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## **BOUNDARY CROSSING: INTERNATIONAL STUDENTS' NEGOTIATING HIGHER EDUCATION LEARNING WITH DIGITAL TOOLS AND RESOURCES**

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This paper draws on qualitative data from a research on Chinese international students at the University of Leicester in the UK and reports on the appropriation of digital tools during their intercultural adaptation. The paper brings two theoretical approaches to improve our understanding how international students make sense of, and use digital tools and resources when they begin to adapt to a new higher education environment. One theoretical lens is appropriation of cultural resources, the process through which digital tools are shaped in use, which draws on the work of Pachler et al. (2010). The other approach draws on the model of boundary crossing (Akkerman & Bakker, 2011), which provides an alternative route to understand appropriation of digital tools as boundary crossing tools. Adopting such theoretical approaches allows an interpretation that boundary can carry learning potential through the spectrum of transformative learning where students are seen as active agents shaping their learning trajectories. It also contributes to the debates around the deficit view of internationalisation that portray international students as *victims* or *problems* while dichotomies the learning strategies of students from Asia and the West. The study highlights that Chinese international students' intercultural leaning experience involves ongoing engagement with social networks and artefacts. There is also an aspect of the expansion of their capacity at a personal level and strategic agency to appropriate digital tools and services to cross different sociocultural contexts such as bridging political, cultural and language differences. Understanding this is important in a context where learning becomes increasingly mediated by technologies which can contribute to improving pedagogical approaches for using digital tools and services to engage international students.

### **Appropriation of digital tools and services for boundary crossing**

Diversity and mobility in education presents both paramount opportunities and challenges: International students are regarded as vital to UK higher education sector due to their cultural and economic contribution, with China being the largest source of postgraduate (PG) students (British Council, 2014). Yet, international students embark on universities bringing with them their own diverse characteristics and experiences, which has led to growing attention on the process of international students' intercultural learning (Gill, 2007). Intercultural learning is "acquiring increased awareness of subjective cultural context (world view), including one's own, and developing greater ability to interact sensitively and competently across cultural contexts as both an immediate and long-term effect of exchange" (Bennett, 2009; p.2). Our

focus of intercultural learning is placed on one form of transnational higher education, namely the studying abroad programs. Empirical studies show tensions occurred when encountering a distinct cultural experience is more overwhelming at the initial stage of students' adaptation, particularly for postgraduate students since most full-time postgraduate programmes in the UK is expected to be completed within a year. Nevertheless, such intercultural experience can lead to a transformative learning process in which international students negotiate learning as a dynamic interplay between challenges and professional developments (Gill, 2007; Gu, Schweisfurth, & Day, 2010; Tran, 2013).

This cross-cultural learning experience essentially involves *boundary crossing*: meaning "a person's transitions and interactions across different sites" (Suchman, 1994). A boundary means "sociocultural difference leading to discontinuity in action or interaction" (Akkerman & Bakker, 2011; p.133). Boundaries can be viewed as discontinuities in various form of practices: such as discontinuities in a community of practice and social activities and intercultural learning (Walker & Creanor, 2005). For example, Singh (2005) found that while Chinese international students continue to experience a sense of "strangeness" of the host culture, politics and pedagogies in Australian universities, they become autonomous agents of their life-changing experience and take responsibilities to participate in the intercultural community of learning. Boundary objects are artefacts doing the crossing by fulfilling a bridging function (Star, 1989). This paper prefers the term of *boundary crossing tool* over *boundary objects*, as it stress the agency of learners and we view them as a form of *cultural resources* that "integrates media, mobile devices, internet tools and services under the functional description of resources". The concept of boundary crossing emphasis the focus on ongoing, dimensional actions and interactions between contexts rather than one-sided transition (Akkerman & Bakker, 2011).

The notion of boundary crossing is associated with how Bhabha (1990) used the notion of *third space* in intercultural learning. Bhabha (1990) called attention to the way that the encountering of two different cultures may open up a third space where meaning is negotiated. Burnapp and Feng (2007, cited in Burnapp, Feng, & Zhao, 2012) extended the concept of third space to investigate the possibility of a virtual third space. Later, Burnapp et al. (2012) studied how Chinese international online distance students use the Internet and social networking sites and concluded that the creation of mixed online communities of Chinese and British students facilitate intercultural learning in such a way that leads to a hybridity of previous and new expectations. This paper provides a sociocultural perspective to learning using digital tools within transitional experience. It respects a learner-centred collaborative leaning approach, wherein it is essential to explore the influence of cultural practices, social relations and community of learners (Prieto et al., 2016). From the viewpoint of sociocultural theorists, learning involves meaning making process mediated through interaction both with other learners and artefacts (Vygotsky, 1978).

## **Research Methods**

Qualitative data collection took place from mid-2014 over 15 months, and research participants were Chinese international students on master's programme at the University of Leicester. Data collection instruments included mind maps, semi-structured interviews and photographic journaling.

### ***Mind maps***

Mind maps were used as a tool for preparation for interviews. Participants were invited to create mind maps to map out their use of various digital devices and technologies for educational purposes. Participants were encouraged to provide details, such as rating the relevance of different technologies, and to write descriptions of how they use certain technologies for learning. Wheeldon (2011) explained that qualitative research serves as an important means to explore meaning through looking into the ways of how individuals construct and frame their accounts of knowledge, experience and perception. For the depth of the qualitative data, mind maps facilitate a more comprehensive reflection of experiences through enabling participants to develop the rehearsed narratives (Hathaway & Atkinson, 2003). Fourteen participants (out of a total of 30 who took part in interviews) produced mind maps.

### ***Semi-structured interviews***

Semi-structured interviews were used as a primary method to elicit participants' viewpoints of the topic without pigeon-holing the responses of those interviewed, and in turn semi-structured interviews allowed the researcher to identify unexpected things revealed by interviewees and so further probing. Thirty participants took part in interviews and the interview schedule began with demographic questions that asked their education background, subjects studied at undergraduate and postgraduate levels, the demographic area in China and IELTS examination results. The sequence of the interview questions was from general to the more specific. Participants were asked about their general studying experience such as the formats of the assignments and assessments, they were then asked to share their experience of using mobile technology to study those activities.

### ***Photographic journaling***

The use of photographic journaling was inspired by several works on social science research methodologies and empirical study, including Experience Sampling Method (Hektner, Schmidt, & Csikszentmihalyi, 2007), the Day Reconstruction Method (Kahneman et al., 2004), and the Day Experience Method (Riddle & Arnold, 2007). Experience Sampling Method (ESM) is a way of collecting data about context and content of participants' daily life relevant to the focus of the study. ESM has the potential to generate a rich and in-depth perspective on moments in a participant's life (Hektner et al., 2007). The implementation of this method was inspired by Riddle and Arnold (2007). WeChat (instant messaging app similar to WhatsApp) groups were established with the research participants. With prior agreement with the participants, they were prompted at several random points by instant messages. If participants

were doing study related activities, they were asked to use digital devices (e.g. mobile phones or tablets) to record their learning scenarios and the use of materials and devices they have at hand. Meanwhile, they were invited to answer some questions at the time of the message if they were doing any study-related activities. The questions included information about the time of the day when they were studying, with whom they are studying, study location, general feelings and issues about study. Out of 30 interviewees, 4 took part for the photographic journaling activity that lasted a month, and participants were invited to return message on a day each week.

## **Results**

Data were analysed based on Akkerman and Bakker's (2011) framework that identifies four learning mechanisms regarding the process of boundary crossing. These are:

- Identification – (re)defining intersecting cultures in light of each other.
- Coordination – mediating artefacts and procedures enable common practices in distributed work.
- Reflection – observing and explicate differences and similarities between practices and thus to value each other.
- Transformation – changes in practices and even hybridity of practices.

We studied how Chinese students appropriated cultural resources in their intercultural learning experience, and report themes in relation to the above four learning mechanisms.

### **Identification**

The mechanism of identification takes place by interpreting one practice in the light of another, focusing on differences and similarities. In turn it leads to the underlying need to a renewed understanding of different practices and the reconstruction of identities to overcome discontinuities (Akkerman & Bakker, 2011). As observed in interview data, the participants were consistently comparing their experience in relation to uses of digital technology and social media. For example, Blackboard serves as the main Virtual Learning Environment (VLE) in UK universities. However, only 5 out of 30 students reported that they used VLE for their undergraduate study in China. Some of these students mentioned uses of different VLEs in undergraduate study in China such as: Moodle (P5, male, age 23, Management), Zhengfang Learning Management System (LMS) (P8, female, age 23, Translation), while the use of VLE during their undergraduate study was mainly restricted to selecting courses, submitting assignments and checking the outcome of their exams (P5, P8). Others also mentioned differences, such as:

*“Basically, the undergraduate university’s website was used mainly to promote the university and to announce events. We also had university account that allows users to download articles from CNKI [a nation-wide central database] for free. However, unlike the website for postgraduate study [at Leicester], it does not have a system that works like Blackboard as a central platform for learning resources. There were not many things to be downloaded and to view.*

*[Undergraduate] tutors did not share slides and materials. Maybe some did share, but only those famous teachers and in well-known disciplines” (P22, female, age 23, Media).*

*“I feel now I can make use of online resources because we have Blackboard. I mainly used printed books and CNKI for undergraduate study. But now the Leicester university database provides easy access to journal articles” (P1, male, age 23, Translation).*

Understanding the social media and technology space in China is important for educators who try to engage Chinese international students. In China social media sites like Facebook, YouTube and Twitter are inaccessible without a VPN (Virtual Private Network). These conditions underscore how different China's Internet is compared to that in the West. In China, the National Knowledge Infrastructure (CNKI) serves as the most-used academic online library, and it contains comprehensive databases and resources such as journals, doctoral theses, masters' dissertations, e-books, newspapers and so on (Wan, Hua, Rousseau, & Sun, 2010). Most of the interviewees (n = 25) reported using CNKI to search for resources when they had written assignments (e.g. essays), mainly driven by their undergraduate institutions. As it can be seen from the transcripts, students are comparing their previous practice with new practice. A lot of students mentioned about their uptake of Google Scholar, University A-Z database, Wikipedia and YouTube for learning purposes during postgraduate study. Some students were introduced to discipline-based databases by their tutors, such as using Lexis to search for news (e.g. P10, female, age 23, Public Relations). Most of participants (n = 19) noted that to email their tutors and course representatives about studying issues or to arrange meetings is a more common practice in the UK (e.g. P28, female, age 22, TESOL).

### **Coordination**

The second learning mechanism is referred to as coordination, focusing on identifying effective methods to enable connections and cooperation in communication to maintain the flow of the work (Akkerman & Bakker, 2011). The analysis of the interview showed that all interviewed students use mobile technology on a daily basis and most of them can compare different practices and use different social media services to cross sociocultural boundaries (i.e. the participation gap caused by different experiences and formal-informal gap). In China, WeChat as a mobile communication service gained prominence and has become the most widely used social networking service (Lien & Cao, 2014). WeChat has WhatsApp-like messaging, a Facebook-like news feed known as moments, and a PayPal-like wallet, together with other built in applications which seemingly does most things for users, such as, booking taxis, shopping online (CIC, 2015). Although our research participants have varying degrees of experiencing technology – some had more experience with Facebook and YouTube because of their previous overseas experience developed during student exchange programmes (P6, P11), undergraduate (P15) and postgraduate (P8) studying experience. Nearly all participants reported clues that shed light on their process of sense-making of the new experience, as in this case:

*"I have a Facebook group. Because I did a course 'academic media' at Leicester's English Language Teaching Unit [where students learn English and academic writing skills]. There were 14 people in the group. The tutor named it as 'new media', and we used it for discussion. Students post questions and comments. Now, I do not use it very often. There are many Chinese students now in the university. So, I still use WeChat for communication as a dominant tool. And even some foreign students have been influenced by us to start using WeChat" (P14, female, age 24, Media).*

*"Facebook has some educational uses. For example, because it is an international environment, like we have Japanese, Hungarian students and students from other countries in the group. And they might not use WeChat, so we use Facebook and Messenger to discuss about the group assignment and arrange time for group meetings" (P10, female, age 23, Public Relation).*

P14 described her adoption of Facebook as a result that Facebook was explicitly designed into a learning activity as a tool by her tutor to integrate the physical and virtual learning opportunities to cross the formal-informal boundary. Although Facebook was not designed to be used in formal classroom learning, it was used outside classroom to connect students who are working towards the same goal and to extend their learning and support. Although P14 mentioned that she still uses WeChat as a dominant communication tool, and that Facebook group was only active within the course time, later she talked about that she continues to add more contacts on Facebook and WhatsApp. These were used for groupwork, discussion and distribution of tasks and consequently helping her in her development of intercultural understanding and language skills. In another case, P10 pointed out the educational value of Facebook to bring students from diverse cultural backgrounds together for learning and to break the geographic boundary.

The photographic journaling activity also reveals similar themes. For example, P12 returned some photos of using WhatsApp for group work and was invited to talk about how he discusses questions with his classmates. As he lived in another city and was not able to travel to the University everyday, he often uses a photo-sharing tool to ask questions from one of his classmates. They also distribute work and make phone calls to explain questions when necessary. Examples are shown below:

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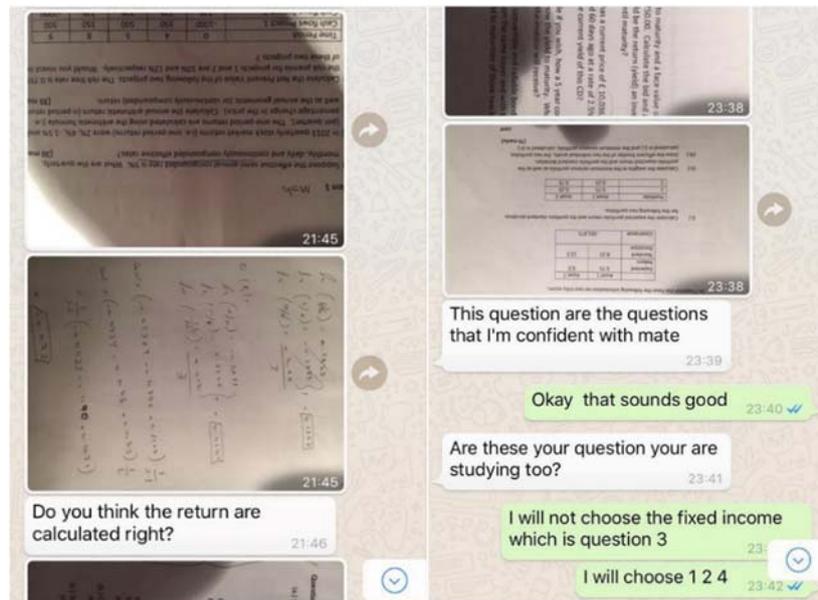


Figure 1. The example of using social network (e.g. WhatsApp) for discussion (P12, male, age 23, Financial Mathematics and Computation)

From P12's description, he did one group work with this peer and they added each other on WhatsApp to discuss group work. P12 said that although he was not in the same group for the following assignment with this classmate, they were still discussing course-related activities on WhatsApp. The analysis of data reveals mobile tools and social media such as Facebook and WhatsApp are appropriated by students to cross boundaries in different ways, such as: (a) technological boundary: students from different contexts use different technology under the wider dynamic environment, and some Chinese students perceive this different and start to use Facebook or WhatsApp to connect their peers when necessary. (b) temporal and geographical boundary: because the formal classroom is time constrained, and, social media can assist in bridging communication connection and increasing immediacy to smooth coordination. It can be seen that mobile devices, especially with convergence of social media allow for *seamless* and *just-in-time* learning opportunities to support information sharing and collective contribution (Sharples, Taylor & Vavoula, 2007).

### Reflection

This mechanism involves reflection as a means to define differences between practices and will in turn learn own and other's practice (Akkerman & Bakker, 2011). The reflective impact involves dialogical inquiry, to scrutinize oneself from the others' eyes and eventually engaging multiple perspectives (Boland & Tenkasi, 1995, cited in Akkerman & Bakker, 2011). Students' response entails how a self-reflective process facilitate them to rethink their biases, transcend limitation of knowledge and engage in cross-cultural dialogue, as in the case:

*"At the beginning of the course of 'the politics of digital media', some lectures covered sensitive topics, which often offended Chinese students as they were feeling great about China. For instance, when the tutor was talking about the Fa Lung Gong [often understood as a spiritual practice in the Western context],*



Figure 2. Example of frequently used digital sites and application for learning (P13, female, age 24, media)

The above figure shows a set of digital tools as well as services that are used most frequently by P13 for learning purposes. As it can be seen, P13 drew various tools that she often uses on the laptop and these tools include both tools that predominantly use Chinese language and those dominated by English language. On her drawing of her iPad, it not only shows an array of applications, but she also wrote the activities she conducts with the help of these applications. She also uses number of stars to indicate the frequency of use among these applications: more stars means that she uses such tool more often. The above figure implies that P1 has expanded the knowledge of newly experienced tools into her cognitive structure and developed a strategic attitude towards the uses of digital tools, integrating available tools and using them purposively dependent on context to achieve specific goals. Other mind maps and interview data also confirmed that students do not simply transfer one practice to the other, rather they expand their knowledge and combine Western sites with Chinese sites.

## **Conclusions**

The students who took part in this study can be considered as sojourners – who live in the UK academic and cultural environment on a temporary basis. The present study found that these sojourners' initial encounter of challenge and conflicts can be translated into a new capacity to personal expansion and transformation. Technology and social media are useful cultural resources to cross boundaries in a variety of ways such as across culture, time, locations, formal-informal and physical-virtual (Pimmer, Linxen, & Gröhbiel, 2012). Sometimes, tutor act as the designer of co-creative learning practices, as in the case of Facebook group, which later contributed to students' increased social capital (which broadly stands for the resources accumulated through the relationships between people), and mobile-based multimodal representation can be used to facilitate an iterative learning cycles and discussion.

Evidence showed that students are constantly assimilating and accommodating their learning through expanding something unknown into their cognitive structures and making sense of the contextual influences with changing cognitive structures. This is in line with the concept of situated learning (Lave & Wenger, 1991). For example, students use mixed pedagogical strategies. They made use of Blackboard, tutor's slides, and other web-based learning opportunities to lessen the stress of initial entry of changed academic context (e.g. P22); they use different social media to foster communication connection both with Chinese friends and students from other cultural backgrounds (e.g. P14); they research on Chinese sites to look into case studies for their essays and search on English search engines for academic journals to produce English writing (e.g. P13). The use of digital tools and resources can be seen as an act of agency as Chinese international students "strategic making and remaking of selves, identities, activities, relationships, cultural tools and resources" (Moje & Lewis, 2007; p.18). This appropriation process also entails social negotiation, which represents "the internalization of the pre-given world of cultural products" (Pachler et al., 2010). Changes in their identity can also be seen from their employment of mixed learning approaches, their changing

relationship to peers and their acceptance of alternative perspective and norms, which indicates that identity is multiple, evolving and contextually reconstructed rather than fixed and static (Banks, 2008).

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