

# Digital equity in cultural context: exploring the influence of Confucian heritage culture on Hong Kong families

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**Abstract** Our study examines digital equity in a cultural context. Many studies have used classic analytical variables such as socioeconomic status and gender to investigate the problem of unequal access to, and more recently differences in the use of, information and communication technology (ICT). The few studies that have explored cultural variables have usually focused on theory or considered culture as a background dimension. Our study's central thesis is that cultural context plays a crucial role in shaping parents' ICT-related child-rearing practices. In a case study of 22 Chinese students who share the Confucian heritage of Hong Kong, we demonstrate the importance of cultural dimensions of students' ICT use, and examine how cultural values are associated with digital equity. Our findings reveal that Confucian values influence aspects of family/social relationships, in particular whether students receive adequate and appropriate ICT resources and use ICT effectively, which are essential aspects of digital equity.

**Keywords** Digital equity · Confucian values · Parenting practices · Family relationships

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## Introduction

Students are now exposed to a broad range of new and rapidly changing digital technologies in their formal and informal learning environments. The digital divide has traditionally been defined as the gap between those who have access to computers and the Internet and those who do not (Van Dijk 2012). A number of studies show that inequalities have not disappeared in the networked society. Greater access to information and communication technology (ICT) does not necessarily imply the reduction or elimination of family-related disadvantages (Yu et al. 2012a). The home environment is important for the growth and development of young people, and parents have a significant influence on their children's achievements (Spera 2005). Family is therefore an appropriate context for investigating students' experience of ICT use. Furthermore, students' interactions with digital technologies can involve emotions, values, ideals, and intentions (McCarthy and Wright 2004). We argue that digital equity also needs to be explored within particular cultural contexts. The cultural context in which human communication occurs is perhaps the strongest influence on human interactions (Jandt 2013), as culture is 'an agent for change' according to its original concept (Bauman 2011, p. 6).

Confucian values are institutionalised and systematically reinforced in East Asian countries and the major aspects of Confucian tradition have shaped and influenced East Asian family life (Park and Chesla 2007). Confucian values are shared by many Chinese families residing in societies with different political structures, such as mainland China, Hong Kong, Taiwan and Singapore. This suggests that Chinese cultural values are transmitted through the expectations and behaviour of parents, and that Confucian values will continue to influence contemporary Chinese societies (Rao and Chan 2009). Cheng (2004) reviewed the studies on moral education in Hong Kong from 1973 to 2003. Through an examination of the history of immigrants to Hong Kong and the recollections of three generations spanning 1945–2003, Cheng (2004) argues that Confucian parental morals have shaped the development of family education in Hong Kong from 1973. Within Chinese families, the parental influence is oriented by a Confucian moral source, which emphasises such virtues as diligence, perseverance, self-reliance, benevolence, and duty. However, in the digital era, the influence of Confucian values on family education and ICT use needs further attention.

There has been a great improvement in school and home access to ICT in Hong Kong since the first five-year strategy for ICT in education was launched in 1998 (Yuen et al. 2016a). Recently, students' access to computers and the Internet at home has reached almost 100% (Law et al. 2015), and ICT has been completely integrated with the everyday lives of Hong Kong students (Yuen et al. 2016b). However, as shown in Yuen et al. (2016a), digital inequity in student's home ICT access and use still exists. The present study investigates the digital equity issue in Hong Kong with a focus on parenting practices and family relationships. The central question is whether Confucian values influence parents' support of and attitudes towards their children's ICT access and use. This study seeks to address two research questions: (1) Are there inequities in students' ICT use, particularly in terms of the effective use of ICT? (2) How do Confucian values influence parents' ICT-related child-rearing practices in relation to digital inequity?

## Literature review

### Confucian heritage culture and family relationships

Since the mid-1980s, the phenomenon of Confucian heritage culture (CHC) learners' success in academic fields has drawn considerable attention from international scholars (Park 2011). Studies have shown that students from Asian regions with a strong Confucian influence, such as China, Japan, Korea and Vietnam, perform better in academic attainment tests than do Western students and students from regions influenced by the Buddhist tradition, such as Laos and Cambodia (Brand 1987, cited in Lam et al. 2002, p. 100). Studies of CHC suggest that CHC learners, parents and education share some cultural traits that contribute to excellent academic performance. Achievement-orientation, collectivism, high expectations of parents and attribution of success to students' efforts have been proposed as explanations of the phenomenon (Wong 2008). At the same time, many studies have examined the negative effects of CHC, including obedience to authority, passivity in class, a lack of critical thinking and inadequate learning strategies. Biggs (1996) takes a systems approach to teaching and learning and provides a critical review of the conflicts between the negative and positive effects of CHC and suggests that such conflicts require further exploration.

Although the debate continues, CHC can provide a fruitful theoretical approach to the study of education in specific cultural contexts (Rao and Chan 2009). Studies on CHC in education have proliferated since the mid-1990s (Watkins and Biggs 1996, 2001). Some scholars have revisited the concept of CHC in changing educational contexts. Li (2009) argues that Chinese beliefs about learning centre on a set of purposes, which focus on 'perfecting oneself morally and socially, acquiring knowledge and skill for oneself, establishing oneself economically, achieving social status and honour, and contributing to society' (p. 61). The effect of CHC on Hong Kong students' learning has been carefully examined (Thomas 2006).

Furthermore, traditional expectations of 'teachers as parents' still exist in the CHC context (Pratt et al. 1999). As a British colony for more than 150 years, Hong Kong's education system is fairly Westernised. Many scholars have explored the cultural differences and potential cultural conflicts between Western-style educational strategies in the Confucian cultural context of Hong Kong schools (e.g., Walker and Dimmock 2000). However, as Cheng (2004) argues, the moral values and family education within Chinese families in Hong Kong remains oriented by Confucianism. Thus, our study focuses on the influences of Confucianism on relationships among family members and the family-school relationship.

The core of Confucianism is the Chinese perception of social relationships, which is different from Western individualism (Fei 1992). The basic characteristic of Chinese social structure is the Confucian *renlun* (human relationship). Unlike the Western emphasis on individualism, autonomy and equality, the term *lun* expresses a very different attitude: 'everyone should stay in his place [because] toward the intimate, there is only intimacy; toward the respected, only respect; toward superiors, only deference; between men and women, only differences; these are things that people cannot alter' (Fei 1992, p. 66). In the Doctrine of the Mean (*Zhongyong*), the five relationships (monarch and subject, father and son, husband and wife, older and younger siblings, and friends) are regarded as passages to the world (*tianxia zhi dadao*). The Great Learning (*Daxue*) defines the link between the individual and society, and this connection is only possible through the family. Public order is achieved by moving towards the centre of discrete circles; that is, towards the family (Fei 1992).

In the Chinese cultural context, family is the basic unit for self-cultivation, and everything begins with self-cultivation and eventually leads to peace in the world. The Chinese saying of ‘*xiu shen, qi jia, zhi guo, ping tian xia* (if there is light in the soul, there will be beauty in the person, if there is beauty in the person, there will be harmony in the house, if there is harmony in the house, there will be order in the nation, if there is order in the nation, there will be peace in the world)’ (Shek 2006, p. 276), which is summarised in *Daxue*, reflects traditional Chinese thinking about the family’s role in education and cultivation. In a review of Chinese family research literature, Shek (2006) argues that there are three important characteristics of traditional Chinese family values. First, the Confucian concept of *wu lun* (the five cardinal relations) emphasises filial piety; filial piety is the most important behaviour and children are ‘expected to bring honour to the family’ (p. 276). Second, with reference to the five cardinal relations, children are socialised to obey their parents unconditionally. Children are not expected to have their own views or to have privacy rights. Third, gender role differentiation is an important part of traditional Chinese culture and children are socialised into hierarchical gender roles. According to traditional Chinese values, men’s role is to ‘take care of things outside the family’ and women’s role is to ‘take care of things inside the family’ (p. 277). The husband is the master of the family and the wife should obey her husband.

### Confucian Heritage and Hong Kong families

The cultural characteristics of Confucianism still permeate contemporary Hong Kong society (Hofstede et al. 2010). The World Values Surveys, which survey 65 societies and 75% of the world’s population, suggest that a society’s cultural heritage affects values despite modernisation (Inglehart and Baker 2000). Based on research conducted in 53 countries and regions, Hofstede (2001) developed a framework for measuring cultural differences that has four dimensions: individuality/collectivism, power/distance (relative inequalities of power and wealth), uncertainty avoidance and masculinity/femininity. Hong Kong Chinese culture is characterised as being low on individualism and high on collectivism. Among 53 countries and regions, the individualism index value of Hong Kong ranked 37 and the power distance index values of Hong Kong ranked 15 and 16, parallel with France. The power/distance ratios for Hong Kong, which reflect relative inequalities in power and wealth, are relatively high. The masculinity index value of Hong Kong is 57 (with a mean of 49 and a standard deviation of 18), ranking 18/19 among 53 countries and regions, which parallel the scores for Greece. The strength of stereotypical masculinity/femininity roles is medium (Hofstede 2001). To examine masculinity and femininity in the family, Hofstede et al. (2010) divided the diagram of power distance versus masculinity into four quadrants. Hong Kong was almost in the middle of the diagram in the lower-right-hand quadrant, which ‘stands for a norm of a dominant, tough father and a submissive mother’ (p. 151). The family context in the aforesaid diagram depends on individualism/collectivism. Collectivist societies (such as Hong Kong) maintain extended family links with ‘the father as a model of obedience’ (p. 153).

Education is emphasised in the Confucian tradition. It is perceived as important for both personal improvement and societal development. Education is seen as the road to developing one’s fullest potential and to constructing a good society (Lee 1996). Empirical studies show that Hong Kong parents are willing to make sacrifices (e.g., the provision of financial and material resources) for their children’s education (Lam et al. 2002). Chinese parents have high expectations of their children and are very involved in their children’s education, regardless of their social or economic status. They send their children to school

not only to become knowledgeable about the world, but also to learn how to build social relations and, most important of all, to be morally cultivated (Li 2009). Prioritisation of education in CHC shapes the family–school relationship and parent–child relationship in contemporary Hong Kong.

At the same time, the Confucian image of the ideal teacher may influence parents' expectations about schools and teachers. According to Confucian values, the relationship between teacher and student is parallel to the relationship between parent and child. Effective teachers are often characterised as having a close and protective relationship with students, similar to that of a coach or even a parent (Pratt et al. 1999).

Chinese parents' high expectations for academic achievement may also shape the parent–child relationship. Such high expectations may make the parents exert strict parental control over their children. Self-cultivation (*xiu shen*), through which moral behaviour is developed, is strongly emphasised in Confucian thought (Shek and Chan 1999). Chinese parents generally regard academic achievement as very important and they expect children to study hard. They believe that diligence is the key to achieving success in life. Similarly, they disapprove of entertainment as it does not generally contribute to this goal (Shek and Chan 1999). Children's persistence and effort is seen as the key to success in education (Lam et al. 2002).

Filial piety is another important aspect of Confucianism and it is closely related to academic achievement. To exhibit filial piety, children are expected to bring honour to the family (Shek 2006). Traditionally scholastic success has been regarded as the passport to social success. Currently, in capitalistic Hong Kong, it is still common for academic excellence to act as a springboard for students to enter a money-making profession (Shek and Chan 1999). Virtue with regard to one's tasks in life consists of trying to acquire skills and education, working hard, not spending more than necessary and being patient and persevering (Nguyen et al. 2006). Filial piety is considered the first Confucian virtue and the foundation of all good conduct; it still strongly influences the learning motivation of Hong Kong students, although it is not the strongest factor. Hong Kong Chinese students seek to fulfil their filial obligation through academic achievement as an important way of repaying their parents and bringing honour to their family (Hui et al. 2011).

Confucian thought also shapes the gender relationship. In CHC countries, the traditional rules for women are called the '*three follows*': at home the woman follows her father, once married she follows her husband, and when widowed she follows her son (Nguyen et al. 2006). Lee (2002) argues that Hong Kong society is permeated with traditional gender ideology that is patriarchal in nature. This ideology regards the family as the 'natural' place of women. Men are encouraged to operate in the public sphere as the family's breadwinners and leaders of the household (Liong 2015). Moreover, as Fei (1992) points out, because according to Confucian thought men and women are different, 'there should be no intimacy in the interaction between men and women' (p. 91). Chinese social structures promote many associations between people of the same sex. For example, Brewer et al. (1987) compared seventh-graders' social judgements of the intimacy of interactions between the sexes. Their findings showed that Hong Kong children were particularly sensitive to gender as a determinant of preferred social interactions. In their friendship choices, a friend of the same gender was a more stable determinant of friendship patterns.

## Framing the study

The issues of digital equity can be examined in terms of various factors, including socioeconomic status (SES), income, level of education, ethnicity, gender, age,

connectivity and geography. A number of studies show that greater access to ICT does not necessarily imply the reduction or elimination of family-related disadvantages (Carveth and Kretchmer 2002; Angus et al. 2004; Becta 2008; Jewitt and Parashar 2011; Yuen et al. 2016a). As suggested by Van Dijk (2012), the digital divide can be differentiated according to four stages of access: motivation to access ICT, physical and material access to ICT, possession of digital skills to use ICT, and usage access measured by the number and diversity of ICT applications available. Many researchers have suggested that the focus of digital divide research has shifted from physical access to digital devices to effective ICT use and access (Van Deursen and Van Dijk 2014). Effective ICT use refers to the ability to use ICT to produce tangible outcomes that benefit economic, social, cultural, and personal well-being (Helsper et al. 2015). Thus, we examine digital equity in the family context by focusing on students' effective ICT use, and the dimensions of digital equity considered in the present study include whether students (1) receive adequate and appropriate ICT resources and parental support, (2) are able to use diverse advanced technologies and applications, and (3) are able to use ICT effectively to promote academic success and well-being.

We have discussed some important characteristics of traditional Chinese family values. The present study attempts to explore CHC's influence on Hong Kong families through the lens of three aspects of social relationships, namely family–school, parent–child and gender relationships. Our study locates digital equity in the family context, and argues that CHC shapes the social relationships within and around Chinese families, and these relationships influence the parenting practices and distribution of ICT resources to children as well as their ICT use. Confucian values can thus influence the effectiveness of ICT use and the potential implications of digital inequity.

## Methods

### Participants

We used a case study approach (Yin 1994) to investigate students' ICT use in Hong Kong families. We aimed to broaden our understanding of the complexity of digital equity, and whether CHC influences parenting practices and family relationships in relation to digital equity. The cases were individual students. We selected a set of students to represent a wide range of ICT experiences and backgrounds. The criteria for selection were as follows: (1) Chinese students from local schools and Chinese families; (2) students with different SES backgrounds; (3) students at different levels of education, from primary to secondary; (4) students who used ICT to different degrees, from low to high usage; and (5) a similar number of each sex. The participants were recruited using 'informal networks' and 'gatekeepers' strategies (Hennink et al. 2010). The research team consulted with principals or teachers in different schools to explore potential cases through informal networks, then the principals and teachers of the participating schools served as gatekeepers to suggest suitable participants according to the selection criteria. Final decisions about participation were made by formal negotiation between the research team and the schools. The participation of the schools was voluntary and no financial compensation was offered. The final sample comprised 22 cases (aged between 7 and 18) from 8 schools, reflecting a variety of student backgrounds (Table 1).

**Table 1** A summary of sample cases

School	School type	School academic performance	School ICT resources	Cases selected from the school (Gender, Grade)
A	Private primary school	Above average	Above standard	A2 (Male, Grade 3) A3 (Female, Grade 3) A4 (Male, Grade 3)
B	Public primary school	Average	Standard	B5 (Female, Grade 3) B6 (Male, Grade 3) B7 (Female, Grade 3)
C	Public primary school	Above average	Standard	C9 (Female, Grade 6) C10 (Male, Grade 6)
D	Public primary school	Average	Standard	D1 (Male, Grade 2) D8 (Female, Grade 4)
E	Public secondary school	Above average	Standard	E11 (Male, Grade 7) E14 (Male, Grade 9) E16 (Female, Grade 10)
F	Public secondary school	Below average	Above standard	F12 (Male, Grade 8) F13 (Female, Grade 7) F15 (Female, Grade 10)
G	Public secondary school	Above average	Standard	G18 (Female, Grade 12) G19 (Female, Grade 12) G20 (Male, Grade 12)
H	Public secondary school	Average	Standard	H17 (Male, Grade 12) H21 (Male, Grade 12) H22 (Female, Grade 11)

## Data collection

We collected data from multiple sources including interviews, documents and student reports. For each case, the following data were collected: three student interviews, one principal interview, one parent interview (4 father interviews and 18 mother interviews), one focus-group interview with teachers, one focus-group interview with classmates, four student bi-monthly reports, and the school's ICT plans or documents.

The individual and focus-group interviews (each with five or six participants) were conducted in Cantonese, and a combination of open-ended and semi-structured approaches was used. Student interviews focused on ICT use in different contexts and perceptions of parenting practices. Key questions included, How do you use ICT in and outside school? What is your attitude toward different ICT use? Do you discuss ICT use with your parents? Parent interviews aimed to understand the family context of student ICT use and parents' ICT-related child-rearing practices. Key questions included, Do you allow your children to use a computer/the Internet at home? What are the concerns? Have your children ever asked you to guide and support their ICT use? Altogether, 96 individual and 44 focus-group interviews were conducted and audio recorded.

## Data analysis

First, the research team transcribed the collected interview data. Data were then analysed using quantification methods and other techniques for data aggregation and reduction, such

as matrices and tables (Miles et al. 2014). We took a grounded approach using the constant comparative method (Strauss 1987) to provide within-case and cross-case analysis, drawing patterns between the ICT use described by students and other participants in the case studies.

The first step of the analysis included data coding and the identification of salient points or structures. Guided by the two research questions, a holistic coding approach (Miles et al. 2014) was applied. The research team followed the practical standards for coding procedures suggested by Miles et al. (2014) to ensure that the process of data analysis was consistent and the findings meaningful: (1) data quality checks were made; (2) data analysis was guided by the two research questions; (3) interrater agreement checks were made between the two coders; (4) rival explanations were actively considered; (5) findings were reviewed and discussed by the research team in a number of iterations. The interrater reliability for the two coders, who both coded all the segmented transcripts, was found to be  $\kappa = 0.74$  ( $p < 0.001$ ) indicating a good level of agreement (Viera and Garrett 2005). The coding category in which disagreements were most common was parenting practices. Interrater disagreements were resolved by careful deliberation.

## Results

The coded and classified data were conceptualised into five categories and 10 subordinate categories to address the two research questions. The first category targeted the first research question. We identified ‘access to ICT’ and ‘types of usage’ to illuminate the underlying digital inequity in the affluent social context of Hong Kong, where access to ICT infrastructure seems to be ubiquitous. We sought to shed light on the second research question through the other four categories. By analysing the academic use of ICT and ICT use at school, we explored how CHC shapes parents’ perceptions of their children’s academic success and the family–school relationship. Through analysing parenting practices and students’ reactions, we explored how the parent–child relationship is shaped by CHC. Finally, we explored how gender relationships are influenced by CHC. The differences and similarities of families in negotiating these three social relationships reveal how Confucian values influence parents’ ICT-related child-rearing practices, and thus the potential implications for digital inequity in CHC.

### Home ICT use

#### *Access to ICT at home*

The students were requested to submit three bi-monthly self-reports, which recorded their ICT use in and outside school. The reports indicated different frequencies of ICT use for various purposes both in school and at home, and showed that the students had spent more time on ICT at home than in school and the older the student, the wider the gap. Average daily home ICT use was 2 h (ranging from 15 min to 8 h). All students had physical access to ICT at home.

The interviews with students and their parents revealed that all students had motivation to access ICT at home, despite the differences in quality and quantity. Some students (five cases) had access to abundant sophisticated ICT devices. It was quite clear that all of the fathers in these families possess strong motivation and ability to use ICT.



- A4: Since Primary 1, my father has been teaching me how to use the iPad. We have an Apple computer and other kinds of computer at home.
- E11's mother: My husband enjoys using the latest technologies and always keeps up to date. We bought many gadgets before our children were born. Now they [her two sons] can use them too.

In contrast, the physical ICT access in other cases (17 cases) were average or even quite limited. Compared with the aforesaid five students, the quantity and quality of home ICT access among these students differed a lot. Due to the restriction on family resources, H21 had to share computer devices that could only perform basic functions with other family members. A similar situation was found in some other cases. For example, the mother of F13, whose family is working class, indicated that there is only one computer at home and they do not have any other ICT devices. Besides family resources, parental permission is another factor that influences students' physical access to ICT. Although some students possessed diverse ICT devices of relatively good quality, they were not allowed to access them. A typical case was F12, who possessed her own computer, iPad, and two mobile phones, but still had only average access to ICT.

- F12's mother: I don't allow her to go online at home. We monitor her at home and also control her access and use of ICT. [...] I will not allow her to bring the smart phone out. The one she takes to school is only able to make phone calls.

In some more extreme cases, students had very limited physical access to ICT due to both parental restriction and family resources. For example, E14 only had access to a second-hand computer without an Internet connection, and thus he could only search for online information through his mobile phone. His father later cut off the Internet connection at home and the financial support for his mobile phone.

### *Types of usage*

All of the students indicated that they possessed basic ICT skills and engaged in various ICT activities. These activities were classified into three general types of usage: learning and information seeking (e.g., using educational software to learn new things and obtaining information from the Internet), social media and entertainment (e.g., playing online games and using social media), and creative uses of media (e.g., constructing websites and creating photographs and other images).

Our findings are consistent with previous studies on the digital divide (e.g., Van Dijk 2012). Although motivation and physical access to ICT have been widely bridged, the skills to use ICT and usage access to ICT remain problematic. Some students (five cases), such as A2 and A4, demonstrated effective ICT use and could apply diverse applications to promote academic success and their social life; A2 was very familiar with Google Chrome, Microsoft applications such as PowerPoint, and eClass (the school learning management system) and A4 could use Google or Yahoo to search for information on things that he did not know or understand.

Compared with the above effective ICT users, other students reported that they were only able to use simple applications, mostly for entertainment, and some of them experienced ongoing negative consequences of excessive or uncontrolled ICT usage.

- B6: I play online games. It's OK to play [games] on the computer as long as you are not addicted to it.

**Table 2** Student ICT use and family background

Case	Student's ICT use	Parents' educational background	Family SES
D1	More entertainment than academic	Father: tertiary; Mother: secondary	High
A2	Effective use	Both parents: tertiary	High
A3	Effective use	Both parents: tertiary	High
A4	Effective use	Both parents: tertiary	High
B5	More entertainment than academic	Both parents: secondary	Middle
B6	More entertainment than academic	Both parents: secondary	Middle
B7	More entertainment than academic	Both parents: secondary	Middle
D8	More entertainment than academic	Both parents: secondary	Middle
C9	More entertainment than academic	Both parents: secondary	Middle
C10	Effective use	Father: tertiary; Mother: secondary	High
E11	Effective use	Father: tertiary; Mother: secondary	High
F12	More entertainment than academic	Mother: secondary (single parent family)	Middle
F13	More entertainment than academic	Both parents: primary	Low
E14	Mostly entertainment and social media	Both parents: secondary	Middle
F15	Mostly entertainment and social media	Both parents: primary	Low
E16	Mostly entertainment and social media	Both parents: primary	Low
H17	More entertainment than academic	Father: secondary; Mother: primary	Low
G18	Mostly entertainment and social media	Both parents: secondary	Middle
G19	Mostly entertainment and social media	Father: secondary; Mother: primary	Low
G20	Mostly entertainment and social media	Father: primary; Mother: secondary	Low
H21	More entertainment than academic	Mother: primary (single parent family)	Low
H22	More entertainment than academic	Both parents: secondary	Low

'Effective use' indicates that students could apply ICT applications to promote academic success and personal well-being

- G19: I normally use the computer to watch television programmes and movies; I seldom do my homework [on the computer]. I am fond of the computer and cannot control how much time I spend [watching] television dramas [online]. [...] Yesterday, I couldn't stop watching online video until 2 A.M.

To summarise, there were differences in the quality and quantity of ICT access, digital skills, and ICT usage among the 22 cases. Table 2 summarises the student's ICT use and their family background. There is a gap between students who are able to use ICT effectively and students who are not. Some students (e.g., A2, A4) were more able to produce tangible outcomes that led to academic success and personal well-being. However, some students (e.g., G19) were comparatively disadvantaged.

## Academic success as a priority

### *Academic use of ICT*

Our findings suggest that academic success is still parents' primary concern (22 cases). Although not all of the parents were able to provide effective and sufficient guidance for

their child's learning and ICT use, all of them indicated that they would support their children's academic activities by making digital tools available to them.

- Mother of E16: I don't think ICT can help her [academic performance], so I won't buy it. I bought an e-dictionary before, which cost more than 2000 dollars [about USD 260], to prevent her from using the computer, but she didn't use it at all.
- Mother of F13: If ICT is necessary for learning and we can afford it, we will buy it for her. Before, we bought her a mobile phone and saw her surfing online all the time, and thus we prohibited her from using the Internet.

In general, the idea that only the academic use of ICT should be valued and supported was agreed with by most parents except those of A4, B6 and G18. This suggests that the parents in our study accept the responsibility of assisting their child to achieve success in formal education. For them, the value of online activities depends on whether they help students accomplish homework/study. As the parent of F17 said, 'I allow her to play—only if it is related to her studies. I am afraid that she will play games and ignore her studies, so I prohibit her from playing.'

It is interesting that most parents (17 cases) tended to differentiate ICT use for entertainment from ICT use for learning. For example, F12's parent indicated clearly, 'I only allow her to use ICT for learning. I am so afraid that her exposure to various online entertainment particularly playing online games will make her go astray.' When we asked parents about the importance of ICT use, they showed a similar attitude that only ICT use for learning is important for their children.

- Mother of E16: I don't think using ICT is helpful for my daughter. For some children who use ICT for learning, it will be helpful for their future. For my daughter, she only uses it for entertainment and thus ICT use is harmful to her.

These parents seem to have a less positive attitude towards their children's ICT use for entertainment and consider it to have a negative effect on their children's learning. They expect their children to have self-restraint and to invest more effort in learning than in leisure activities.

### *Use of ICT for learning versus entertainment*

It is noteworthy that some of the students (eight cases) shared their parents' perception of the academic use of ICT. These students indicated that they would only use computers for entertainment after finishing their homework. When we asked students if they thought computers were important for academic success, these students responded that computers were important. As B5 said: 'For example, I need to learn typing, otherwise I would not know how to do it when I go to university.' D8 said: 'I quite enjoy using the computer, as it has functions that help us finish our homework. We need computers to finish our homework. But we won't be assessed on some of the content, so there seems little point in learning it.'

Some students (eight cases) thought that ICT use for entertainment influenced their learning negatively. As C9 specified in the interview, 'those who play games instead of doing revision, they will not be able to answer the questions on the test. Thus, teachers have to go through the topic before the test, which affects other students who wish to do revision.' These students made a more practical use of ICT and related it to homework/study. Thus, compared to students with an intrinsic interest in ICT use, they were only willing to acquire basic skills that were related to homework/study. They perceived ICT

use as unimportant for achieving good academic results and, thus, they were unwilling to learn more about technology.

## **Overdependence on school and teachers**

### *Teachers' role*

About half of the parents and students were found to be over-dependent on the supervision and guidance from their schools. One student (G19) said that whenever she has problems or difficulties related to ICT, she asks her ICT teacher to solve the problem. Even when she was at home, she would still call her teacher for help through WhatsApp, because her family members did not know much about ICT. She was also not willing to discuss problems with her classmates. She and her classmates all asked the ICT teacher for help when they had problems. Therefore, she believed that her ICT teacher 'treats all of us very well.'

In that case, the lack of support and guidance from parents made the child rely on a teacher to solve her problems. This student's ideal teacher was expected to function as a 24-hour service hotline. Similar situations were also found among F12, H21, H22, and H23. The teachers of these students had been dedicated to developing ICT skills in and out of formal classes and thus these users all indicated that they could get support from their teachers regarding ICT use. The principal of School F complained: 'Teachers also need to have a rest and have their own family life. But I am worried that the teacher–student relationship nowadays goes beyond academics, and teachers play the role of parents even after school.'

Overall, for those students who did not demonstrate effective use of ICT, their teachers sometimes have to play the role of parents by taking up responsibilities to supervise and help the students whenever they need it. This finding is supported by the research of Pratt et al. (1999).

### *Parents' role*

As far as the principals were concerned, although some of the parents were anxious about their children's activities online, they tended to leave all the supervision work to the school and did not restrict and provide guidance to their children's ICT use at all.

- The principal of School C said: Parents should supervise the students to turn off the computer and read books. They should teach the students. Some parents frequently complain that their children are disobedient; however, these parents have never disciplined their children. They do not know how to make requirements for the students.

Complementing the previous section about the teachers' role, the findings suggest that although the schools had asked the parents to supervise the students at home, some parents did not realise they had a responsibility to provide guidance for their children. Although the parents were willing to support their children's education and prioritise academic achievement, some had very limited ICT knowledge and skills and thus could not provide effective support.

In general, the findings suggest that support from teachers plays a more important role than support from families among secondary school users. However, even with support and guidance from their teachers, the students were unable to use ICT effectively.

## Monitoring and controlling ICT Use

### *Parenting practices*

The parenting practices revealed by the data were relatively authoritarian and controlling. The parents expected their children to listen to them, to behave according to their rules and to always show respect. The mother of A4 said in the parent interview: 'I have installed a camera in the sitting room, for safety and to monitor what he does at home.'

Monitoring refers to parents' intentionally observing or inspecting what their children are doing on the computer because they want them to develop proper behaviour and have higher achievements. Parental monitoring and control seems generally to be an indication that parents are genuinely caring and loving towards their children (Yu et al. 2012a).

- Mother of B5: She can only use the computer at a given time and with my permission. I have set rules about how many times she can log on to eClass, play online games and watch movies per week.
- Mother of E14: The only condition we set is whatever you do, you are not allowed to close the door. In this circumstance, we can see what he is doing and watching anytime.
- Mother of G20: The computer is located in the sitting room so that we can see which Internet sites my child is surfing, what he is watching or doing online.

In general, irrespective of the age, educational level, gender or performance of their children, most parents attempted to monitor and control their children's online experiences. It is clear that parents were somewhat anxious and worried about their children's computer use at home.

### *Students' reactions*

Some parents (seven cases) complained that ICT use has distracted their children in every way and they would like to stop them from using it. As revealed in the previous section, most students in our study are not allowed to go online without parental monitoring. Under such controls, these students went against their parents' authority, which in turn led to family conflicts and ended up with restraints on ICT access.

- Mother of E16: She [my daughter] seems annoyed by everything I say. Now I think it is useless to say anything. [...] If I refused to allow her to watch online videos, she might behave aggressively. So I let her do whatever she wants. [...] But I would not buy her software or apps. Because I don't think the software and apps would provide help for her learning.

Unlike their parents, the students considered that they could learn through online explorations, either by themselves or with peers. For example, E16, who was seriously complained about by her mother, told us in the interview: 'I think my mum doesn't understand me. I can listen to music while doing homework, but she always worries that I cannot focus on my studies that way. I just watch online videos for half an hour every night, but my mum usually thinks I am playing all the time if I listen to music while doing homework.' Overall, an intergenerational gap exists between parents and their children in terms of values and attitudes toward ICT practices.

## Gender stereotypes

### *Male dominance*

In Hong Kong, traditional gender roles continue to prevail in the family: the man is the breadwinner and the woman the caregiver, even if both spouses are employed. Men are the decision-makers and women the home-makers (Chan et al. 2002; Westwood et al. 1995). When we asked the students who took care of their daily life at home, 14 of them answered ‘mother’, 4 said ‘female domestic helper’, 2 said ‘grandparents’, and only 1 said ‘father’. Although in most of these families, both parents worked to earn a living, the fathers appeared to be more devoted to work, whereas the mothers were more attentive to family life. This finding resonates with past studies (e.g., Lee 2002; Nguyen et al. 2006). Rather than a medium masculine society (Hofstede et al. 2010), our results suggest that males play a dominant role in work and family environments in Hong Kong and the gender roles in Hong Kong families are distinct.

The findings of gender stereotyping among the students indicate the idea that elder males play a dominant role in the family remains strong across generations. Younger students seemed to assign high value to their family, and they expressed respect and deference towards their parents and elder siblings, who were described as ‘models’ or even ‘heroes’ during the interviews. Older siblings not only exerted a great influence on the students’ daily use of ICT, they were also mediators of family events or issues.

- A4: I love playing online games. There is one game in my computer [in which] my father has reached level 60. I wish to surpass his record.
- A2: One day, my father rushed home and told us that there is a software called WhatsApp, which is cheap. My mother and I asked what it was and he explained it to us. He always teaches me about new software programmes.
- E11: [The way I learned Google Earth and Facebook] It is because I saw my brother downloading it [Google Earth]. [...] It is also because I saw my elder brother started using it [Facebook].
- Mother of E14: Once you prohibit him from playing, it possibly leads to a fight. I did not know how to cope with it, making the relationship worse. Then his father helped to mediate our relationship and succeeded in stopping this situation. [...] If any difficulties occur, he never asks me, he always asks his father. He thinks my ability is poor, his idol and hero is his father. Thus, he does not respect me and would turn to his father for everything.
- Mother of E16: She spends all her time watching online videos and her father also watches videos quite often. Before, they both liked reading very long Wuxia [‘martial hero’] novels, such as Jin Yong’s novels [i.e., *Cha Leung-yung*].
- Mother of H21: He would not turn to me for help, because he thinks I would not know how to solve the problem; he always asks for help from his elder brother.

### *Gender difference*

Gender difference was also noticeable. When we asked students how they compare the use of ICT between boys and girls, most of them (12 cases) indicated marked differences.

- B5: ‘Boys know more about computers. They play a lot of online games, but girls seldom do.’

- F12: 'Boys and girls show their preferences while using computers. Boys use them more often, and they like playing games. Girls usually chat online and play mini games.'
- F15: 'Actually, I don't have any feelings about using digital technologies because I am not a boy, so I am not good at playing online games.'
- G20: 'Males and females show differences when they use computers. Girls use them less and they seldom play games. They prefer to chat with each other through WhatsApp.'

One student (E14) even thought that men and women should not have intimate interactions (e.g., talking, playing); if he did this, he said, he would be mocked by his peers. His mother said: 'He said the thing he hated the most was playing with girls, because some people would comment that he was gay if they saw him play a lot with girls.' Similar to previous studies (e.g., Brewer et al. 1987), it was clear that students perceived gender as a determinant in social interactions and thus had developed 'gendered ICT use' at an early age, which is likely to lead to the next iteration of the gender stereotype.

## Discussion

The modernisation of Asia is an ongoing process. Most if not all Confucian heritage Asian nation-states were once colonial territories, where imperial powers not only hindered any attempt to authentically self-modernise but also imposed cultures and values that were alien to the locals (Park 2016). Hong Kong showcases how Confucian culture and its family-centred values were forcefully transformed by colonisation and modernisation. Although today Hong Kong is a regional leader in neo-liberal administration, with thriving pragmatic and individualistic values, both 'thin' and 'thick' versions of CHC co-exist side by side with these attitudes (Park 2011). A thin CHC is socially constructed, situationally specific and has lighter forms of Confucian cultural values with only meagre to modest resemblance to classic Confucianism, whereas a thick CHC has clearly Confucian values such as *tao* (way), *jen* (humanity) and *li* (ritual, social ceremony and convention), which exist across regions and can be traced back to the classics of Confucius and widely recognised Confucian schools (Park 2011). There are certain Confucian cultural values that continue to affect people's lives and even shape 'national' cultures.

Generations of Hong Kong people grew up under a Confucian family education (Cheng 2004). Although Confucian values do influence their communication and relationships, the intensity (thick or thin), can vary from region to region and family to family. Our review of the literature reveals such variation, in the degree and extent to which Confucian values usually influence family-school, parent-child and gender relationships.

Nowadays in Hong Kong, access to ICT hardware and infrastructure is near-ubiquitous. We sought to find out if there are inequities in students' ICT use. Our findings revealed differences in the quality and quantity of ICT access, digital skills, and ICT usage among the 22 cases. To address the second research question, we placed digital inequity in the cultural context of CHC to examine whether Confucian values influence parents' support of and attitudes towards their children's ICT access and use. Our findings show that Confucian values are apparent in Hong Kong Chinese families, irrespective of differences in family background, upbringing and school context; family culture shapes relationships and parents' ICT-related child-rearing practices in association with students' effective ICT use. This is not to say that we attribute all of our findings to CHC; rather, our study represents an attempt to examine the cultural aspect of digital equity, which is rather understudied.

## Family–school relationship

A number of recent studies suggest that ‘the presence of new technologies in the home, and the involvement of parents in supporting their uses for learning, are impacting irreversibly on young people’s lives’ (Davies and Jewitt 2011, p. 290). Chinese parents have high expectations for the academic achievements of their children and are willing to invest in education and ICT (Yu et al. 2012b; Yuen et al. 2016a). These traits may have reduced the digital gap in terms of hardware access. Together, the present study and our previous studies suggest that such cultural characteristics also shape the family–school relationship in Hong Kong. Respect for authority, a key element of CHC, leads parents to generally accept school authorities and to support their professional practice; as a consequence, both students and parents may passively rely on schools and teachers. In traditional Confucian culture, teachers are expected to be perfect care-takers, who are responsible both for providing knowledge and caring for students from the heart (*xin*). The teacher–student relationship mirrors the parent–child relationship. It is possible that such traditional expectations about teachers’ responsibilities may lead parents to rely excessively on school-based care and instruction. Indeed, some Hong Kong parents overlook their role in providing guidance for ICT use at home, including ethical use and educational use (Yu et al. 2012b), which are crucial aspects of digital equity (Yuen et al. 2016a). Our findings significantly contrast with the findings of the EU Kids Online study, which suggest that most parents now understand that it is worthwhile engaging with their child’s ICT use (Livingstone et al. 2011).

Cultural hybridisation in Hong Kong has increased parents’ high expectations for their children’s success, efficiency and productivity. Traditional Confucian culture requires children to obey conventions; consequently, achieving success at school is considered an expression of filial piety that fulfils a moral obligation to the family. In traditional Chinese society, children, especially sons, are expected to gain a reputation for the family and ancestors (*guang zong yao zu*). Traditionally—and still today—success in public examinations was considered an achievement and an honour (*gong ming*) for the entire family if not clan.

In today’s managerially neo-liberal Hong Kong, public examinations and academic success are still the most important and fair path to upward mobility for local youth. Western culture and traditional values synergistically encourage young students to push themselves to the limit to meet their parents’ high expectations for academic achievement. Therefore, it is not surprising that when children resist parental guidance and use ICT for entertainment, parents become worried or even angry. Hong Kong parents perceive entertainment, and informal use of ICT in general, as useless and unproductive. Thus, students’ using ICT for entertainment or even for informal learning purposes can cause real anxiety in parents, even though it is becoming common for many important skills to be acquirable and learned through informal learning (Helsper et al. 2015). Cultural differences regarding the conception of formal and informal use of ICT seem to be a very important area that is relatively unexplored.

## Parent–child relationship

When children do not meet their parents’ expectations, the parents feel that the children lack filial piety and that their sacrifices are in vain. Yau and Smetana (1996) argue that traditional Chinese family life is characterised by order and authority. Children’s life goals and family members’ achievements are expected to be geared toward building the family reputation. The parent–child relationship in Chinese families tends to be linear, and is



usually characterised by parents' expectations that the children will achieve academic success in school and be obedient at home. Chinese parents strongly emphasise their children's obligations to the family. Children who act contrary to their parents' wishes are told that they are selfish and inconsiderate because they do not show gratitude for what their parents have done for them and that they have made the family lose face. Our findings show that ICT use at home is controlled by parents who mainly restrict its use to studying and other school-related activities. If children use ICT for leisure, they are seen as lacking consideration for their parents, as they are failing to live up to parental expectations. The parents do not realise that their concepts of 'learning' and 'entertainment' need to be revisited in the context of new digital practices (Drotner 2008).

In a review of the literature, including policy documents, access and use of ICT were found to be uneven across socioeconomic groups, and affected primarily by parental and school factors (Becta 2008). In Confucian thought, the relationship between teacher and student is parallel to the relationship between parent and child. Therefore, the roles of teacher and parent can be mixed. Teachers sometimes have to play the role of parents, and supervise and help children whenever they need it. In the EU Kids Online study, 63% of European 9–16-year-olds indicated that they have received Internet safety advice from parents, 58% from teachers, and 64% from peers. Parents are not the only people responsible for children. Teachers also have a vital role to play, and for many children, their peers are also a valuable resource. The more teachers and friends mediate children's Internet use, the greater the children's digital literacy and safety skills (Livingstone et al. 2011). Unpacking and differentiating the mixed roles of teacher and parent in CHC merits further investigation.

## Gender relationship

According to Hofstede's study (2001), the strength of stereotypical masculinity/femininity roles is medium in Hong Kong Chinese culture. It should be noted that Hofstede's study was a macro-level study based on questionnaires collected from professionals in transnational corporations. Although the gender stereotype may have decreased in work places in Hong Kong, it is still common in private spaces such as the family. Our findings demonstrate the complexity of gender relationships within Hong Kong Chinese families. The cases exhibited a deep-seated gender stereotype both in the family and at school. For example, children tend to admire their fathers and use them as role models. They resort to their father or other male family members to solve ICT-related problems, perhaps because of a culturally generated and embedded gender stereotype that gives fathers more authority as the head of the family in charge of public and professional tasks. At school, the pattern of more interaction with peers of the same gender (Brewer et al. 1987) parallels the gender stereotypes within the family. The use of ICT spreads through same-gender networks that have distinct statements or preferences for ICT usage.

Chan and Lee (1995) argue that Chinese families are traditionally patriarchal in character and that such families make good training grounds for obligation and compliance. However, the Hong Kong families in our study are different. They tend to be more open, consensus-seeking and egalitarian. The husband/father is still the head of the family, yet his authority is far from being autocratic or all-encompassing, as it used to be. This corroborates our earlier claim that in most CHC societies, both thin and thick versions of Confucian culture-related values co-exist (Park 2011). Our finding illustrates the transformation of family values happening in Hong Kong families. However, for the mid-SES Chinese families in Hong Kong, traditional gender bias still influences roles such as the

allocation of housework and childcare, which women are expected to carry out or supervise (Chan et al. 2002; Westwood et al. 1995).

Gender has been highlighted as a significant factor in students' ICT use since the 1990s (Durndell et al. 1995). However, Gannon (2008) drew on samples of text from advertisements, government websites and focus-group interviews with high-school girls in Australia to explore some of the risks and pleasures computers offer to young people. The results indicate that the gender difference is subtle, and out-of-school engagement shifts young people from passive to active users of ICT. Whether lower SES Chinese families in Hong Kong are more likely to be influenced by Confucian family values, and the effect of these values on gender differences or inequality in ICT use within and outside the family, are interesting areas for further research.

## Conclusion

In this paper, we argue that digital equity needs to be understood within cultural contexts. The present case study adopts a cultural paradigm to explore the ICT experience of students in 22 Hong Kong families, and to examine the influence of Confucian values, in particular 3 types of social relationship: family–school, parent–child and gender. The present study has several limitations. First, the sample of a case study focusing on 22 students is limited. Second, the qualitative data collected cannot be generalised to a wider scope. Third, it is difficult to draw conclusions about clear effects from the analysis of qualitative data. Despite these limitations, the implications of our findings for research and practice are worth noting. We found that Confucian values affect family–school, parent–child and gender relationships. These relationships influence parenting practices and the distribution of ICT resources to children and the effectiveness of their ICT use, and thus have potential implications for digital inequity. Whether Hong Kong parents can uphold Confucian values in the face of rapidly changing participatory culture (Jenkins 2009) and new digital practices (Drotner 2008) remains to be seen. In terms of the dialectics between a thin and thick CHC, Hong Kong parents seem to be revisiting their role as parents to foster better family communication and relationships. Finally, we argue that it is sometimes necessary to pull contextual factors out of the background and bring them to the fore, if a particular phenomenon such as the digital divide is to be understood in its entirety. The relationships between digital equity and other contextual factors, such as cultural, social, environmental, economic, physical and demographic factors, may merit further investigation.

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### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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