of Chineseness. A range of

information needs to be collated to provide a rich and thick description of the family. The width and breadth of the information collected may distract researcher's attention of the expectations and aim of this study. Reflecting on the information and referring back to the research questions regularly should help the researcher to focus on the objective of the research and avoid being confused by the magnitude of the information.

In this study, a case is defined as a family being studied. Twelve (12) cases will be chosen to contribute to the findings of this research (criteria for selecting families will be discussed in the next section). Initially questionnaire will be sent to 3 schools which have a high Chinese population. Data will be analysed and compared. No more than 12 families participate in this study because as suggested by Hammersley and Gomm (2000), with 'other things being equal, the fewer cases investigated, the more information can be collected about each of them' (P.2). Researchers have to gather a range of artefacts in considerable depth in order to understand one's life experience and hence perception of identity.

Criteria for choosing participants

Questionnaire will be sent out to three (3) public primary schools in Sydney. These schools are considered as suitable sites for investigation as they all have a high Chinese student population. Chinese families are defined as families which speak any of the Chinese dialects at home. One (1) questionnaire which is to be filled out by a parent(s) will be sent out to each family. Cortes, Rogler and Malgady's Bicultural Scale which is to measure participants' cultural identity will be included in the questionnaire. This instrument was tested and validated by Mezzich, Ruiperez, Yoon, Liu, and Zapata-Vega (2009). It is concluded that this scale is easy to use and has strong test-retest reliability. Construct validity is measured and internal consistency of the test is high. It is a 'brief and efficient' instrument which will add some knowledge into the background of the participants.

Four (4) groups of families namely bicultural, culturally marginalised, culturally traditional and acculturated will be identified by this instrument. Three (3) families from each group will be invited to participate in the next stage of the research. Selection criteria for these families are as follow - 1. Those who provide detailed information in the questionnaire, as it suggests willingness to disclose information and displays interest to the research; 2. Families from diverse background as this will provide diversity in the data collected.

Each of the 12 families will be provided with a journal diary to record information of their children's after school activities/experiences for a week. Time, place and nature of the activity as well as the responses of the child(ren)'s will be recorded. The information collected will be mapped with the data received from the questionnaire and used as the basis for developing questions for the subsequent interview.

A 60-90 minute interview will be conducted with parent(s) after the journal diary is received and data analysed. 30 minutes will be allocated for clarifying information elicited from questionnaire. The rest of the time will be allocated for participants to provide information about their life history. Oral history is one of the methods adopted in data collection. It consists of gathering personal reflections of events in life. It allows participants to feel free, get heard and break some of the social and psychological bonds of silence (Creswell, 2007). Researchers can have a better understanding of the weight the participant gives to the events chosen to be told and the contexts in which they have lived (Horsfall & Titchen, 2007). As a result, researchers can seek to understand and illuminate participants lived experiences. Interview will not go beyond 90 minutes. However, with the consent of the participants, another interview may be conducted if necessary.

Self as an instrument

Despite a precise definition and consensus in the application on auto-ethnography is much wanted, it is still a term being used widely but differently by social scientists (Ellis & Bochner, 2003). As the term itself implies, it is a process (graphy) of the study of a culture (ethno) in which the researcher's self (auto) is part of the process. It is a continuum which different researchers engage themselves differently, even at different stages of the research process. Ellis and Bochner (2003) use the idea of 'ethnographers gaze', which zooms inward and backward, forward and backward, between the personal and cultural, to visualize the shift in focus in the research process.

As such, there is an array of approaches and use of different terms associated with auto-ethnography. Narratives of self, critical autobiography, self-ethnography, personal writing, reflexive ethnography, native ethnography – just to name a few. This research is going to adopt the approach of reflexive ethnography in which the research is not primarily interested or focused on the researcher's own experience as a member in the culture, but her experience will elucidate some aspects of the experiences of Chinese migrants. Like other ethnographic studies, reflexive ethnographies range along a continuum from starting to research on the researcher's experience to where her experience is actually studied with other participants (Ellis & Bochner, 2003). This research will start from looking at the researcher's own story as a Chinese migrant in Australia. Her experience will be deconstructed and reflected upon before research data is displayed. Researcher's own experience is not studied with those of other participants as this will allow more room for self-other interaction in the research process and still allows the researcher to maintain an objective positioning. Readers are invited to take an active role to understand the author's and participants' worlds.

This is a study of 'self', in which the researcher and the researched are engaged in ethnographic dialogues that provide the platform for both to understand who they are in this diasporic context. The researcher uses her dual positionality as a bicultural subject to problematise the distinction

between observer and observed, insider and outsider. As a member in this Chinese diaspora her subjectivity provides her with a useful lens to understand the data. This understanding will provide some insights into the position and importance of mathematics performance in the Chinese family.

Significance of research

The significance of this project is that methodologically it investigates issues in a way that is not much used with this ethnic group and in doing so will contribute to a better understanding of the idea that Chinese born people are naturally superior at mathematics. Ien Ang claims her autobiographic tales of Chineseness 'are meant to illuminate the very difficulty of constructing a position from which I can speak as an (overseas) Chinese...' (Ang, 2001, p. 24). While the researcher cannot speak *for* other Chinese immigrants in terms of their positioning in this diasporic culture, she can speak for herself. Including her identity in this study serves a purpose, which makes the identity useful in the interpretation of data (Ang, 2001). An attempt to display and deconstruct own life history in a research is neither a self indulgent nor an ego-blowing exercise for the researcher. It may be a risky but definitely not a thoughtless approach. In fact it takes a lot of courage for her to display her 'self' in public.

References

- Ang, I. (2001). *On not speaking Chinese : living between Asia and the West* London: Routledge.
- Biggs, J. (1996). Western misperceptions of the Confucian-heritage learning culture. In D. Watkins & J. Biggs (Eds.), *The Chinese learner: cultural, psychological, and contextual influences*. Hong Kong/Melbourne: Comparative Education Research Centre/Australian Council for Educational Research.
- Bishop, A. J. (1988). Mathematics education in its cultural context. *Educational Studies in Mathematics*, 19(2), 179-191. doi: 10.1007/bf00751231
- Creswell, J. (2007). *Qualitative Inquiry Research Design: Choosing Among Five Approaches*. U.S.: Sage.
- Curthoys, A. (2001). 'Chineseness' and Australian Identity. In H. Chan, A. Curthoys & N. Chiang (Eds.), *The Overseas Chinese in Australasia: History, Settlement and Interactions*: Taipei : Interdisciplinary Group for Australasian Studies (IGAS) and Centre for the Study of the Chinese Southern Diaspora.
- Dandy, J., & Nettelbeck, T. (2002). The Relationship Between IQ, Homework, Aspirations and Academic Achievement for Chinese, Vietnamese and Anglo-Celtic Australian School Children. *Educational Psychology: An International Journal of Experimental Educational Psychology*, 22(3), 267-275.
- Ellis, C., & Bochner, A. (2003). Autoethnography, personal Narrative, Reflexivity. In N. Denzin & Y. Lincoln (Eds.), *Collecting and Interpreting Qualitative Materials*. USA: Sage.
- Fulgini, A. J. (1997). The academic achievement of adolescents from immigrant families: The roles of family background. [Article]. *Child Development*, 68(2), 351. doi: 10.1111/1467-8624.ep9706130503
- Hall, S. (1996). Introduction: Who Needs Identity? In S. Hall & P. d. Gay (Eds.), *Questions of Cultural Identity*. London: SAGE Publications Ltd.
- Hall, S. (2003). Cultural Identity and Diaspora. In J. E. Braziel & A. Mannur (Eds.), *Theorizing Diaspora*: Blackwell Publishing Ltd.
- Hammersley, M., & Gomm, R. (2000). INTRODUCTION. In R. Gomm, M. Hammersley & P. Foster (Eds.), *Case Study Method*: SAGE.
- Hao, L., & Bonstead-Bruns, M. (1998). Parent-Child Differences in Educational Expectations and the Academic Achievement of Immigrant and Native Students. [Article]. *Sociology of Education*, 71(3), 175-198.
- Hess, R., Chang, C.-M., & McDevitt, T. (1987). Cultural Variations in Family Beliefs About Children's Performance in Mathematics: Comparisons Among People's Republic of China, Chinese-American, and Caucasian-American Families. *Journal of Educational Psychology*, 79(2), 179-188.
- Horsfall, D., & Titchen, A. (2007). Telling Participants' Stories. In J. Higgs, A. Titchen, D. Horsfall & H. Armstrong (Eds.), *Being Critical and Creative in Qualitative research*. Sydney: Hampden Press.
- Huntsinger, C., Jose, P., Liaw, F.-R., & Ching, W.-D. (1997). Cultural Differences in Early Mathematics Learning: A Comparison of Euro-American, Chinese-American, and Taiwan-Chinese Families. *International Journal of Behavioral Development*, 21(2), 371-388.
- Leung, F. K. S. (2002). Behind the High Achievement of East Asian Students. *Educational Research and Evaluation: An International Journal on Theory and Practice*, 8(1), 87 - 108.
- Li, J. (2004a). A Chinese Cultural Model of Learning. In Fan Lianghuo, Wong Ngai-Ying, Cao Jinfa & Li Shiqi (Eds.), *How Chinese Learn Mathematics: Perspectives from Insiders* (Vol. 1). Singapore: World Scientific Publishing Co. Pty.Ltd.
- Li, J. (2004b). Learning as a Task or a Virtue: U.S. and Chinese Preschoolers Explain Learning. *Developmental Psychology*, 40(4), 595-605.
- Li, J. (2004c). Parental expectations of Chinese immigrants: a folk theory about children's school achievement. *Race, Ethnicity and Education*, 7(2).
- Lowe, L. (2003). Heterogeneity, Hybridity, Multiplicity: Making Asian -American Differences. In J. E. Braziel & A. Mannur (Eds.), *Theorizing Diaspora*: Blackwell Publishing Ltd.

- Lynn, R. (1991). Intelligence in China. *Social Behavior and Personality: an international journal*, 19, 1-4. doi: 10.2224/sbp.1991.19.1.1
- Lynn, R., & Mikk, J. (2007). National differences in intelligence and educational attainment. *Intelligence*, 35(2), 115-121. doi: 10.1016/j.intell.2006.06.001
- Mezzich, J., Ruiperez, M., Yoon, G., Liu, J., & Zapata-vega, M. (2009). Measuring Cultural Identity: Validation of a Modified Cortes, Rogler and Malgady Bicultural Scale in Three Ethnic Groups in New York. *Culture, Medicine and Psychiatry*, 33(3), 451.
- Seah, W. T., & Bishop, A. J. (2001). *Crossing cultural borders: The negotiation of value conflicts by migrant teachers of mathematics in Australia*. Paper presented at the 2001 Annual Conference of the Australian Association for Research in Education Fremantle, Australia. <http://www.aare.edu.au/01pap/sea01394.htm>
- Stevenson, H., & Stigler, J. (1992). *The learning gap : why our schools are failing and what we can learn from Japanese and Chinese education*. New York: Summit Books.
- Stevenson, H., Stigler, J., Lee, S.-Y., & Lucker, G. (1985). Cognitive performance and academic achievement of Japanese, Chinese, and American children. *Child Development*, 56, 718-734.
- Sue, S., & Okazaki, S. (1990). Asian-American Educational Achievements: A Phenomenon in Search of an Explanation. *American Psychologist*, 45(8), 913-920.
- Wang, G. (1999). *Imagining the Chinese diaspora : two Australian perspectives/Wang Gungwu, Annette Shun Wah*. Canberra: Australian National University.
- Wang, J., & Lin, E. (2005). Comparative Studies on U.S. and Chinese Mathematics Learning and the Implications for Standards-Based Mathematics Teaching Reform. *Educational Researcher*, 34(5), 3-13.
- Wolcott, H. F. (1999). *Ethnography: A Way of Seeing*. Lanham: Altamira Press.
- Wong, N.-Y. (2004). The CHC Learner's Phenomenon: It's Implications on Mathematics Education. In L. Fan, N.-Y. Wong, J. Cao & S. Li (Eds.), *How Chinese Learn Mathematics: Perspectives from the Insiders* (Vol. 1, pp. 503-530). Singapore: World Scientific Publishing Co Pty. Ltd.
- Wu, M. (2006). A Comparison of Mathematics Performance between East and West: What PISA and TIMSS Can Tell Us In F. K. S. Leung, K.-D. Graf & F. J. Lopez-Real (Eds.), *Mathematics Education in Different Cultural Traditions: A Comparative Study of East Asia and the West. The 13th ICMI Study* (Vol. 9). New York: Springer.
- Yin, R. (2003). *Applications of Case Study Research* (2nd ed. Vol. 34). California: SAGE Publications, Inc.