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Language Learning with Technology

Perspectives from Asia

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Preface

Language Learning with Technology: Perspectives from Asia is a collection of academic articles and case studies which deals with both theories and practices in the application of technology in language education. The invited authors are all experienced researchers and teachers and are known in the field of language learning with technology. The chapters and case studies showcase the way ahead for other researchers and teachers who wish to implement and/or research the use of technology with their students. The book is not only about what types of technology are currently being used in the language classroom, but *how* the technology is integrated with language pedagogy and content knowledge. Therefore, there is a strong focus on pedagogy throughout the book. Another feature of the book is the inclusion of students' and teachers' voices. In many of the chapters the authors turn to their participants to find out what they think of learning or teaching with technology. Although the responses are mostly positive, there are still areas where task design or course development need improving.

Parts I and II of the book illustrate what might be considered examples of the normalization of technology in language education, that is, the stage where teachers and learners come to expect that some technology will be used as part of their courses, for example, the reliance on PowerPoint in the classroom these days. Then, in Part III, we offer several chapters and case studies, which present the latest theories and practices in using more advanced technologies for language education: Virtual Reality, Augmented Reality, Artificial Intelligence, and eye-tracking technology.

The focus of this book is on Asia and Asian students. This is because although technology is advancing with speed and most, if not all, students are already using technology in their social lives, we are aware that traditional teaching practices, which do not include the use of technology, continue to be used in many Asian classrooms. This situation causes friction with language education pedagogy not keeping pace with the needs and wants to twenty-first-century learners. By way of the chapters and case studies in this volume, we illustrate how teachers can, and perhaps should, be more open to integrating some form of technology either as a part of in-class learning, or as a supplement for out-of-class activities.

Part I of this book contains five chapters. The opening chapter is by Agnes Kukulska-Hulme and presents an overview of the state of play with technology

and education in general as well as in language learning. In this chapter, Kukulska-Hulme uses Reflection, Inquiry, Rehearsal, Outcomes as a way to frame her discussion and she mentions many of the themes that are relevant to the rest of the book: local vs global, evidence-based practices, potentials for using technology, sharing of information, learner diversity and the need to engage with technology for future teaching and learning. Following on from this, the next four chapters are presented as full research articles. The first three chapters illustrate using technology in-class, between class and outside practices, and using technology out-of-class. In Chap. 2, Hafner and Miller detail the use of technology in an English for science course. Here, the authors refer to the use of technology as ecological, that is, the technology used in the course provides students with communication opportunities in order to develop their digital literacies and their identities as global, multiliterate citizens. The use of semi-authentic scientific projects allows students opportunities to communicate using a range of social apps and multimedia with each other and their audiences in ways that are authentic and meaningful. In Chap. 3, Wu and Miller describe how a strong link was developed among students who formed an out-of-class WeChat support group in order to practice the English they had learned in class. The chapter begins with a review of some recent mobile-assisted language learning (MALL) frameworks and then proposes using a revised version of the Production-Oriented Approach (POA). The study shows how the POA helps conceptually, and practically, to link classroom and out-of-class learning with the support of mobile technologies. Chapter 4, by Yin and Chik, describes the everyday experiences of two Asian students living and studying in Australia. By way of the students' voices, the authors show the multiple ways these students use technology, not only in their daily lives, but also as a way to integrate themselves into a multicultural environment, and learn English. While the content of Chaps. 2–4 is firmly placed on students' experiences, and the uses of technology are fairly sophisticated contexts, in Chap. 5, James and Lee use narrative inquiry to investigate teacher identity, context, and technology integration in low-resource ESL classrooms in Malaysia. We see that not all teachers have the resources to make use of the latest technological ideas, but after they are trained in how technology can be used, even in low-resources teaching contexts, they are generally favorable towards trying to use it.

Part II of the book contains nine case studies based on research from practitioners around Asia. Basically, these case studies serve to illustrate how theories and principles of language learning with technology can be put into practice. The case studies follow a template so that readers can easily gain access to the information. The template is: (1) Background, (2) Case Study (e.g., participants, project description, data), (3) Results (e.g., students' and teachers' voices), and (4) Pedagogical Principles.

In the first case study, Richard Watson Todd and Stuart G. Towns (Thailand) describe how they motivated their students to become engaged with improving their writing skills by having them post their work on Wikipedia. This added an authentic audience for students to write for and was highly motivating. Then, in the next case study, Wenhao Zhang (Hong Kong) talks about how his students made

use of PowerPoint (PPT) in their English for Specific Purposes (ESP) presentations. Although students and their tutors have come to expect professional-looking presentations with PPT, Zhang maintains that there is still a lot to discover about how students make use of this tool and how their presentations can be improved from monitoring and analyzing students' practices. Moving to teachers' use of technology for their professional development, the next case study by Marie Yeo (Singapore), describes a blended course for online language teacher education. After taking part in a face-to-face training period, teachers from across Asia can continue to access the course online. The benefits are that the online resource allowed for contact to be maintained between teachers and their tutors after the initial training period and many teachers were grateful for the additional follow-up support. In Case Study 4, Eric Hagley (Japan) outlines the way his Japanese students, with limited English proficiency, participated in the International Virtual Exchange Project. The outcome was that a language classroom in a regional university in Japan became a place where students understood the foreign language they were learning better and virtual exchange became an effective way to enhance international communication. Case Study 5, by Alice Shu-Ju Lee and Wing Yee Jenifer Ho (Macao), reports on how an instructor structured a group peer review activity that allowed students to synchronously commenting on their peers' research essays using Google Docs. The results show a strong level of student engagement and students' comments which went beyond the teacher's expectations. Turning to the topic of flipped classes, in Case Study 6, Sung Yeon Kim (Korea) investigates how this type of learning was incorporated into content courses for pre-service language teachers. Although many teachers resisted the use of flipped courses, and there were problems for both teachers and students getting used to a flipped course, the results from this case study show that with some training, teachers can make use of this mode of teaching, and students gain benefits from it too. In the next case study, Mayyer Ling and Deyuan He (Brunei) apply Garrison's Model of self-directed learning (SDL) to students' Canvas discussions in order to investigate interactions between learners. Students taking a film studies course were asked to discuss what they had learned with each other on the discussion platform on Canvas. The idea was to create space for learners to use their second language to express themselves freely. It was found that students were able to manage, monitor, and motivate each other in their online discussions. In most of the case studies, students and their teachers were working in technologically advanced environments, turning to a more demanding context for the use of technology, Muhammed Shahriar Haque and Md. Masudul Hasan (Bangladesh) discuss the problems and difficulties their students had when trying to make use of technology in a challenging learning environment. Even although there was poor internet connectivity and other difficult environmental factors, by perseverance, both students and their tutor made Google Classroom work and they all benefited from using it. In the last case study in Part II, Lluís Valls Campà and Juan Manuel Díaz Ayuga (Japan and Spain) explain a virtual exchange project between Japanese students of Spanish, and learners of Japanese in Spain. For eleven weeks, students discussed in online forums and, in Japan, engaged in classroom-related activities. Although the virtual exchange was considered a success in terms of having students use their foreign language, and

learn more about each other's culture, the authors caution about setting up such activities without prior training and careful selection of materials and tasks. Such a note of caution perhaps applies to all attempts at introducing new methods, or new technologies to students and teachers.

Part III of the book contains two research chapters and two case studies. These all deal with more advanced applications of technology, and perhaps not the type of technology most teachers would be familiar with or be able to use. However, due to the rapid advancement of technology, such areas need to be reported and examined for the benefits they may lead to in our future use of technology in education. In Chap. 15, Siew Ming Thang, Nurjanah Mohd Jaafar, Hong-Fa Ho, and Noor Baizura Abdul Aziz make use of the EyeNTNU-120 eye tracker in laboratory conditions to track students' eye movements when reading texts with and without illustrations. The main findings were that illustrations were useful in aiding comprehension, but that students needed to be trained to look at the illustrations while reading in order to gain these benefits. In Chap. 16, Danyang Zhang and Pascual Pérez-Paredes explore the perceptions of 153 EFL teachers of the use of Augmented Reality (AR) in English language education. AR basically integrates computer-generated content over a real word environment. Although few teachers had any experience of using AR, they were enthusiastic about the prospect it might have to enhance their students' learning.

The use of advanced technologies can also be seen in the next two case studies. Case Study 10, by Mehrasa Alizadeh and Eric Hawkinson (Japan), explains how smartphones can be used to help students learn more about Virtual Reality for tourism in an EFL context. Their students were given the opportunity to experience creating media for tourism purposes within an English-medium instruction context: graphic design, photography, videography, with instruction on how to create content for virtual tourism. Questionnaire responses show that although a new way of learning, most students were receptive to trying out this approach. The last case study in the book, by Bin Zou, Sara Liviero, Kefei Wei, Lu Sun, Yitong Qi, Xiaoyu Yang, and Jaiwen Fu (Mainland China) presents a study into the use of an Artificial Intelligence (AI) speech evaluation system. These practitioners assess how useful an online app, *Liulishuo*, was in giving students feedback on their speaking fluency, vocabulary range, grammatical and pronunciation accuracy. The results show that once familiar with how to use the app, most students were happy with its ability to detect their pronunciation problems. This made students more aware of their speech and how to improve areas of pronunciation.

Together, the chapters and case studies in this book represent a fair cross-section of teachers' and students' perceptions on how technology can be successfully integrated in language education in Asia today.

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Part I

Chapter 1
Moving Language Teaching and Learning from the Known to the Unknown

Agnes Kukulska-Hulme

1 Introduction

At the time of writing this introductory chapter, the largely unanticipated COVID-19 pandemic created an unexpected context in which to consider developments in language learning with technology. Widely imposed restrictions on mobility and travel suddenly put an end to many of the benefits of mobile learning, when conceived as learning on the move rather than merely the use of mobile devices. New requirements for social distancing put a stop to habitual sharing and passing around of technology among friends, colleagues, students, and even strangers such as users of internet cafes or tourists handing over their mobile phones to have their photos taken. People were forced to adapt in haste to new circumstances, including teachers and students being required to start teaching and learning remotely. Many began using technologies and applications they had never used or even heard of before.

Yet before all that happened, the year 2020—with its pleasingly repeating pattern of numerals and its association with 20/20 'perfect vision'—had an almost magical feel to it and a symbolic value as a harbinger of bright new beginnings. It was an aspirational target date for ambitious initiatives and fresh perspectives. From global initiatives such as the European Commission's 'Europe 2020' strategy for growth (2010) to national plans for development through education such as the 'Towards vision 2020' Malaysian project (Lee, 1999), the 'National Guidelines for Medium- and Long-Term Educational Reform and Development (2010–2020)' in China (Gu, 2010) and the UK's V2020 charity's efforts (V2020) to strengthen communities through leadership, it was clear that the year 2020 stood for exciting targets and high ideals. Looking ahead to the next few years, organisations and governments will aspire once again to bring about positive change, but this will happen in substantially

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different and perhaps more volatile, uncertain, complex and ambiguous environments (see VUCA-world, 2020). The future seems less predictable than it was before.

This chapter considers some changes that are occurring as education adapts to new realities and as those involved in language teaching and learning stride forward—or shuffle hesitantly—into the unknown. It highlights the potential to accept and explore the unknown, through processes of inquiry and consideration of desired outcomes. To facilitate this process, the structure of the rest of the chapter is loosely based on a learning design framework developed as a tool for language teachers to help them reflect, innovate and prepare new learning activities to be undertaken with the use of mobile devices (Kukulska-Hulme et al., 2015). The original framework is effectively an invitation to teachers to explore how language learners might be guided and supported to undertake 'inquiries', defined as open-ended, active learning activities that take advantage of opportunities for technology-supported language learning or practice in, and especially beyond, the classroom. The framework assumes that teachers have enough autonomy to be able to do that. Although it is used in this chapter in a different way (not for the design of learning activities, but to consider broader aspects of change), there is a similar goal in terms of undertaking a structured exploration to discover something new. The framework has four key elements:

- Reflection
- Inquiry
- Rehearsal
- Outcomes.

There is no required order or sequence to these four elements. Starting with 'reflection' is one possibility, which in this case presents an opportunity to assess how things have been done in the past or up till this moment, to plan for the future or to decide how to proceed. Individuals (language teachers, trainers, instructional designers, researchers and others) can do this kind of reflection themselves, though often they also look to leaders in their educational settings or in communities with which they have an affinity, to guide their thinking and actions.

2 Reflection: Guidance For an Unfamiliar Terrain

Language learning with technology as a field of research and practice has established itself as a complex collection of overlapping and interconnected communities across the globe, whose members are largely able to share their knowledge widely, though many are drawn primarily towards interactions and collaborations with colleagues in their own locality. Teachers tend to look to their local or national contexts for guidance on how to use technology in teaching. There are many good reasons for this, including language barriers preventing wider communication. Even technology that looks similar across the world varies considerably in many respects and is closely associated with local ways of using it. On the other hand, it is increasingly important to have a global outlook and an awareness of technology adoption, to be able to consider

emerging ideas elsewhere as well as to take advantage of virtual opportunities to cross borders and boundaries when we teach, design materials, research and learn. In the Open University's *Innovating Pedagogy* annual series of reports (http://www.open.ac.uk/blogs/innovating/), we have partnered with institutes in different countries (US, Singapore, Israel, Norway, Ireland and China) to enable us to provide a rich repertoire of emerging pedagogical innovations (including some specifically related to language learning) and to compel us to communicate their value in a way that can be understood with relative ease.

In Europe, as in many other parts of the world, teachers, researchers, learning designers, application developers and education managers are likely to continue to look to professional associations and trusted agencies or institutes for reliable guidance on worthwhile uses of learning technology and emerging trends. In 2020, in the field of research and practice in learning technology, the UK Association for Learning Technology (ALT) produced a 5-year strategy, launched in February 2020 (ALT, 2020a), which champions openness and includes a key aim to increase the impact of learning technology for public benefit. ALT also signed a Memorandum of Understanding with the European Association of Computer Assisted Language Learning (ALT, 2020b) to combine efforts to enhance the understanding and application of learning technology in education and in language learning. By doing so, the two associations signal that collaboration across boundaries and borders will be a preferred way of operating over the next few years.

National education policies and strategies vary in the extent to which they provide direction with respect to the integration of technology in education, and specifically in language teaching. A recent high-level advisory joint report from five UK policy and research organisations, 'Towards a national languages strategy: education and skills' (British Academy, 2020), makes no mention of the role or impacts of learning technologies. However, the UK Department for Education's policy paper on 'Realising the potential of technology in education' (Department for Education, 2019) declares support for the education sector to develop and embed technology, so as to cut workload, foster efficiencies, support inclusion and drive improvements in educational outcomes. The paper notes that 'It can be difficult for education leaders to separate evidence-based practice and products from a vast range of gimmicks' (p. 2). This suggests that researchers should perhaps make greater efforts to interpret for education leaders available and reliable evidence concerning appropriate uses of learning technology in education (Luckin, 2018; Xu et al., 2020) as well as providing evaluation frameworks that will help detect those aforementioned 'gimmicks' (e.g., Herodotou et al., 2019; Rosell-Aguilar, 2017). Guidance on realising the potential of technology needs to come both from inspiring visions and from evidence of what has been shown to work. It should also be underpinned by inquiries into how language and communication are changing and what pedagogical innovation might be needed.

3 Inquiry: Language in Emergencies and Beyond

Education systems around the world are for the most part deeply embedded in political, economic, social and cultural structures, with their attendant assumptions and enshrined practices that are hard to change. In contrast, the concept of a 'learning culture' is more malleable, with individuals or groups of participants potentially able to steer or adopt new developments as they wish. Porcu (2017) defines 'innovative learning culture' as:

> a social climate that stimulates people to work and learn together, to grow as an individual and as a group (team, organization), and that provides people with the autonomy needed to be flexible, to experiment, to be creative, and to investigate radical possibilities in order for the organization to have better chances for survival in the long run. (p. 4)

While the context discussed by Porcu is learning among journalists, innovative learning cultures offering a favourable social climate are needed in many spheres of activity, including education. In that spirit of creativity, openness and autonomy, people can initiate inquiries into what changes, if any, teachers and learners might like to see or to introduce.

The changes brought about by the pandemic have been unplanned and unpredictable as to their effects. The switch to online education around the world has been characterised as 'haphazard and chaotic' (Williamson et al., 2020), which is clearly not the way anyone would have wished it to be. Nevertheless, there are already suggestions that some practices developed during the pandemic may be beneficial and worth retaining. Two examples offered by Yi and Jang (2020) in relation to South Korea include supporting translingual practices in language learning (such as use of multiple languages in subtitling of videos) and enabling new collaborative teaching configurations thanks to more opportunities for the teachers to discuss their philosophies, methods and materials in the context of remote teaching. Other aspects of the adoption of technologies and methods in language teaching and learning during the pandemic have started to be explored in emerging small-scale studies (e.g., Supriadi et al., 2020; Upor, 2020) that will eventually need to be brought together to show the bigger picture. There are also publications on the effects of the pandemic on e-learning (e.g., Ebner et al., 2020; Peterson et al., 2020).

Language comes to the fore in any crisis or emergency, as the ability to comprehend a situation and seek out help or advice becomes a priority. In national health emergencies, as specialist terms begin to feature in the news and unfamiliar words start to make an appearance, everyone is faced with some degree of challenge. In the COVID-19 pandemic, scientific terminology has jostled with layman's terms and culturally specific metaphors that have been used in efforts to explain a new situation to 'everyone'. The meanings of numerous words and expressions are constantly being queried and redefined as citizens grapple with slippery definitions of 'a household', 'a social gathering', 'mingling', 'confinement' and many others. For those who have little or no access to information in their first or preferred language, and cannot check their understanding, the situation is greatly exacerbated. In the pandemic crisis, initiatives providing information and resources in several languages (e.g., Suffolk County

Council, 2020), including Indigenous, Endangered and Under-Resourced Languages (ELP, 2020), can be of enormous help.

Willingness to learn other languages in order to understand and communicate with others, rather than predominantly to score highly in tests, is increasingly important in our world where there are constant requirements to share new information and understand people from diverse backgrounds. General benefits of language learning, in terms of academic achievement, improved attitudes to other cultures and development of cognitive abilities are being showcased (ACTFL, 2020; Woll & Wei, 2019), yet arguably there is insufficient inquiry into what motivates learners and what kinds of language learning are not only personally valuable but also have public or societal benefits.

4 Rehearsal: Echoes of the Past

A long-standing challenge in education has been how to move the global enterprise of language learning beyond the familiarity of traditional methods and materials to less explored horizons and unfamiliar ways of teaching and learning that are arguably more fitting for our times. In 2009, I posed the question: 'Will mobile learning change language learning?' (Kukulska-Hulme, 2009), at a time when the proliferation of mobile devices along with emerging conceptions of 'learning on the move' had created some opportunities for change yet it was not clear whether these would be realized. The paper emphasised contextual learning outdoors and indoors, and movement between these settings, predicting that we could expect to see more examples of language learning being integrated with everyday life. Home-based learning enhanced by technology seemed to hold some potential for future language learning. The paper went on to say that mobile technologies could support the objective of allowing learners to influence what is learnt and how. It speculated that a key challenge would be to develop designs 'that clearly identify what is best learnt in the classroom, what should be learnt outside, and the ways in which connections between these settings will be made' (p. 164).

Mobile learning has indeed changed language learning in many ways, including some ways that were not strongly predicted a decade ago—for example the informal use of social media for everyday language practice and increased exposure to target languages, and the use of mobile phones in out-of-class settings to connect students' social mobile communication with language learning practices (see Wu & Miller, 2020). Although there are no exact figures for it, it seems that smartphones are now an immensely popular technology for informal language learning and internet-based media are a major resource of content and interaction, often used alongside formal course materials and instruction. Formal education has been more circumspect in exploring mobile learning.

In parallel with the rise of mobile technology adoption, the past decade has seen considerable work in defining principles for mobile learning designs (Elias,

2011; Herrington et al., 2009; Kukulska-Hulme & Traxler, 2019) that have fore-grounded real-life relevance, personalisation and learners as knowledge creators. Over that period, the concept of design for learning with mobiles has widened from its previous institutional focus and should now aim 'to embrace the exploitation of the abundance of online digital resources (content, communities and tools)' (Kukulska-Hulme & Traxler, 2019, p. 182). Such design for learning might be undertaken more autonomously by teachers together with their students. Recently Hall et al. (2020) also proposed a set of principles for innovative mobile learning, designed to challenge existing thinking and practices in digital education. These principles emphasise collaboration, authenticity, adaptivity, mobility and student choice. They reflect key concepts propounded by the mobile learning research community over many years. Such principles make perfect sense to innovators and researchers, yet they can be difficult to implement in teaching practice. Sometimes there is just no time to make changes, as teaching loads and student demands are too high. Therefore, if changes are to be made then those aspects should be the starting point.

5   Outcomes: Open to Negotiation

The underlying philosophical stance in a world in flux is the acceptance of risk, change and uncertainty, especially when learning takes place with everyday personal technologies and outside the classroom. This risk-taking is already a challenge in western countries where students are often encouraged to take some responsibility for their own learning; however, in Asian contexts, where students rely on teachers for guidance, it can be seen as an insurmountable obstacle. When contemplating designing for learning in an uncertain future, Beetham (2013) discussed a range of issues that designers of learning would need to engage with in the upcoming five to ten years. There were technological uncertainties in terms of digital tools available for learning; there was the rise of digital media and web 2.0; personal and social technologies were coming to the fore; and numerous economic and political uncertainties were impacting learning designs. Implications were explored, and four educational futures were conceived in terms of learning as connectivity, open educational practice, learner-defined contexts and learning in diverse settings. While most of these have increasingly become reality, learner-defined contexts stood out as being 'contentious' and this version of the future is only just beginning to be realised. Learner-defined contexts describe the capacity of individuals to personalise aspects of their experience, including negotiating their own learning goals and desired outcomes. However, some learners might prefer to be told what outcomes to achieve. Alternatively, they may prefer to define their goals and outcomes in collaboration with other learners. Therefore, learner diversity (widely defined) should be added as an important feature of future learning designs.

In a world in which many languages are evolving and changing rapidly in response to factors such as technology use, wider sharing of new information and online encounters among diverse language users, both teachers and learners have to be able

to deal with less predictable situations and learning outcomes than has been the case in the past. The corollary of this is that they need to be more aware of their personal agency and encouraged to exercise self-determination in language learning and in the selection and use of multiple technological resources. This perspective emphasises teachers' and learners' capacity to become agents of change. However, in reality, many are highly constrained by systems of evaluation or assessment as well as available financial resources and time. In many contexts, change has to be facilitated by leaders who are able to overcome these barriers.

In a world in which cooperation and collaboration across cultural and linguistic divides are increasingly important, learning outcomes focused on these aspects will be needed, alongside more research on these topics in language learning and intercultural exchange (Nishio & Nakatsugawa, 2020). In many parts of the world, cultural and linguistic divides exist within a small radius. Responses to the pandemic, particularly in terms of social help and support, have shown how important it is to focus on local issues as much as global ones, yet the common ground is a concern with human relations rather than place.

6   Conclusion

In the decade up till 2020, the world seemed to be moving gradually towards a tipping point into ubiquitous mobile learning that appeared to be well aligned with ambitions for transnational educational mobility in increasingly mobile societies (Traxler & Kukulska-Hulme, 2016, p. 208). Mobility can be 'a great instigator of change' (Kukulska-Hulme, 2010, p. 12); however, in the immediate future, this driving force will be curtailed. While physical mobilities are temporarily suspended or limited to some degree, other types of mobility should come to the fore, such as temporal and virtual mobilities that can expand horizons and enlarge our social networks and interactions. This may lead to new inquiries into how to use what we have learnt in the current pandemic to develop language learning for other emergencies as well as for times of greater choice, enjoyment and possibility.

In the framework used for this chapter (Kukulska-Hulme et al., 2015), teachers are encouraged to rethink their practice in relation to the possibilities offered by mobile devices and the affordances of environments in and beyond the classroom. This includes reorienting teaching and learning towards an inquiry mindset whereby learners (individually or with others) are supported in exploring and rehearsing the target language and where the outcomes are likely to be somewhat different or more open-ended than in more traditional teaching. Although designed for mobile learning, the framework seems to be applicable more broadly to reconsideration of language teaching and learning with technology. It has recently been used to reflect on a project on language teacher education (Bortoluzzi et al., 2021).

An increasingly international perspective on research in technology and language learning, largely based on publications in English that are accessed on the internet, might suggest that there are common conceptions of the purposes and expected

outcomes of technology-based language teaching and learning, but that is hardly the case. Turvey and Pachler (2020) argue for an awareness of the 'pedagogical provenance' of research studies, to take account of primary factors such as 'teachers' knowledge, understanding and capabilities in utilising digital tools effectively within teaching and learning', as well as secondary factors such as 'their philosophical attitudes and values when appropriating digital technologies or, their pedagogical values and beliefs more broadly' (para. 1). Almost the same could be said of learners and other stakeholders in educational settings. Provenance and context matter a great deal. Yet we must still try to learn from one another's experiences of innovations, despite our differences. With perhaps less haste and more time in 2021 and beyond to consider their options, all may look for more considered ways to 'step safely into the unknown' (Reeson, 2019).

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Chapter 2
Language Learning with Technology in the Classroom

Christoph A. Hafner and Lindsay Miller

1 Introduction

The notion of language learning with technology is one that has been extensively explored in the field of computer-assisted language learning, or CALL. One key feature highlighted by this research is the way in which technological innovations have extended the reach of course design. For example, the effect of internet connectivity has often been to break down the four walls of the classroom, allowing teachers and learners to connect with a wider, global public and learn flexibly at a time and place of their own choosing. These affordances are reflected in some recent developments of CALL research. One line of research investigates mobile-assisted language learning (MALL), considering the enhanced mobility and situated learning made possible by mobile devices (Kukulska-Hulme & Viberg, 2018). In addition, recent research has examined the relatively structured and teacher-directed practice of virtual exchange (O'Dowd, 2018) and there has also been interest in agentive language learning practices beyond the classroom in the 'digital wilds' (Sauro & Zourou, 2019). In this chapter, we focus specifically on classroom applications of technology, drawing on a study to illustrate how technology can be deployed as part of structured language courses.

2 Towards an Ecological Approach to CALL

The intentional use of technology for language learning in the classroom can be divided into a number of different approaches summarised by Chun (2016), who draws on the work of Warschauer and others (Warschauer, 1996; Warschauer &

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Healey, 1998). Although this conceptualisation has been criticised for being too rigid (Bax, 2003), it nevertheless serves as a useful heuristic. Approaches to CALL can be characterised as structural, communicative, integrative, and ecological. According to Chun (2016), in structural CALL, the technology is used for drill and practice activities that target accurate use of formal language structures; in communicative CALL, the technology is used for communicative exercises that target fluent use of language functions; in integrative CALL, the technology is used to provide access to authentic interactions with members of relevant discourse communities; and, in ecological CALL, the technology is used to provide global communication opportunities capable of developing students' digital literacies and their identities as global, multiliterate citizens.

The approach that we adopt to technology in the ESP course described in this chapter draws on many principles of an ecological approach. In ecological CALL (Blin, 2016), the technology is considered as just one part of the socio-cultural context within which language learning takes place. For proponents of an ecological approach, it is necessary to consider the technological environments that instructors can design to support learning outcomes as part of a wider 'ecology' that includes everything from institutional elements, to teacher and learner orientations, to technological affordances as implemented in instructional designs (van Lier, 1998, 2004). In this view, language learning with technology cuts across time and space to include not only classroom-based applications of technologies but also applications that go beyond the classroom.

Designing a technological learning environment for the purposes of language learning means paying attention to the full range of factors outlined above. While some CALL research appears to begin with the question 'How can technology be incorporated into the learning design?' Chun et al. (2016, p. 70) propose a design heuristic that begins with the more pedagogically motivated questions: What goals do I have for my students? What resources are available and how can they be used? and How is the students' learning with technology evaluated?

3 Environmental Factors in Language Learning with Technology

Among the environmental factors that have received attention in conceptualising CALL activities are those that relate to respective roles of teacher, learner, and technology, and the extent to which these necessitate a more or less student-centred pedagogy (Taylor & Gitsaki, 2004; Warschauer & Healey, 1998). In short, some of the key dimensions in CALL environments and how they can vary can be summed up as follows:

- The learner role: ranges from passive recipient of knowledge to active co-constructors;

- The teacher role: ranges from performing no role at all to that of facilitator or monitor;
- The role of the technology: includes 'tutor', 'tool', and 'stimulus'.

Another important concept when it comes to the use of technology in the learning environment is that of 'locus of control'. In the context of CALL course design (see, e.g. Hubbard, 1996), one can consider where the 'locus of control' lies: is control with the learner, the teacher, or the technology? Who makes decisions about what to learn, when to learn, where to learn, and how to learn? Arguably, technology has gradually developed in such a way that more and more student-centred applications of technology are now possible. However, it does not necessarily follow that all uses of technology are now student-centred: in classroom contexts, control is likely to be shared by teachers and students and the degree of control enjoyed by each likely varies with different kinds of activities, as we shall see.

Other important parts of the context include institutional factors. The extent to which institutions provide the necessary material and human resources for technology-enhanced learning to take place varies greatly. This includes the provision of necessary devices, network connections, and so on, as well as other forms of support like adequate training in relevant pedagogies. In Lawrence et al.'s (2020) study, they found that while teachers are expected to innovate, not all are given the necessary training and support to do so.

4 Innovation and Normalisation

The field of CALL is one that highly values pedagogical innovation, seeking to use technologies in innovative ways that enhance language learning. As new technologies are constantly evolving, there is a danger with such an approach to focus on new tools simply because of their 'newness'. However, Bax (2003) suggests that, ultimately, the goal for CALL research should be the 'normalisation' of the use of technology in language learning. For Bax (2003, p. 23), 'Normalisation is… the stage when a technology is invisible, hardly even recognised as a technology, taken for granted in everyday life'. The book is a good example of a normalised technology in language learning: textbooks are so pervasive that we do not even recognise them as a technology. An even more fundamental example is the technology of writing: attempting to teach and learn language nowadays without writing would be unimaginable to most people.

We suggest that, nowadays, CALL is to a large extent becoming 'normalised' in Bax's terms. Of course, there are still emerging technologies that have yet to find their way into language classrooms in a routine way: virtual reality, augmented reality, and artificial intelligence technologies spring to mind. However, many of the technological tools that one finds in the classroom have become taken-for-granted parts of the environment. In fact, many students have come to expect technology to

be incorporated into their language learning experience (Conole, 2008). There are two elements to this normalisation:

1. technology is an integrated part of the learning environment and so is seamlessly used to facilitate the process of teaching and learning; and
2. technology is an integral part of communication and so the use of technology for communication purposes forms a natural part of learning goals.

We would maintain that many of the 'classroom' practices described in this chapter serve as an interesting example of what technology looks like when it is a natural, and more or less invisible, part of the teaching and learning process.

5 The Study

5.1 Background

The study described in this chapter reports on a General Education (GE) English for science course at a university in Hong Kong and is part of a larger research project (see Hafner & Miller, 2019). The course is a compulsory credit-bearing course, which contributes towards the students' overall university Grade Point Average (GPA) and as such has high value for the students taking it. It has been designed to meet the spoken and written communication needs of a range of B.Sc. students at our university. Over the past few years, the number of departments opting to enroll their students in this English for science course has increased and we now teach students from Applied Biology, Applied Chemistry, Applied Physics, Environmental Science and Management, Computing Mathematics, Architecture, Surveying, Biomedical Sciences, and Veterinary Medicine. The course aims to 'provide students with the necessary communicative competence to operate effectively in a range of scientific contexts' (Department of English, 2018) and is delivered in weekly three-hour tutorial sessions over a 13-week semester with around 25 students in each tutorial group.

The English for science course takes a wide-angled approach to English for academic purposes to cater to the different disciplinary groups we teach and is organized around an English for science project, whereby students are required to work in teams of four to carry out a simple scientific study (see example in Appendix 1). The results of the study are then reported first as a digital video scientific documentary, designed for a general audience to view, and shared through YouTube, and then as a scientific report (an individual piece of work) designed for a specialist audience.

In the first 7 weeks of the course, we focus on the digital video and divide the work students have to complete into various stages: (1) reading/data collection, (2) scripting/storyboarding, (3) performing/recording, (4) editing, and (5) sharing (see Table 1). As an integral part of the course design, students are introduced to several technological devices in class to enable them to complete their projects, and they

Table 1 Use of technology

Week	Topic	Teacher	Students
1	**Introduction to course** • Identify some of the communicative demands of being a scientist • Identify commonly used logic of scientific discourse • Describe and explain different kinds of 'narratives' in science communication	• Introduce CANVAS • In class Projector • PowerPoint • Multimedia (What makes a good scientist?)	• Make use of the internet on phones or laptops
2	**Reading workshop (Webquest)** • Find and judge reading material appropriately • Research a topic • Plan the project work	• In class Projector • PowerPoint • The internet	• Laptops • WhatsApp groups formed for scientific documentary
3	**Video Workshop (PowerDirector)** Presenting scientific information • Using Multimedia • Generic structure • Communicative purpose • Creating a scientific documentary • Giving credit and getting attention	• In class Projector • PowerDirector • Multimedia (BBC mini-documentary)	• Laptops • Microphone for recording • Students' own images to import into Word processor • Use Word processor to create storyboard and work on script (weeks 3–5)
4	**Field study** No tutorial		• Students collect data for their scientific documentary
5	**Writing Workshop (Google Docs/Word processor)** Presenting scientific information • Review scripts • Practice of presentation skills	• In class Projector • The internet (Multimedia samples of scientific documentary genre) • Google Docs demonstration	• Word processor for storyboards and scripts • Laptops
6	**Video workshop** Presenting scientific information • Video troubleshooting	• In class Projector • Demonstration of video editing on PowerDirector	• Laptops • Editing tools on PowerDirector
7	**Scientific documentary sharing session**		• YouTube presentation of scientific documentary

(continued)

Table 1 (continued)

Week	Topic	Teacher	Students
8	**Overview of Scientific Report** **Citation and referencing in scientific reports** Learning to use corpus tools to analyze scientific reports	• In class Projector • PowerPoint • AntConc	• Laptops
9	**Writing workshop: Introduction sections in scientific reports** Identify common language used and common problems students have in writing introduction sections	• In class Projector • PowerPoint • AntConc	• Laptops
10	**Writing workshop: Methods and results sections in scientific reports** Identify common language used and common problems students have in writing methods and results sections	• In class Projector • PowerPoint • AntConc	• Laptops
11	**Writing workshop: Discussion and conclusion sections in scientific reports** Identify common language used and common problems students have in writing results and discussions sections	• In class Projector • PowerPoint • AntConc	• Laptops
12	Student consultations		
13	Course Review Review communicative purpose of different sections of scientific reports Identify a range of ways of dealing with their writing weaknesses in future, including use of online resources	• In class Projector • PowerPoint	• Laptops

are expected to spend a considerable amount of time out of class following up their classwork.

In the second part of the course, Table 1 weeks 8–13, we incorporate a data-driven approach that encourages students to explore corpora relevant to particular disciplines to help them prepare their individual scientific report, which is based on the same data set that was used for the group project. In this part of the course, students can search corpora of scientific texts with recommended corpus tools (AntConc: Anthony, 2019) and inspect the most frequently used vocabulary and expressions in each section of scientific texts: Abstract, Introduction, Methods, Results, Discussion, Conclusion, Acknowledgments. This discovery-based approach to writing allows students to make use of technology in an authentic manner to check their writing against customised corpora of scientific texts. Students are asked to bring laptops to each lesson and download the AntConc software and tailored corpora that we have compiled for them. Then, they are given demonstrations by the tutor of how to search the corpora for specific language forms and the functional uses of English in scientific texts. These in-class data-driven learning activities sensitize students to this resource and the tutors encourage students to continue to check, out of class, their own scientific report writing with the information contained in the corpora, when necessary.

6 Course Design

Table 1 shows the use of technology as applied in the thirteen-week course. As can be seen from the table, technology is integrated throughout. The tutor makes use of PowerPoint, the online learning management system (Canvas), and the internet (YouTube) in class to present and explain important concepts. In addition, students are requested to bring laptops to most of their lessons and a considerable amount of class time is given over to students conducting online searches for information and practising using editing software. The combination of face-to-face teaching and monitoring by the tutor, and students as recipients and co-constructors of knowledge, results in a constant interplay between teacher and learners' roles with each other. This interplay of roles results in a unique ESP course design, which engages students with their in-class learning in a technological learning environment.

The project-based syllabus design allows for a degree of authenticity to be included in the course: it provides students with real reasons for communicating with each other (in and out of class), using authentically sourced materials (via the internet), and engage with technology (when appropriate) in an authentic fashion so as to deliver their experimental findings as a digital video uploaded to YouTube. This process also provides students with real reasons for writing (storyboards and scripts) in a meaningful context. The project design of the course also allows for teaching and learning opportunities relevant to the generic structures and lexico-grammatical patterns particular to students' needs. Tutors provide relevant language and skills input at significant points during the course, using a task-based design that is intended

to encourage a learner-centred approach and seeks to promote collaborative learning among the students.

The English for science course was designed to have students engage with technologies in an authentic and natural way. The approach integrates the digital media environment to support language learning: reading and evaluating online texts, writing and sharing digital multimodal texts. As an extension of their in-class technological learning environment, students often use a range of digital tools to collaborate with each other outside of class time to complete their group-work project so that the use of technology becomes an essential feature for language learning and project development.

6.1 Teacher's Use of Technology

Throughout the English for science course, the tutor makes use of various technologies. Here we mention three: PowerPoint, Multimedia, and the Learning Management System.

In each lesson, the tutor makes use of PowerPoint (ppt) slides to present information to the students. PowerPoint is a presentation programme and allows tutors to prepare customised slides about the content of a course and can include textual content as well as visual information (diagrams, charts, photos) and sound. In this way, the presentations made in class with PowerPoint can be visually attractive and keep students attentive and motivated. In the English for science course, a customised background slide is used so as to standardise the presentation mode, see Fig. 1. In this way, students are not distracted by incongruous visuals and as all tutors teaching the ESP course use the same standardised PowerPoint slides, the course materials promote a certain, distinct identity.

Embedded into some of the ppt slides are multimedia clips. These are often linked to YouTube and serve to illustrate points about the use of language and other multimodal semiotic resources in digital video scientific documentaries, or as a means of presenting other learning content. In this way, the use of multimedia ensures

Fig. 1 The customised ppt slides
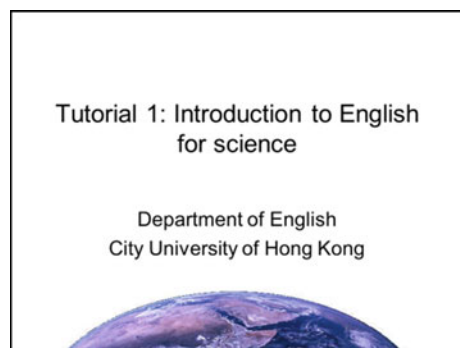
that tutors can bring the outside world into the classroom and the lessons are lively. Authentic interviews with scientists communicating science (e.g. TED talks) ensure a degree of validity to the course content, and genre-specific concepts like the different ways to present documentaries are easily explained by experts online.

The tutor also makes extensive use of Canvas both in class and out of class. Canvas is a learning management system (LMS), which can be used for online, hybrid, or face-to-face courses. During class time, tutors show students how to access files and have students download worksheets for in-class use, and view video clips. Out of class, students can turn in assignments, check their grades, receive announcements, and interact with their tutor or other students. Therefore, apart from being used in class, the online site can be accessed from a variety of devices and is available for use around the clock which allows for a certain synergy to develop throughout the course. In this way, tutors can use the LMS at any time and any place to update information about the course, view students' comments on a discussion board, grade assignments, and generally use the site as an online office to interact with students taking the course. Many students have come to accept that they can access information about their course via an LMS and it is now a much-used technological device as part of 'normal' teaching and learning.

6.2 Students' Use of Technology

The digital video project gives students the opportunity to engage with multimodal forms of expression that they may already be familiar with, and are becoming more common in twenty-first-century life. Throughout the English for science course, we establish classroom procedures, which require students to make use of technology as a resource for learning. This is done in several lessons in the course so that the use of technology becomes an integral aspect of the students' classroom learning experience. For instance, in one lesson, we prepare students for a writing task by taking them through the following steps:

Task 1. Pre-listening: Students play a thought experiment game together that consists of making choices and tests their levels of altruism.
Task 2. Listening: Students listen to the podcast about altruism in Swiss children. They take notes and answer comprehension questions.
Task 3. Discussion: Students discuss possible limitations of the research they listened to and how these could be overcome by a future experiment, and how other cultural groups might respond to the experiment.
Task 4. Writing: Students in groups brainstorm and use word-processing software to write an introduction section for a scientific report on the topic of altruism in different cultures.

As can be seen from this example, we use listening to a podcast as a way into discussions about the topic, and then use the results of the experiment described in the podcast to digitally write (using word-processing tools) about the situation in a

different cultural context. Students use their laptops for this writing task. The use of technology here complements, and perhaps due to the editing features available on the word processor, which allow for transparent peer feedback using collaborative markup functions, enhances the students' writing experience.

7 Technology-Enhanced Activities in Class

In this section, we report on three parts of the course where technology had an important role to play. We illustrate how we made use of a Webquest in a reading workshop, PowerDirector in a video workshop, and Google Docs in a writing workshop, see Table 1.

7.1 Webquest (Reading Workshop)

In week 2 of the course, students are given their project topics (e.g. see Appendix 1). As a preliminary stage in preparing to conduct their projects, students are given an in-class reading workshop where the learning goal is to ensure that students are able to find and critically evaluate information on the internet. The class task is as follows:

HOW TRUSTWORTHY IS YOUR SOURCE?

Which of the following sources do you think your lecturers would consider to be reliable sources of information for your studies? What do you think the appropriate purpose of such sources might be?

1. Textbooks
2. Library reference books
3. A paper encyclopedia, e.g. Encyclopedia Britannica
4. An online encyclopedia, e.g. Wikipedia or Encarta
5. A local newspaper, e.g. SCMP, Apple Daily
6. An international newspaper or news agency, e.g. The New York Times, The BBC
7. A blog written by a distinguished, Nobel prize-winning scientist
8. A blog written by a fellow student
9. A peer-refereed academic journal
10. A popular science website
11. An email list that includes a number of prominent scientists
12. The Hong Kong Environmental Protection Department website.

Fill in the table below to indicate your answers.

Text	Reliable?	Possible purpose?
1		
2		
3		
4		
Etc.		

This task is intended to sensitise students to the reliability of English language source materials they may wish to use in researching their project topics. Later in the lesson, students apply this knowledge during the reading workshop, completing a Webquest (Dodge, 1995), which requires them to find and evaluate information about key questions needed for their video project. As the topic used in class is the same as the topic for the video project, the in-class activity informs later out-of-class research that students do. Thus, the aim of the Webquest is to ensure that there is a degree of awareness raising of critical literacy practices among all the students in each group, and that they will select sources carefully, when it comes to compiling the research for their scientific documentaries.

During the Webquest, the tutor circulates and checks with students that they understand the concept of reliability of the online sites they visit and encourages them to make notes so that they can share the information with their project teammates later on. This in-class monitoring of the students ensures that the tutor can troubleshoot when students have problems, and allows the tutor to answer individual questions during class time. Students are given up to 45 min of the class time to conduct their internet searches before sharing what they found with each other for another 15 min. This extended classroom activity sets the baseline for students to appreciate the type and kind of background information they need to search for online. It aims to ensure that only reliable sources will be used in the preparation of the digital videos and scientific reports.

7.2 PowerDirector (Video Workshop)

Prior to week 3, students are asked to download and install a trial version of PowerDirector, a Windows-based video editing suite, and to bring at least one laptop per group to the class. In addition to this, they are asked to bring a number of images that could be relevant to their project topic. The goals of lesson 3 are to make sure that the students are able to use at least one digital video editing tool so that they can edit their videos before uploading them onto YouTube for viewing/evaluation in week 7.

Lesson 3 begins with a discussion about how scientists communicate with a non-specialist audience. Students view a professionally produced BBC mini-documentary

about the importance of water for the human skin and their attention is drawn to the use of both rhetorical and multimodal (visual and aural) ways of making the content interesting and accessible to the viewer. In addition, the tutor discusses with the class other points of interest in the BBC documentary such as the setting used (the street, the home, the lab), the narrator's pace of delivery (lively and keeping pace with changing information), memorable visual effects (bottles of water being smashed to illustrate that a myth has been 'busted'), and the soundtrack (relevant to the images).

In the next stage of the lesson, students are introduced to the concepts of *remix, copyright,* and *ethics*. As they have to produce their own scientific documentary, they need to be aware of the issues involved in these areas and make sure that they follow correct procedures in producing their digital video.

Students are then taken through how to use PowerDirector in a step-by-step procedure with the tutor explaining and exemplifying the software via the classroom projector. The stages students are taken through are:

1. Capturing and importing media
2. Adding a title slide and a credits list
3. Sequencing images in the timeline
4. Adding motion/animation to images
5. Adding a soundtrack
6. Adding a voice recording.

Students work together as a group or in pairs with their laptops, trying out the features of PowerDirector. The tutor is on hand to troubleshoot. The main aim of this video workshop is simply to familiarise students with the video editing software, providing them with an opportunity to try out basic operations like importing and sequencing images. The activity takes up a significant part of the three-hour lesson as it is important that students become familiar with the video editing process, even if they have tried to use such software before. After the practice session, they then work in their groups and make use of PowerDirector (or another video editing tool if they prefer) to begin working on their projects out of class.

7.3 *Google Docs (Writing Workshop)*

In week 5, the lesson involves a workshop on how to create a full storyboard and complete a script for the scientific documentary. Students are introduced to Google Docs as a way to collaboratively write the script for their video documentary. Google Docs is a free-to-use web-based word processor. It allows users to collaboratively work online in real-time and allows for multiple users to work on the same document simultaneously. That is, students can see each other's contributions to the script writing and track any changes they make. As this software is user-friendly, browser-based, and compatible with most file formats, students are quick to learn how to use it. They can access Google Docs via Canvas and the tutor can also access the group's Google Docs to monitor and advise them. It is important to note that, in this

writing workshop, the focus is *not* on the use of Google Docs. Instead, the focus is on creating an effective script and storyboard, using language in combination with other semiotic resources, like visual images and soundtrack, in an effective way. Once more, the activities practiced in this lesson have to be completed out of class by the group so that they can produce their digital scientific documentary and upload it onto YouTube.

The lesson begins with the students viewing an online video about the different types of documentary videos: observational, expository, and participatory. They are asked to decide which would be the most suitable type of documentary based on the data they have collected. The tutor also has students discuss what type of problems they may encounter when filming their documentary and how these might be overcome. Finally, some input is provided on the 'basics of visual composition', namely: narrative versus conceptual images, engaging audience through offer and demand images, engaging audience by using distance, the meaning of various camera angles, and visual coherence (see Kress & van Leeuwen, 2006). Then, students work on their storyboard and script for their video. They are asked to make decisions on:

1. How to get the attention of their audience—an opening hook and a memorable closing;
2. Structure of the script following a simple IMRD format (Introduction, Methods, Results, Discussion);
3. Language use in the script;
4. Use of visuals.

A storyboard is a graphic illustration of what the video should look like, similar to a comic strip. Students often make their own sketches and use these for the basis of their scriptwriting. Most of the storyboarding is oral group work along with sketches and note taking directly onto a Word file. In addition, some tutors encourage students to use dedicated digital tools like *Canva* (https://www.canva.com/create/storyboards/). Based on their storyboard, the tutor asks the students to make use of Google Docs as a way to work on their scripts as a group activity. By using Google Docs in class, they can then have a record of what they would like their script to look like and continue writing their script after class.

8 Discussion

In the course design presented in this chapter, we see that technology not only had an integral part to play in the students' learning experiences, but it was also purposefully designed drawing on principles of an ecological approach to learning. Our starting point in the course design was to consider the contexts within which our science students needed to use English. Based on our initial needs analysis, we discovered that the students needed to learn how scientists used language when talking and writing about science, and that part of this communication often took place in multimodal contexts. The course design, therefore, met the students' learning goals in

having them develop competence in talking about science in an informal manner (as might happen in a tutorial) and while writing formal scientific texts (such as a lab report). The ecological approach we took allowed us to deal with both language and content as our learners explored language within scientific settings and made use of technological devices and apps in order to do this. Our evaluations show that students happily engage with the technology and they often go beyond our expectations in their abilities to present their projects as a digital video scientific documentary, and then as a written scientific report (see Hafner & Miller, 2011).

As can be seen from the study, there are different ways that technology is used in the course. We sometimes use technology to teach/learn: an educational technology approach, and sometimes students learn to use the technology for communicative purposes: a digital literacies approach. When used for educational purposes, the tutor makes use of technology for delivery of information (PowerPoint slides, and the LMS, Canvas), or demonstration of technical skills (PowerDirector). In such activities, the locus of control rests primarily with the tutor who makes the decisions of what and how to present information. When technology is used for communication, the locus of control transfers to the students, for instance when they used Google Docs to collaboratively write their storyboards and scripts, or used PowerDirector as a tool to edit their multimodal scientific documentaries. Now, students have control of the technology and make use of it not only for more efficient and effective language learning, but also as a tool for communicating information by drawing on the collaborative, mobile, and multimodal forms of representation made possible by digital media.

Based on the study, we suggest a number of principles for the integration of technology in second/foreign language courses. First, it is essential to start the learning design with pedagogical questions of learners' needs, or as Chun et al. (2016) suggest: 'what learning goals do I have for my students?' This means that the technological tools used must match the course design and promote targeted language and digital literacies needs. In our experience, we have found project-based learning to provide an excellent framework for integrated skills development. At the same time, it also gives learners a real reason to read and write, allowing them to experiment with communication technologies and digital, multimodal products that can be shared with an authentic online audience. Second, designers should consider how they will support student use of technology, for example through the use of reading, writing, and video workshops in the study (see also below). In-class use of technology can focus on the critical skills that are needed, like the ability to search for, locate and evaluate information on the internet, or the ability to meaningfully combine multiple modes in a video. There is, of course, also a technical element that sometimes still needs to be addressed: for example, in spite of all the hype about 'digital natives', some students still need to be given technical instruction in how to perform basic functions using video editing software.

In the process of using technology in the English for science course, we noticed a degree of 'normalization' of the technology. That is, we rarely had to explain to the students the concept behind using the technology. Of course, there were instances when the technology had to be explained: corpora and video tools (as

mentioned above), but these were soon learned by the students as a way to complete the course requirements, and we never had to persuade students of their usefulness. On this course, a large amount of the technology has become pervasive, unquestioned, routine, or invisible: we take it for granted in the same way as older technologies like pens, paper, and textbooks. In view of this, it appears that we are getting closer to Bax's (2003) notion of fully, integrated CALL, where the technology is just a normal part of the learning environment. Although it might appear that the technology is invisible in the course, there is, as mentioned above, still a need to support it. What matters here is that course designers need to be able to judge which uses of technology need support in terms of providing a rationale and providing guidelines on use. This extends beyond the use of technology by students to include support for teachers on the course. In the English for science course, we provide tutors with a comprehensive teachers' manual which explains the pedagogical and technical use of all technological aspects of the course, and we run training sessions for new tutors to the course who may not have used the technology (e.g. corpus tools and video editing tools) themselves before.

In the twenty-first-century classroom, pedagogical approaches need to change to adapt to the digital communication environment. Teachers and course designers need to understand technology as one part of a complex ecology of teaching, learning, and communication. In this context, it is pedagogical considerations that must come to the fore, with teachers using technologies in accordance with sound pedagogy in order to meet the learners' expectations and their language and digital literacies learning needs. We believe that with a principled approach to using technology for educational and communicative purposes these expectations can be met.

Appendix 1

English for Science Project
Multitasking madness
RATIONALE:
Scientific presentations and reports (such as lab reports) are frequently based on observations which test a hypothesis. In this project, you will make some observations of your own and report them, first in the form of a scientific documentary (Assignment 1), then as a 'scientific report' to your tutor (Assignment 3).

Work in groups of 3 or 4.
BACKGROUND AND EXPECTED OUTCOME.

1. How is multitasking defined? If there are different definitions, what are they and which one is most relevant to this study?
2. According to scientific research, what factors affect a person's ability to multitask?
3. What are the benefits of multitasking? What scientific evidence is there for these benefits?

4. What are the risks of multitasking? What scientific evidence is there for these risks?
5. What policy recommendations, if any, have been made with regard to multitasking? Consider legal requirements and policy reports in Hong Kong and elsewhere.

Read the procedure below and write down what you think will happen.

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Aims:

- To investigate Hong Kong people's perceptions of multitasking
- To investigate the relationship between gender and the ability to multitask.

Materials:

- Members of the public who are willing to take part in your study
- Multitasking tests
- Camera and notebook/pencil.

Procedure:

1. Identify members of the public who are willing to take part in your study. There should be at least 10 people (the more, the better) and they can be friends, other students at CityU, family members, and so on. There should be equal numbers of females and males.
2. Interview the participants in English in order to learn about their perceptions of multitasking. You could ask participants whether they think they are good multitaskers, how often they multitask, whether multitasking is a good thing, and whether women or men are better multitaskers. Record answers to the questions.
3. Record background information related to your participants: e.g. age, gender, and any other background information that you think might be relevant.
4. Visit the following website and demonstrate the multitasking game to participants, showing them how it is played:

   (a)   http://multitaskgames.com/multitask-game.html.

5. Have each participant play the game in order to measure their multitasking ability. Repeat this step a total of three times and record the participants' score on each attempt. Calculate the average score for each participant.
6. Compare the results obtained for the women, with those obtained for the men.
7. Summarise and interpret your findings. Do you notice any relationship between gender and ability to multitask? How could your findings be explained?

<u>Variations:</u>

In consultation with your teacher, you may make slight variations to the procedure above. For example, if you wish to add other dimensions (like age, for example) to your analysis and therefore wish to survey a slightly different population, you may do so. However, please consult your teacher about any proposed variations—your teacher must approve these variations with you to ensure that the new research questions that you generate can be answered by the procedures adopted.

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Chapter 3
From In-Class to Out-Of-Class Learning: Mobile-Assisted Language Learning

Junjie Gavin Wu and Lindsay Miller

1 Introduction

"Sorry, my English is very poor" seems to be the typical response of many Asian students when you try to strike up conversations with them. Admittedly, some Asian University students lack proficiency in their second/foreign language, but, most of the time, after having studied English for at least 8 years since primary, even kindergarten, education, many already have reasonably good linguistic competence. We need to consider then why these students feel the need to keep apologizing. One major reason for this lack of confidence is that language education in most Asian countries continues to be teacher-fronted and learners are not provided with sufficient chances to produce and use the language in (quasi) real-world contexts. As a result, they never have the opportunity to experience the extent to which they can communicate in their second/foreign language. The problem is exacerbated by factors such as large class sizes (up to 80 students in a language class); an emphasis on developing input-related skills (listening and reading) that caters better to large groups of learners in terms of classroom management; and test-dominant educational cultures, where learning how to pass the tests is valued more than being able to communicate in the second/foreign language. This problem seems to be more salient with Chinese students studying in China, where "mute English" (He, 2018) is used to describe a lack of ability to use a foreign language among Chinese EFL learners.

Due to increased global mobility, the use of English as a Lingua Franca for real communicative purposes socially, across disciplines, and in different careers poses greater challenges (or opportunities) to ESL/EFL learners. Firstly, we see the significant presence of English used on social media and for entertainment purposes.

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Students want access to such types of media and proficiency in English enables them to participate more fully with their popular culture. Secondly, in academia, professors of all disciplines are now required to publish high-quality research papers in English as an important indicator of their research capabilities. Thirdly, as Wu and Zhang (2019) argue, workers with strong communicative competence have better market value and hence more career prospects. For instance, in the business world, English is used inter-culturally, and in some cases intra-culturally, to accomplish various communication tasks, including maintaining the partnership with those with another mother language and writing up business proposals (Du-Babcock & Bhatia, 2013).

To these ends, it has become clear that there has been a rising need for English learners to use their second/foreign language outside of the classroom, and not solely for certification purposes. Fortunately, many practitioners in difficult teaching contexts around Asia have realized this growing need and have begun to reform their teaching practices. Perhaps not surprisingly, technology plays an integral part in this "revolution" and has led to a variety of innovative teaching ideas such as blended learning, flipped learning, and virtual exchange. Meanwhile, a large number of technological tools, educational or otherwise, are free for everyone to use. Moreover, technology has developed at an unprecedented rate and advanced technologies have been applied in language education, including virtual reality and artificial intelligence. In this chapter, we focus on how mobile technologies can assist in taking the students' learning experiences from in class to outside of the class and can be used as a strong motivational tool for communication purposes. Particularly, we look into the current MALL pedagogical frameworks and adapt a new, yet influential, teaching framework from China. The chapter ends with teaching principles of extending in-class to out-of-class learning via technological mediated learning environments.

2 Mobile-Assisted Language Learning Pedagogical Frameworks

Mobile-assisted language learning (MALL), with its mobility, portability, and context-aware support (Traxler & Kukulska-Hulme, 2016), has been around for some time now and has been acknowledged in many language classrooms across the globe thanks to the continuous efforts from pioneer scholars like Agnes Kukulska-Hulme, Mike Sharples, and John Traxler. In recent years, mobile devices have been further integrated with the latest Augmented Reality (AR) technology and some applications (e.g., Metaverse, JigSpace, and CoSpaces Edu) are now freely available. Yet, a word of caution is in order that we must be aware of the WOW effect of new technologies while acknowledging that pedagogical considerations should always be given priority when integrating technology into language education (see a discussion of

the theoretical underpinning of using augmented reality in language education by Zhang et al., 2020).

Technology changes at an increasing pace and one might often mistakenly think that the more advanced the technological tools are, the better students' learning experiences will be. However, recent researchers have found that learners, in an unstructured environment, rarely make use of the latest technological tools such as their smartphones in their educational pursuits (Tossell et al., 2015). This finding reminds us of the nature of teaching: what really matters is that the pedagogical design aligns with the teaching abilities of the teacher and the learning experiences of the learners. Moreover, as many technological tools are innovative and arrive suddenly onto the market, there seems to be little time to connect them with learning or educational theory. As Burston (2014) remarks, "MALL has yet to realize its full potential and … achieving this aim is more a matter of pedagogy than technology" (p. 344). We believe that soundly designed pedagogical frameworks are needed so as to support classroom teachers to better appreciate the pervasive nature of the technologies which may augment student learning.

There are at least two ways to address the urgent need for pedagogical support for MALL projects. Firstly, some researchers have proposed new pedagogical frameworks that are specially formulated within the context of MALL (see Table 1). These frameworks derived from empirical findings or were informed by and contributed to learning theories. For instance, Wong et al. (2015), based on a discussion of second language acquisition theories, task-based language learning, and mobile seamless learning principles, put forward seven learning principles and a design framework for seamless language learning. The framework aims to link formal and informal learning spaces with the affordances of mobile technologies while facilitating students' holistic language development (input and output). They further demonstrated the application of the framework with their MyCLOUD project in five Singaporean schools. However, as they pointed out, one drawback of the current seamless language learning projects concerns the issue of assessment (what, who, where, when, and how).

In a second example, drawing on sociocultural theory, Ma (2017) offered a three-component MALL model based on an ecological investigation of her participants' personalized learning experiences in relation to MALL. Learners' L2 agency plays a key part in her framework including learners' learning beliefs, motivation, and cognitive processing (e.g., self-regulation and metacognition). However, as the framework originated from her multi-case study of ten Hong Kong university learners, the small number of participants may limit its generalizability.

A third attempt to link MALL to learning theory, by Miller and Wu (2018), informed by their longitudinal research project of a WeChat-enabled language learning community, proposed a framework for the natural transition from structured learning to unstructured learning contexts. It is hoped that, with the mediation of technology, content and collaborative learning can be combined to enable learners to achieve a higher level of autonomy. Similar to the drawback of Ma's work, this framework has not been empirically tested with learners from different learning contexts and with different language proficiencies.

Table 1 A short review of the latest MALL frameworks

Frameworks	Authors	Years	Descriptions
A conceptual framework of ubiquitous knowledge construction	Peng, Su, Chou, & Tsai	2009	The pyramid-structured framework starts from the bottom with learners and mobile tools, moving up to pedagogical methods (constructivism and lifelong learning), to the top with the vision of ubiquitous knowledge construction
A pedagogical framework for mobile-assisted language teaching and learning	Kukulska-Hulme, Norris, & Donohue	2015	The framework links teachers, learners, mobile devices, and language use by reflection, rehearsal, inquiry, and outcomes
Seamless Language Learning (SLL)	Wong, Chai, & Aw	2015	7 SLL principles and a design framework are proposed based on the 10 dimensions of Mobile-Assisted Seamless Learning (MSL) (Wong & Looi, 2011), including authenticity, in-class and out-of-class learning, language input and output, learning by doing, and skills integration

(continued)

As educational studies have become more cross-disciplinary than they were a decade ago, and a technology element has almost become a necessity, another way for classroom teachers to plan and implement their own MALL projects is to adapt existing, sophisticated pedagogical frameworks and approaches from other educational linguistics fields. For example, Hafner and Miller (2019) proposed a multidimensional model for English for Specific Purposes (ESP) course design and implementation. This framework has useful insights that go beyond the scope of the ESP studies reported on. It links four pedagogical levels of course design to a five-dimensional model of genre, multimodality, plurilingual practices, learner autonomy, and project-based learning. These five key constructs apparently can be applied to other learning contexts too, and in particular, those that integrate technology with language learning. With this idea of using an existing model to design a pedagogical approach to MALL in mind, in the following example, we showcase how a broad teaching approach can be adapted from an in-class to an out-of-class learning context.

Table 1 (continued)

Frameworks	Authors	Years	Descriptions
Resources, Activity, Support, and Evaluation (RASE)	Churchill, Fox, & King	2016	Drawing on a variety of learning theories (e.g., problem-based learning, situated learning, and activity theory), the framework attempts to facilitate student learning in the mobile learning context from the planning (Resources, e.g., online materials), learning (Activity, e.g., student project; Support, e.g., learning forums), to the final evaluation (e.g., scientific documentaries)
A sociocultural framework for mobile technologies-mediated L2 learning	Ma	2017	Informed by the mediation theory, the framework offers insights into a mediated relationship among mobile technologies (e.g., online resources and mobile devices), learner agency (e.g., self-regulation, learning beliefs), and other agents (e.g., teachers and parents) in both formal and informal learning contexts
A technology-mediated pedagogical framework	Miller & Wu	2018	Drawing on the concepts of content and collaborative learning, the framework aims to develop learners' autonomy from structured to unstructured learning environments via technology and teacher mediation

3   Technology in-Class to Out-of-Class

In Mainland China, there is a drive to improve university Business English (BE) students' use of content and linguistic knowledge acquired from their classroom learning. The impetus for this comes from the fact that the competence to communicate their native Chinese culture using the medium of English is emphasized in BE's national syllabus and as such students have to take a compulsory English course about Chinese culture in order to prepare them for interacting within an international

business community. Cultural elements were also integrated into a number of other BE courses students have to take.

However, anecdotally, students constantly complained that there was not enough time to use the knowledge gained from the textbooks to develop specific linguistic skills that allowed them to talk comfortably about their local culture. This was because "text-centered" and "input-based" language education dominates Chinese teachers' classroom practice (Wen, 2016), and class sizes are so large that it is difficult to engage learners at the individual level. In the English courses, the teachers and learners focus heavily on text comprehension and hope to make progress in listening, reading, speaking, writing, and translation simultaneously and subconsciously via in-depth text comprehension (similar learner experiences have been reported in other Asian countries like Japan, Nishino & Watanabe, 2008; and Thailand, Khamkhien, 2010). This approach to learning has been criticized in that students only learn to read in English but cannot use their knowledge to develop their communication skills. In conversations with the students, they reported that they were unsatisfied with the traditional lecture style of education with a large amount of teacher talk and that in their previous courses, the textbooks used on the course were often "boring" and lacked engaging activities. As a result, most students complained that they felt their courses, and the whole program, did not prepare them for talking about Chinese culture with non-Chinese speaking others.

Furthermore, because of the conservative administrative culture in the university reported on here, there was no internet connection and there was even a top-down no-phone policy rule in class. The only technology available to tutors and students was desktops with Microsoft software. Yet, it should be pointed out that this university is situated in one of the most developed cities in China. Under these circumstances, the teacher considered that some type of language learning had to be extended outside of the classroom. An extramural learning project was set up with the use of WeChat to see if students could develop their interactive skills in chatting about Chinese culture in English with each other in a loosely structured out-of-class technological environment.

4   A Revised Production-Oriented Approach

One attempt to offer a new pedagogical framework suitable for Asian learners is Wen's (2016) Production-Oriented Approach (POA) which provides the bases for teachers to plan, organize, and assess their teaching practice and is based around the concepts of three hypotheses of learning, three teaching principles, and three teaching procedures, which we briefly describe in Table 2.

Wen's POA framework is having an impact on course design and English language teaching in China. Already, other teachers/researchers are using the framework with varying degrees of success (e.g., Polio, 2017). However, the framework, as it is presented by Wen, limits its application to classroom-based learning. With technology entering the world of language education, learning has been expanded out of

Table 2 Wen's production-oriented approach

Hypothesis	Descriptions
H1:Output-driven hypothesis	Provide production-oriented activities at the beginning of the class so that students may notice any learning gaps
H2:Input-enabling hypothesis	Produce materials and tasks that are meaningful and engaging to learners and four language skills can be practiced as a whole
H3:Selective-learning hypothesis	Direct learners' attention to the most important information that they may need from their learning materials in order to produce learning output (*just-in-time*) instead of requiring them to learn everything about the materials (*just-in-case*)
Teaching principles	**Descriptions**
TP1:Learning-centered principle	Ensure careful planning, scaffolding, and maintaining to facilitate genuine learning and teachers need to recognize their important contributions to learning-centeredness
TP2:Learning-using integration principle	Integrate the language skills with content that is relevant to the learners so that language and content support each other and augment the learning experience
TP3:Whole-person education principle	Include the humanistic objectives of the learner, including developing creativity, critical thinking skills, and lifelong learning abilities
Teaching procedures	**Descriptions**
Motivation	Complete some learning tasks first before any instructions in order to raise students' awareness of their learning gaps
Enable	Provide relevant learning materials and brief students about the importance of the production-oriented tasks. Students are then able to use the learning materials, with teacher's guidance, to finish a series of exercises as a way to a final productive task
Assessment	Co-produce assessment criteria with students and include different types of assessment such as self and peer formative assessment and teacher-based achievement assessment

the class, and we now need to address the question of how technology can play a role in POA and consider how technology can possibly help integrate formal and informal learning: in-class and out-of-class. To address these issues, some adaptations have been made to the original POA framework and one recent project conducted by the authors will be used to illustrate the adapted framework. The adapted framework has three major changes ([a], [b], [c]) which are in bold in Fig. 1. The intention is
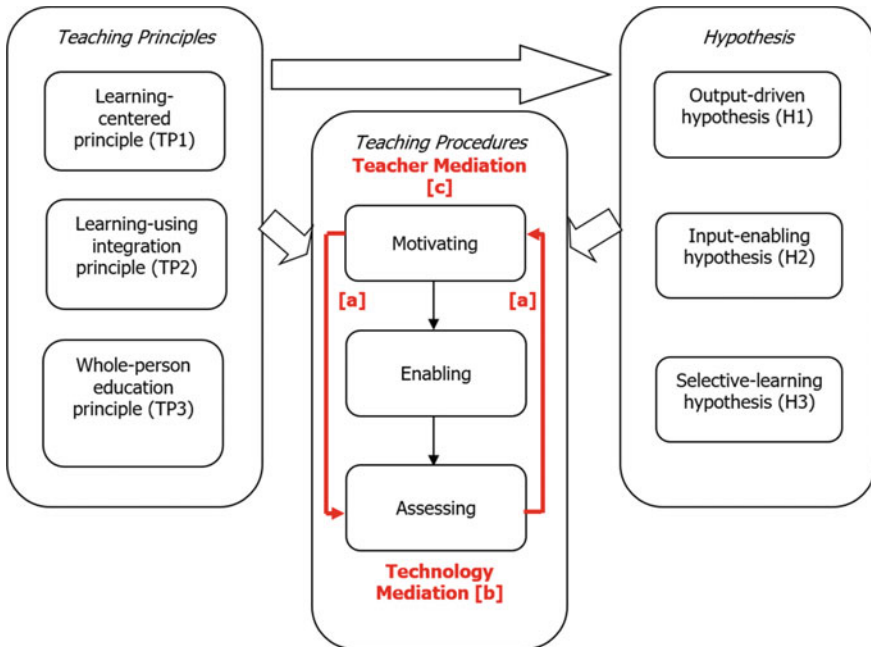
Fig. 1 Pedagogical framework: from classroom to out-of-class learning

not to challenge the framework. Instead, we attempt to make it more applicable and up-to-date to today's learning paradigms.

a)   Assessing and Motivating steps in teaching procedures are intertwined, as the assessment has a wash-back effect on learning (Taylor, 2005). Students learning with a POA approach still need to pass examinations or get certifications. Assessment reforms should not view the traditional summative assessment as an enemy since our educational system has not been changed significantly. Assessments, formative or summative, should offer learners a sense of achievement and act as a guide to promote more self-paced learning. In the meantime, teachers should be able to see explicit links between their teaching and students' learning outcomes. They will then adjust their teaching and facilitate students' learning more effectively by relying on students' assessment performance as way-forward feedback.

b)   The impact of technology on education continues to change the present learning and teaching paradigms, especially for the tech-savvy generations. How to effectively link formal and informal learning has captured educators' attention (Godwin-Jones, 2017). As Wen (2016) argued, her POA framework originated from and is targeted at the traditional classroom settings. However, the value of her framework can be projected out of the classroom setting as "what goes on inside and outside of the classroom" (Richards, 2015, p. 5) are two important

questions for learning, and we need to take account of learning beyond the classroom (LBC) (see Chapter 4). Reinders and Benson (2017) argued that LBC is not the simple idea of changing the location of learning, but it entails the thinking of formality, pedagogy, and locus of control. Among their nine research tasks for future research, they stressed the importance of technology in LBC, especially mobile technologies. Upon reflection, the current POA framework fails to acknowledge the proper role of technology. Hence, we argue that technology mediation should be included in a POA approach as technology in learning is becoming more normalized than it was a decade ago in most countries.

c) To effectively integrate technology into learning and play the various roles of teachers that Wen (2016) argued for, it is necessary to develop teachers' Technological Pedagogical Content Knowledge (TPCK). Although it might sound simple and self-exploratory, TPCK is not a simple sum of technological knowledge, pedagogical knowledge, and content knowledge. Instead, Mishra and Koehler (2006) defined it as:

> [A]n understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge and to develop new epistemologies or strengthen old ones. (p. 1029)

Due to the fast-changing nature of technology, integrating technology into learning is not a simple task. There is more to it than just learning to use the software, and we need to consider the complex context of individuals and the need for careful task design in relation to technology (Mishra & Koehler, 2006). Learning does not take care of itself by simply putting learners together in a technological environment without any organization or peer and teacher support (Miller & Wu, 2018). Teachers need to be able to produce lesson plans that have clear learning objectives: linguistic, communicative, and subject-related goals, for each class period. Therefore, teachers often need to think beyond the textbook and take their students' learning and personal life into consideration. This in itself can be a challenge for many teachers. When we take into account affective factors such as motivation, some teachers may feel overwhelmed at the prospect of being able to design activities that are production-oriented and authentic. In addition to this, teachers also need to try to activate learners' autonomy and facilitate their creativity, critical thinking, responsibility, and teamwork spirit. To this end, teacher's mediation should also be added as one of the major pillars in the POA framework.

5 Applying the Production-Oriented Approach

We now turn our attention to how an adapted POA might be effectively used to bridge in-class with out-of-class learning mediated by technological tools. An eight-week study was conducted in a teacher-education university in east China. Following

the tradition of mobile learning projects and based on findings from a pilot study (see also Wu, 2017, 2018; Miller & Wu, 2018), the study recruited eight Chinese students to form a learning community using WeChat. Four year-1 students and four year-2 students from the same bachelor program of Business English were invited to participate. The eight learners' participation was entirely based on their interest and willingness and no credit or compensation was offered for taking part in the project. The students had an average of 11 years' experience of English learning, around 6 on IELTS, and they were all native speakers of Chinese.

Figure 2 illustrates the broad design of the learning community. In the pre-project or planning stage, the teacher (Teacher mediation) played a major role in designing discussion questions and preparing pre-discussion reading materials for the group. By providing thought-proving questions upfront, the students were able to gain some ideas and reflect on their previous knowledge and possibly notice their knowledge and linguistic gaps. However, to increase students' learning motivations, the weekly discussion topics were chosen by the students from a short pre-project survey. Also, a set time period for chatting in English about the topics was agreed upon among the participants. With the learning-centered principle (TP1) in mind, the teacher took the major responsibilities in designing the project because these Chinese students have been accustomed to passive learning styles in class and they did not have sufficient experience and knowledge to design mobile learning projects on their own. Thus, the

Pre-project
•ground rules setting (teacher)

•survey of topic choice and preferred time (students)

•design of discussion questions and reading materials related to coursebook (teacher)

Production
•pre-discussion materials shared via WeChat before the weekly discussion (teacher)

•weekly scheduled chat in English (teacher+students)

Post-project
•group discussion of the benefits and shortcomings of the project (teacher+students)

•individual interview (teacher+individual student)

Weeks 1-8

Fig. 2 Architecture of the project design

teacher decided to reduce their learning anxiety and heavy study workload at school by designing the learning tasks himself.

Learning-using integration principle (TP2) was also taken into account during the planning stage. The central theme of the eight-week discussion in English was Chinese culture as the participants had just finished an English-medium content course about Chinese culture. In terms of the POA whole-person education principle (TP3), raising native cultural awareness can be seen as a way of drawing on all available resources to express personal identity, something which learners may even have difficulty with in their first language. To this end, how students could be better prepared to talk about their native culture in a second language became the focal point of the WeChat activities. Because this was the first attempt to extend Wen's model to an LBC context and technological setting, the suggested approach was selectively adopted and adapted.

In terms of technology mediation in the project, the major function utilized is group chat, which allowed the learners to construct meaning and understanding with support from each other. The design of the mobile project reflects the dialectical perspective of constructivism. That is, following Vygotsky's theories, "[k]nowledge derives from interactions between persons and their environments" (Schunk, 2012, p. 232). In the meantime, the multimodal feature of WeChat was kept in mind in conducting the discussions. Participants were encouraged to exchange not only texts, but also voice messages, emoji, internet memes, hyperlinks, pictures, and short video clips. The purposes of using multimodal modes of messages include activating learners' motivation by creating a more interesting learning atmosphere, improving students' digital literacies that differ from pen-paper writing in classrooms, and compensating for issues such as slow typing speed and insufficient language proficiencies. Another unique feature of WeChat is the reminder function-@. By @-ing members in the group, the person will get a reminder that a message has been received. Thus, the teacher and students intensively used it to direct attention to a certain participant and to offer more chances to less active participants.

Finally, regarding the POA learning hypotheses, the project ensured input (H2) (pre-reading materials) and output (H1) (discussion), and offered questions for students to choose from based on their personal interests (H3). It also reflects the Motivating and Enabling steps included in the POA: learners were motivated by prompting questions such as "If a foreign friend is coming to your hometown, where will you take him/her?" and "Introduce a special kind of food in your hometown? (with pics)". Also, as most of the selected learning materials were fun and related to the up-to-date topics and news, they were able to motivate and enable students via familiar content. Because of the heavy exam-oriented culture in China, this study decided not to include any assessment elements.

6 Students' Perceptions and Performances in a WeChat-Based POA Project

Students' perceptions of the project were elicited through the use of post-project individual interviews and a focus group discussion in WeChat. Thematic analysis was applied to these qualitative data. To further triangulate the data, we included some descriptive data and authentic discussion examples from the weekly discussion. Permissions to report on their chats were obtained from the participants and their names were anonymized.

Overall, the quantity of the messages indicates an active participatory pattern, although Fig. 3 showcases a fluctuating trend throughout the process. The nine participants (eight students and the teacher) sent over 200 WeChat messages each week. Week 4 was the most active partly due to the discussion topics. Three questions were posted before the discussion and some online materials were provided to ensure that the students had enough background knowledge. The questions were deemed engaging: the first question elicited thoughts on the participants' favorite city in the world, the second question provided a scenario that they needed to introduce one tourist spot in their hometown to a foreign friend, and the final question asked the students about their favorite place in the city where they were studying. These three questions are believed to be authentic in the sense that they are relatively common in real-world small talk, but teachers tend to ignore them in classroom teaching. It was observed that the students had some difficulties in expressing themselves although they cleverly drew on multimodal resources (e.g., pictures) to compensate for their linguistic deficiency (Hafner & Miller, 2019).
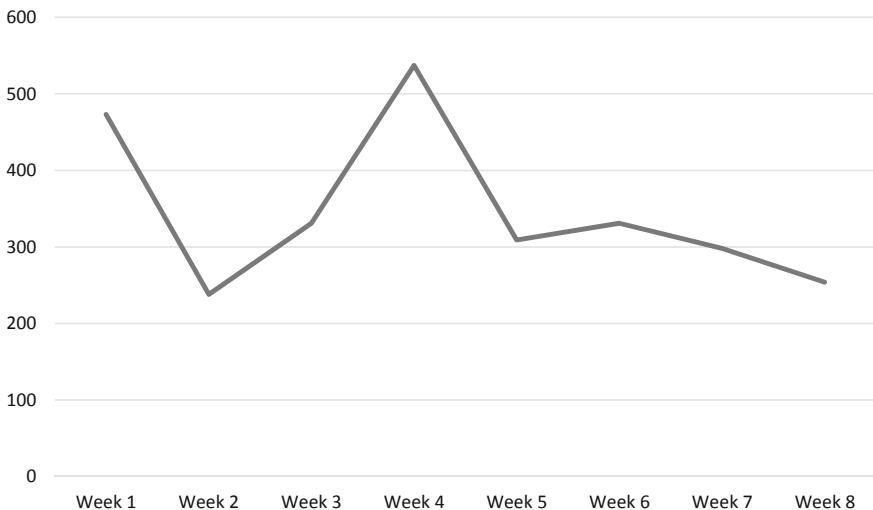
Fig. 3 Participants' performance over the eight weeks

From the post-project interviews, the participants appreciated their chance to make use of their inert knowledge that they had acquired in class and further to construct understanding with other students in the community (Figs. 4 and 5). Also, due to the authenticity of discussion activities and questions, and the background knowledge from the pre-discussion reading materials, not surprisingly students demonstrated a higher degree of autonomy than in class. Additionally, some students mentioned the issue that they noticed their learning gaps because they encountered problems in explaining Chinese culture and expressing themselves in English.

> *We try to learn about the world, not just to study for the sake of a good grade. We are bridging the lessons and the reality…I noticed a serious issue that I didn't know how to use English to express my culture.* (Candice talking about the use of inert knowledge and authenticity)

Fig. 4 Teacher commenting on students' messages and peer facilitation and encouragement of contribution
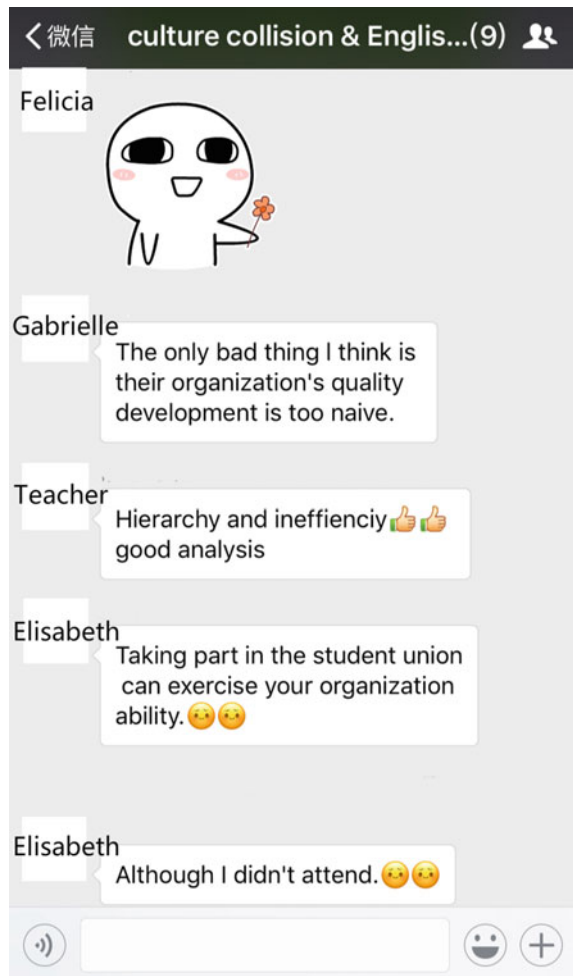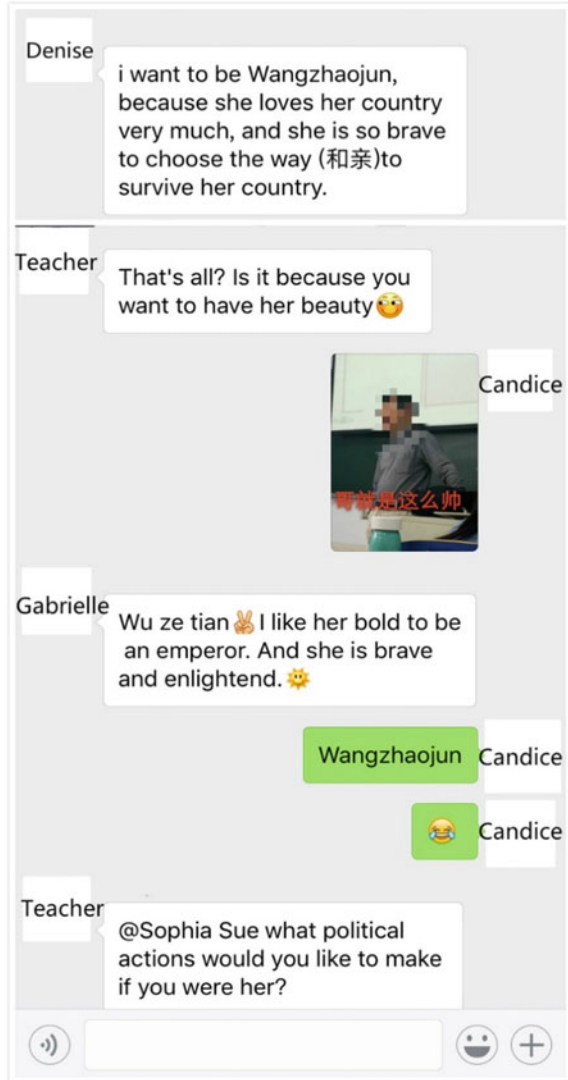
I think it is pointless if we don't share thoughts (in English) in the project. We say what comes into our mind and it is beneficial.   (Ian talking about collaboration and autonomy)

Due to having specific discussion questions to guide them, students did not feel lost in what to chat about, and in addition to this, the teacher played an active role in the discussion by prompting students' contribution. It should be stressed that in a Confucian society, teachers are generally perceived as authoritarian figures and there should be a distance between learners and teachers. However, in this study, the teacher was viewed as an organizer, facilitator, participant, and instructor. Students

did not feel the presence of the teacher as a severe intrusion to their private space and contrarily they welcomed the participation of the teacher (Wu, 2017).

> *The most important is the leadership in the group discussion.* (Joshua)
> *The teacher's participation facilitated our thinking and discussion* . (Felicia)

Another reason for students' positive feedback regarding the teacher's presence might be the teacher and the students' narrow age gap and thus the teacher shared similar interests. Furthermore, he made use of emoji and internet memes to create an image of a "real" person, instead of an overly rigid teacher-like figure. Figures 4 and 5 below illustrate a typical discussion episode among the students and the teacher.

The affordances of WeChat were exploited during their discussions. From Fig. 4, we see that emoji was actively used to achieve their communicative objectives (Hafner et al., 2015). Apart from emoji, memes, video clips, hyperlinks, and voice messages were also made use of by the participants. In Fig. 5, Candice attempted to make a joke in the discussion about a favorite historical figure. As Denise gave the answer to Wang Zhaojun, who is one of the Four Beauties in Chinese history, Candice replied to her by sending a self-made internet meme. The man in the meme was the participants' teacher whose name was a homophone to the lady's (i.e., Wang Zhaojun). The words in the meme were translated into "I am so handsome" because of the confident posture he demonstrated. Thus, Candice was indeed trying to make fun of Denise and the teacher in the meme, and lighten up the discussion atmosphere by pretending not to know the historical figure that Denise referred to. This observation has obviously lent more support to our argument that students became less emotionally resistant to communicate in English when chatting online compared with their daily performance in the physical classroom, and were prepared to "play" or "experiment" with the language—something which is not commonly found in a Chinese classroom.

7 Conclusion

The chapter began with a short introduction of the current issues and pedagogical frameworks of mobile-assisted language learning. Based on this review, the chapter proposed a revised in-class POA model with an out-of-class WeChat learning project from China. Based on our discussions with students about the use of WeChat to enhance their language and content learning, we summarize five principles for designing technology-enhanced language learning.

a) *Pedagogical structures are important when linking in-class to out-of-class learning*

The successful extension from classroom to out-of-class learning is not an easy task for teachers and learners. Learners should not be left alone without any pedagogical structures that show them how to make the links.

b) *Pedagogical frameworks can be designed or adapted locally*

Teachers need to actively customize their own pedagogical frameworks based on their learners' ecological learning environments.

c) *Teachers' roles in out-of-class technology learning should be planned*

Teachers' roles in class are usually clear and non-negotiable. In out-of-class learning, this is not often the case. Teachers still need to scaffold learning while facilitating learner agency. On the one hand, they can plan their roles as facilitators and organizers; on the other hand, they should flexibly switch their roles by projecting a *human* image.

d) *Students' learning anxieties can be reduced in technology-enhanced learning environments*

Asian learners, especially those from heavy examination societies, are raised to focus on grades and, this often results in learning anxieties. This has an impact on their learning confidence and sometimes causes an emotional negative attitude toward learning English. By linking online and out-of-class learning opportunities to students' classroom lessons, students' learning anxieties seem to be reduced.

e) *Multimodal semiotic resources should be exploited more*

Communication enabled by new technologies has transformed our everyday modes of communication. Therefore, it is important to exploit students' accustomed new technological tools (e.g., social media, digital games) in out-of-class learning contexts.

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Chapter 4
Language Learning Aboard: Extending Our Understanding of Language Learning and Technology

Yijun Yin and Alice Chik

1 Introduction

On a typical day, in various multicultural and multilingual Sydney suburbs, tens of thousands of international students go about their daily routines. The first thing Lily does in the morning is check her WeChat messages in Chinese. She reads articles on WeChat and Zhihu on her way to the university. Then she goes to the library to prepare for her Chartered Financial Analyst (CFA) test or write assignments. In addition to her university work, Lily signed up for an online CFA tutorial taught by Chinese teachers, with learning materials delivered in both Chinese and English. Harry wakes up and listens to the English songs on his phone. On the bus to university, Harry checks and replies to his university emails in English. As a research student, he normally does his research project in the office or the library on his own. During the lunch break, he grabs his lunch and checks WeChat and WhatsApp messages, as well as Facebook posts in both Chinese and English.

A typical day for Lily and Harry is very similar to many Asian students in Australia, and all over the world. By engaging in a variety of interactions in the target language, study abroad (SA) experience holds potential for language practice and development. However, more recent studies have shown that students are also using their home languages more extensively via their digital networks (Godwin-Jones, 2016). Students who study overseas encounter different language resources every day online or offline beyond their formal institutional settings. Published research shows that substantial time spent in the target language-speaking country would appear to have a positive effect on learner's overall language proficiency development (Kinginger, 2011), but individual differences including age, gender, motivation,

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personal goal and language proficiency lead to significant variations in language development while studying overseas (Kinginger, 2009; Meier & Daniels, 2013; Stewart, 2010). The more recent media reports also seem to suggest that SA students are not learning the target language, especially in the English-speaking countries, because they only use their home languages with other SA students. For students studying in an English-speaking country, academic activities appear to afford the primary use and development of their English language. Yet the language used outside of class by these students is diverse and unpredictable with many SA students reporting limited access to English-use opportunities (Tanaka, 2007). To date, most research has focused on English learning and affordances in physical environments, for instance, in the classrooms or in the homestay, and there is little reported on the language learning opportunities these SA students have via their digital networks.

Being digitally connected via different technologies is an integral part of twenty-first century students' everyday activities. Online spaces offer multimodal and multilingual choices for communication. The languages and modes of use for online practices can have an important impact on the languages used in the students' offline interactions (Cunliffe et al., 2013). However, the extent to which technology provides SA students with language learning opportunities remains unclear. It is also not clear how students utilise various target and non-target language resources to improve their target language proficiency. This particular research topic demands increased attention as the context of SA becomes more dynamic and complex. Not only is digital technology a vital part in our modern society, but multilingualism in western countries could also create a new topic when discussing language learning and study abroad. In Australia, for instance, over 20% of the Australian population spoke a language other than English at home, and the top languages other than English are Chinese (Mandarin and Cantonese), Arabic and Vietnamese (Australian Bureau of Statistic, 2017). Among these community language speakers, over 65% of them live in the metropolitan cities like Sydney and Melbourne. For international students, their language use and language learning opportunities are likely to be influenced by the linguistic diversity of the city. As Benson et al. (2018) claimed that geographical locations and spaces are influential to study abroad students' language learning opportunities during their stay. However, limited attention has been paid to the relationship between the language learning environment and language learners abroad, especially in the context of multilingual cities.

This chapter presents a qualitative study of two Chinese international students' everyday digital practices when studying in Sydney, Australia. In our research, technology use serves as a multifaceted lens that helps us see how sojourners construct their language environment through technology in informal settings. We seek to shed light on a critical and holistic understanding of how the language environment and learning pathway in the SA setting are transformed by the development and popularisation of technology.

2 Information Ecology: An Ecological Perspective

An ecological perspective of learning requires the exploration of relations between learners and settings (Van Lier, 2006). Learners would perceive their environment differently based on their ability, which indicates the differences in interpretation, action and result, eventually cause the emergence of knowledge (Menezes, 2011). Ecological perspective inspires researchers to make changes in their focus on different resources that provide the potential for learning, including "material, social, or discursive features of the environment which are accessed and used for further learning" (Palfreyman, 2014, p. 190). In practice, the ecological perspective regards the learner as an active member in the environment, which is filled with affordances, meanings and opportunities for learning.

However, over recent years with the development and the increasing accessibility of digital technology and Internet connectivity, a noticeable change has occurred in ways Asian students learn both language and content. The range of resources for learning has become richer and more diverse than before and as a result, learning no longer only takes place in a physical environment, but also in virtual space. When we view online space as learning opportunities, then we also need to consider how people's online and offline activities are bound together. Because of the growing popularity of technology, it is crucial to recognise how technology creates new possibilities within the ecological system for learning and communication. In this regard, Nardi and O'Day (1999) introduced the concept of information ecologies in which people are actively involved with technology as part of an ecological system. They define an information ecology as "a system of people, practices, values, and technologies in a particular local environment" (1999, p. 49). This notion encourages exploration of the interrelationships between technologies and human activities.

The ecology metaphor of technology has influenced many studies in education. For instance, Barron's (2004) framework focuses on the individual differences in technological activities with a select group of high school students. Barron made an attempt to adapt Nardi and O'Day's informational ecology modal and further coined his own definition of learning ecology. Unlike the definition of learning ecology that focused on the physical environment of the classroom (Van Lier, 2006), Barron (2004, p. 6) defined a learning ecology as " the accessed set of contexts, comprised of configurations of activities, material resources and relationships, found in co-located physical or virtual spaces that provide opportunities or learning". In the definition presented in Barron's work, both physical and virtual resources that learners interacted with are viewed as key sources for learning. In response to the calls for the inclusion of technology as a part of the ecology analysis, Siemens (2004) and Downes (2005) proposed the connectivism theory for understanding learning in a digital age, which emphasises the role of social and cultural contact along with technology to enhance learning. Additionally, other theories such as distributed learning (Dede, 1996), emergent learning (Goldstein, 2009) and rhizomatic learning (Cormier, 2008) have been configured based on the similar metaphor of informational ecology to further discover how learning has been reformed in the digitalised world.

One of the main principles of language learning since the early 1980s, with the introduction of communicative approach, has been to view language as part of wider communicative activities. As Van Lier (2006) stated "Language learning emerges from participation in linguistic practices, such practices always being steeped in historical, cultural and institutional meaning systems" (p. 88). For our SA learners, language- related activities happen synchronously everyday with other daily activities in the target language. These activities might take place in the street, at home or at school, on mobile phones or face-to-face, through watching TV or reading a book, with friends or strangers. Thus, from an ecological point of view, we need to acknowledge the complex range of different components that exist in our ecological system in order to understand the unique learning opportunities learners have over diverse contexts.

3   Technology Use and Studying Overseas

The development of technologies is changing how people read, write and communicate and we adopt or adapt technology to suit our own preferences, purposes and contexts (Barton & Lee, 2013). Arguably, the internet technology had bought many changes in our conceptions of "abroad" (Coleman, 2015). Being born as a digital native, young learners nowadays have personal control of their learning and linguistic environments by using digital devices (Kinginger, 2011). Traditionally, the advantages of using technology for educational purposes or informal learning might be widely accepted. In a web space, learning can take place incidentally via people's online participation. The value of this type of participation has been viewed positively and studies have suggested the benefits of digital technology for its affordances on learning a language informally. For instance, DePew (2011) demonstrated three case studies of how multilingual learners used both their L1 (home language) and L2 (English) to construct their respective identities to address different audiences on Facebook. The findings indicated the potential of using social media can have in facilitating second language learning, for instance: learners have more exposure to the target language when watching a television series (Hanf, 2015); gamers can learn the language through textual and social interactions when playing digital games (Chik, 2015); and viewers can use the comment section of YouTube videos for language and intercultural learning (Benson et al., 2018). These studies report on learners deliberate attempts to use the L2 in non-educational contexts. There has been little research into how technology is used among students studying abroad, especially regarding the links between on- and offline language use.

Since study abroad students' everyday online practices are likely to be interconnected with their offline activities and language used either in their L1 or the target language. In a SA setting, the role of technology and digital devices is debated. Though there is concern that staying digitally connected with the home country may hinder social interactions and language practices in the target language (Coleman & Chafer, 2010; Lee, 2015; Roberts, 2010). However, studies have documented the

use of technology to be helpful in building networks with the local community and connecting to the new culture (e.g. Reinhart & Chen, 2013; Trentman, 2013). A study carried out by Reinhart and Chen (2013) investigated how a Chinese Ph.D. student used social networking sites (Facebook and Renren, formerly known as Xiaonei, a Chinese equivalent to Facebook, the company discontinued its SNS business in 2018) to socialise into a new community, build global identity as well as improve language proficiency. The findings point to an important role for social networking sites as means for socialisation and language practices. By posting and commenting on Facebook, the Chinese participant carved out her identities for herself in a brand new community and learned English through online interactions. In the same vein, Back (2013) conducted a web-based study to investigate learners' online interactions through Facebook. The findings suggested an increase in the target language use during the time spent abroad. Forbush and Foucault-Welles's (2016) quantitative study on mainland Chinese students' social media use and adaption suggested the positive impact social media has on building networks and cultural adaption for Chinese students studying in the United States. Social networking sites could provide an avenue for social connection before students' SA journey.

Later studies have continued to explore the affordance of technology in SA contexts. Martínez-Arbelaiz et al. (2017) made an attempt to present an overview of the students' language-related offline and online activities when studying overseas. Having undertaken a quantitative analysis using a questionnaire with 37 students in Spain, the authors concluded that internet technologies afforded more daily communications and information gathering in the L1 among the participants rather than in their L2 or L3. Though the sample size was rather small, the study is still inspirational in that it explored the impact of technology on language use among the sojourners abroad. However, both studies could only document a small fraction of participants' online activities. Clearly, social networking sites are not the only means by which study abroad learners could encounter in their daily technology use. The extent to which the internet technology plays a role in SA students' everyday social and linguistic practices remains poorly understood. Traditional types of research have not been able to show clear patterns in the effects of technology on second language development in a SA context. The current literature is not in a good position to answer the questions on how international students make use of these technological resources in order to have the ability to function in different practices in everyday events. Understanding students' technology use may contribute substantively to our knowledge about language learning in a digital age as well as the language learning opportunities in SA context.

4 The Present Study

The present study explores how Chinese SA students construct their language environment through technology, the kind of activities they engaged in when using different technologies out of class, and how these online practices afforded their

linguistic practice when studying overseas. While several studies have examined the language used online among the SA participants, very little empirical research has been conducted with Chinese international students specifically. Given that China is now the world's biggest source country of international students (OECD, 2018), this rise in numbers of Chinese students has created interest in how best to accommodate these students' language learning needs while abroad. Another fact that makes this topic of interest to study is the state of internet filtering in China. Many social networking sites and websites such as Facebook, Twitter, Google are blocked in China (Bamman et al., 2012). Thus, unlike students from other Asian countries, Chinese students have different social media use and patterns. They might find themselves not only surrounded by a totally new physical environment but also an unfamiliar online environment.

The primary data sources referred to in this chapter are digital diary entries and semi-structured interviews. The digital diary aimed to get an overview of participants' everyday online interactions, and the languages involved in those interactions. Using a diary as a data collection instrument is especially effective when seeking evidence that would not otherwise be accessible to researchers because the phenomena are internal or inaccessible (Bailey & Ochsner, 1983) and the diary method has been employed in many studies of SA setting and second language acquisition (e.g. Benson et al., 2018; Tanaka, 2007). In this study, each participant kept a digital diary using the Diaro App on their mobile phones for seven days. The diary entries include hourly records of their digital activities and a note of the activities they engaged in and the language(s) they used. After one week, all the diary entries were exported as PDF files and sent to the researchers via email. After this, semi-structured interviews were conducted with the participants and the interview questions were generated based on their diary entries.

5   The Stories of Two International Students in Sydney, Australia

The following sections tell the stories of two Chinese postgraduate students studying at universities in Sydney, Australia. At the time of our data collection, Lily was in her first year of a Master's degree by coursework in Finance. Harry was in his final school year of a Master degree by research in the Department of Arts. The digital diary entries submitted by Lily and Harry were visually represented (Charts 1 and 2), showing the distributions of participants' language uses in relation to their digital practices. The closer the app or website circle is to the centre, the more frequently it was used by the participant during that week.
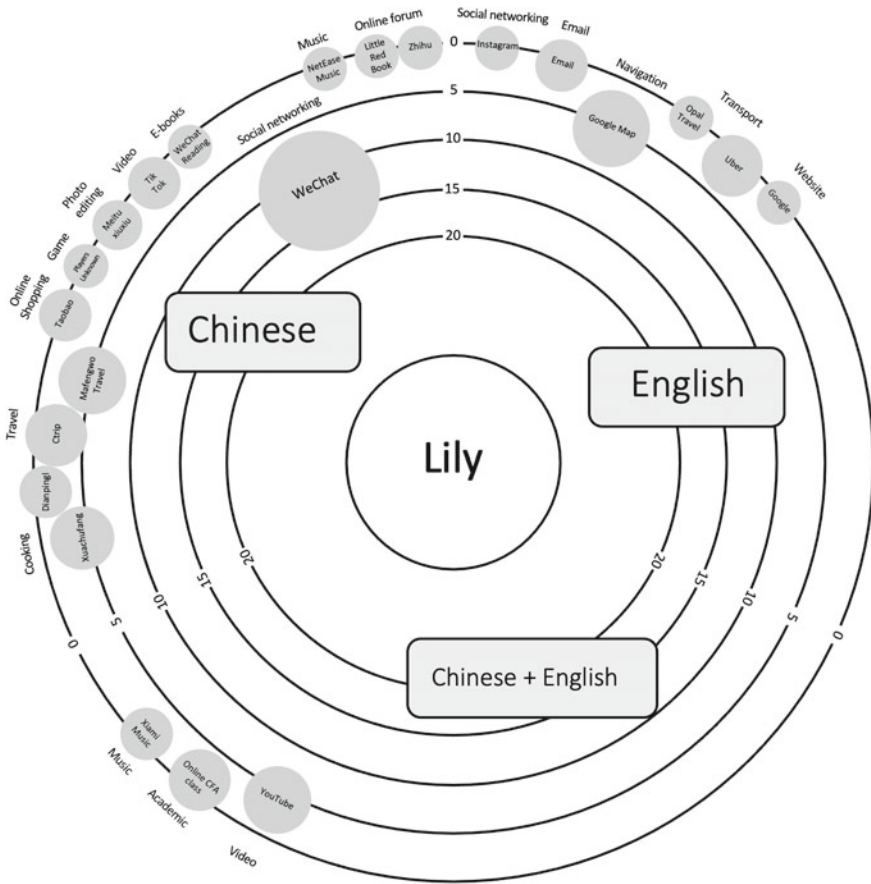
Chart 1 Lily's digital practices in a week

5.1 Lily

We discussed at the beginning how Lily usually starts her day by checking WeChat messages while taking bus to the university. As shown in Chart 1, when compared with other online activities done for different purposes, Lily uses Chinese on WeChat much more often for social networking. During lunchtime, she goes back home as she likes to eat Chinese food which she cooks herself with the aid of a Chinese cooking app. After taking a nap, Lily goes back to the university and stays there for the whole afternoon. In the evening, she normally goes to the grocery store before going back home. When shopping Lily prefers to use the self-checkout service in the store. Occasionally, she needs to translate the descriptions on packages using Apps on her phone. Every night, Lily video-chats with her family and friends in China using WeChat. As she spends most of her time in Sydney alone, she chats online to
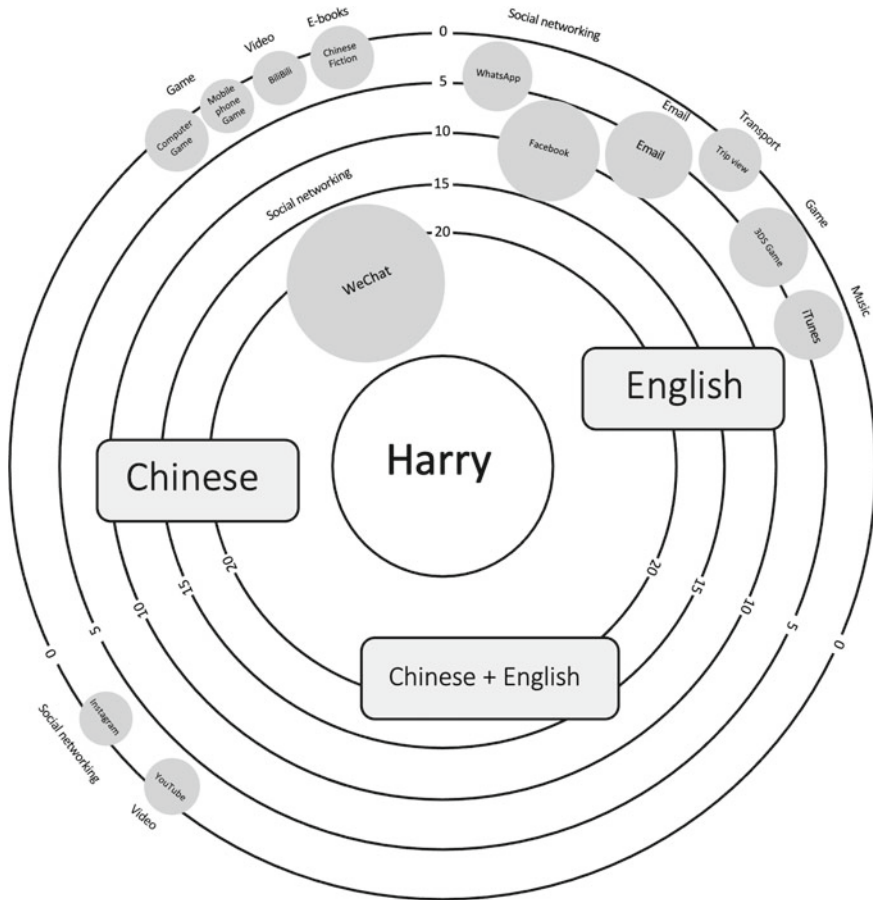
Chart 2 Harry's digital practices in a week

mitigate the feeling of loneliness without her family and friends around. Before the time of our interview, Lily had booked a trip to Cairns. As reflected in Chart 1, she used several Chinese Apps (Mafengwo Travel and Dianping) and website (Ctrip) for booking the trip and for planning what to do when she visited Cairns. Lily also checked some Australian websites to compare prices. On a daily basis, Lily said that she prefers to use Chinese social networking sites and apps. She tried to open a Facebook account but found out none of her friends were there, "I don't have any Australian friends or friends from other countries, all my close friends in Australia are Chinese and we all use WeChat". Lily mentioned that she joined several chat groups on WeChat, for example, she has a group with her Chinese classmates, a group with her roommates, and a group full of Chinese students in Sydney. Lily used those groups for chatting or information exchange. On Chinese social media, Lily followed many English learning channels on Weibo and Tik Tok. Those channels

are operated by native speakers of English, or Chinese people who have lived in a foreign country for many years. Lily found the content posted on social media helpful in terms of learning new expressions and aspects of western cultures. Lily said that she only occasionally used English Appss and websites for specific functions, e.g. checking her class timetable. This could also be reflected in Chart 1, showing Lily's daily online activities done in English were mainly for navigation using Google Map and catching local public transportation.

Before coming to Australia, Lily was a big fan of American TV shows, she predicted that she could live a life in a foreign country just like those actors in the American TV shows. However, she recalled that there was a huge difference from what she expected. She was surprised by how easy it was to speak and use Mandarin in Sydney. She had two Chinese roommates so they spoke Chinese all the time. Lily found there was no source of English practice and cultural encounters at home. As a postgraduate student in the business school, Lily said she did not have enough opportunity to socialise with English speakers on campus either online or offline. Most of her classmates were Chinese students, and she also had two lecturers from China, so she sometimes spoke in Mandarin with her lecturers. In an attempt to practice her English language skills, Lily watched some British or American TV shows every day at home to create an English-speaking environment for herself. Lily was very dedicated to her academic work and was concerned about her language progress. Learning and practicing English was always on the top of Lily's agenda during her stay in Australia. Indeed, she felt that her English was getting worse when staying in Sydney due to the lack of practice in using the language. Therefore, in order to practice more, Lily found a job online as a poll worker in the local elections. This experience elated Lily, she explained, "That was very rewarding, I had numerous opportunity to meet local people and learn about their culture". Due to this experience Lily reported that she felt that her weak listening skill sometimes made communication with English speakers quite challenging, and different Australian accents was an obstacle for Lily as well.

While in Sydney, Lily encountered an incident that made her deeply depressed. She fell for a phone scam, the scammer had a lot of her personal information. Lily was frightened, so she shared her encounter in the WeChat group with other Chinese international students living in Sydney, hoping someone could offer her advice. Many people in the WeChat group suggested Lily call the police. While doing the police report at the police station, Lily found her English proficiency was not good enough to help her with the report, remarking: "I just feel like I am the only person in the world who can't communicate and solve my problem in English. I mean, it will be so much easier if it happens back in China and I can speak my first language". The unfortunate experience aroused Lily's passion to further improve her English, she also felt thankful for having her online WeChat communities, where she could ask for help and suggestions. Additionally, Lily recalled the first time she went to see a doctor in Sydney, she was too nervous to fully understand the conversation. Even although before going to the clinic she had checked some online forums about how to communicate with doctors in Australia, she still had difficulty in understanding the medical terms used in English. Since Lily was not confident in her communication

skills in English, on a return trip home she brought many medications back with her to Australia in case she got sick and could not explain her situation properly in English.

5.2 *Harry*

Every night, Harry likes to spend time talking with his Chinese friends or family on WeChat, watching Chinese TV shows on YouTube, or playing games on his console. Harry described himself as an active game player. As reflected in Chart 2, He plays many games using both Chinese and English across different gaming platforms and devices, such as his mobile phone, PC and console. Although most of the games Harry plays are in Chinese or have Chinese translations, he did not think the lack of Chinese translation would stop him from playing a good game. When playing some games in English, Harry still had the willingness to read the in-game texts carefully in order to enjoy the game more. His daily social media consumptions include apps and websites in both English and Chinese. Before doing his research degree, Harry finished his Bachelor's degree at an English-medium university in Hong Kong, then came to Sydney four years ago for his Master's degree. Since Harry was quite familiar with using English in an academic environment in Hong Kong, he thus anticipated improving his English to the next level in Australia. Having had several years' experience of studying in an English-medium environment, unlike other Chinese students from mainland China, Harry is accustomed to using English apps and websites like Facebook and Instagram. He uses WeChat most frequently, and he also posts on Instagram and Facebook once or twice in a week. As shown in Chart 2, Harry changes his language use depending on the site he is using: he uses Chinese on WeChat and English on WhatsApp and Facebook. Harry mentioned that most of his Chinese friends in Sydney only use WeChat and other Chinese apps. "Basically, even you are physically in Sydney, you can check news on WeChat, make new friends on WeChat, order food delivery on WeChat, do small business on WeChat. WeChat is more powerful than I thought". Harry intended to use more English-language-based websites and social networking sites while in Australia, but he failed because everyone around him used WeChat and he did not want to be an outsider. Harry switched the system language on his phone into English, he felt that he could learn English words of different functions in case he needed to talk about them with other people. He found that most of his communication in English was done on the internet, and his face-to-face interaction was unexpectedly limited. However, he still felt uncomfortable posting contents in English online, he worried that he could not understand the slang and memes used by foreigners, or the cultural background behind their messages.

Harry rented a house with two Chinese roommates in a suburb in an Asian-dominated north-western Sydney suburb. They spoke Chinese at home. Harry would go to other multicultural suburbs in Sydney for shopping and dining out. He likes to search for nice restaurants online via WeChat, Facebook or Instagram. If Harry

spots a good restaurant himself, he would post some pictures or reviews on WeChat and Facebook to share with his friends as well. Harry appreciated the information that people shared online using either English or Chinese, he believed the online information is valuable for international students or immigrants to engage them in the local community. During the first two years of study, Harry was unsatisfied about the fact that he could basically use Chinese everywhere in Sydney. He recalled when he did his first Master's degree in Business and Communication, he had a lot of Chinese classmates in the programme so he did not use much English. They only used some English terminology with each other when they could not think of the Chinese translation. At that time, Harry found himself feeling embarrassed doing presentations in English. He felt that his English was getting worse, or at least not improving. After he entered his second Master's degree by research, he soon met classmates and colleagues from many countries. As the semester progressed, Harry had numerous opportunities to use English at university, and he enjoyed interacting with his classmates. However, the second year of Harry's Master's study consisted of doing his own research project and writing a thesis. He felt that he barely had any opportunities to interact with his classmates, and he usually only had meetings with his supervisor and then the discussions were about his research project. As presented in Chart 2, because of the intensity of the research work, Harry found himself spending more of his leisure time using Chinese on WeChat and watching Chinese TV shows on Bilibili for relaxation. In an effort to break this habit, Harry volunteered to be a university mentor. By organising meetings and events, Harry could get to know more people on campus and speak English more frequently.

Harry demonstrated great enthusiasm for learning and using English. He had his own strategy for improving his English language skills out of class. Throughout the years, he actively sought opportunities to use and speak English. To improve his writing he would read journal articles and try to use good sentences structures in his own writing, to improve his speaking he would talk with people in the university gym or grocery store and try to remember the vocabulary used by native speakers. He paid special attention to lyrics when listening to English songs, and he would try to guess their meaning. Harry found that the gym and grocery store were great places for him to speak English and get the chance to talk with different people. Harry said that he met two friends at the gym, one from Pakistan and one from the United States. Outside of these two friends, Harry had not managed to befriend any Australians outside of his university circle of peers. He felt it was extremely hard to have a close friendship with foreigners due to the differences in language and culture, and as a result of this, all his close friends in Australia were from China.

6   L1 and L2 Technology Use: The Affordances and the Context

The first common ground when reading the experiences of Lily and Harry was an understanding of how technology afforded them opportunities to socialise and communicate in both their L1 and L2 when studying overseas. By using the apps and websites in their L1, students could easily create online communities with their co-nationals through the social networking sites they previously used in their home country, these online social groups gave Lily and Harry a sense of community and belonging due to the similarities in culture and dialects. This seems to support Forbush and Foucault-Welles's (2016) claim that social networking sites help foster network creation. Both Lily and Harry used Chinese social networking sites to socialise with their friends and classmates in Australia and their home country. Because Harry met a few English-speaking friends when he did his research degree, he used Facebook and WhatsApp in English. He was more comfortable about using social media and websites in English than Lily was. As Lily had not befriended any English-speaking friends in Sydney, she felt that using an English-medium social networking site was meaningless. What we can also conclude from their experiences is that sojourners' choice of using certain online social media is generally determined by their social network status in the offline space. Hence, the nature of certain social networking apps or websites would undeniably affect their daily language use when studying overseas.

A second issue we find from the two students' case study is that Chinese students studying overseas use apps and websites in their L1 for information and entertainment. This finding is in line with Martínez-Arbelaiz et al. (2017) where they found daily use of social media in the L1 is higher than the target language. The English Apps and websites that Lily and Harry used were mainly for logistics or getting information, such as using Google Map for navigation or checking Apps for taking public transportation, which was required for their daily lives in an English-speaking environment. Furthermore, some apps and websites that are primarily designed for L1 users may share affordances for L2 learning at the same time. Lily's story illustrates that learning the L2 through the L1 platform is especially beneficial for SA learners who want to learn more about the social and cultural aspect of the host country. Both Lilly and Harry also mentioned how they frequently resorted to websites in Chinese for entertainment purposes. This may not be surprising as students without a support network in a foreign country may like to watch familiar content in their L1 as a way to de-stress from their current situation.

The third point mentioned by both participants was using online resources to compensate for a lack of face-to-face interactions in English. For Lily and Harry, they both had expectations of improving their English proficiency before coming to Australia, however, they were shocked to discover that they could use Chinese almost everywhere in Sydney. In this way, they were unable to see how their English language could naturally improve by living and studying in a native-speaking country, and they both felt some frustration that their English might not improve as much as

they had hoped it would. On the other hand, both students made attempts to put themselves into situations where they would be forced to make use of their English language skills. In Lily's story, she watched TV shows in English at home, and she searched online for casual work that could help her speak more English. Likewise, Harry made effort to use English out of class by switching the system language on his mobile phone and making friends at the gym and local store.

The availability of multilingual offline environments and online communities intersect in international students' everyday experiences and may constrain their language use in their L2. Instead of spending the time to understand how to 'do things in English', students may opt for economical and efficient use of languages. As reported in Harry's story, in addition to its social networking function, WeChat, as the most popular Chinese social networking App, affords many other utilities among the Chinese community living in Sydney. One reason for this strong WeChat implication in cities like Sydney is that Chinese nationals are the major group of Asians in Sydney. Therefore, instead of going through a complicated process of registering for a new online English platform, Chinese sojourners may use one App for multiple functions. This use of L1 technology does not necessarily prevent students from contacting the local community, as information provided in L1 can be used for international students to settle down and explore the new country they live in.

7 Conclusion

Taken together, the case findings presented above suggest that teachers might consider raising students' awareness of the implication of technology use among sojourners when living and learning in a foreign country. When comparing Lily and Harry's technology use side by side, the two stories and charts show different patterns of technology and language use. Lily uses more apps and websites in Chinese, whereas Harry is a regular user of English social networking sites. The technology might be different, but it gave the participants different access points to use and learn English in an English-speaking environment. Even if these Chinese students use more L1 technology while living in Sydney, they still use them strategically to get information or to learn how to do things in English, therefore those digital activities done in their L1 do not actually diminish the interactions in English. The use of technology in a SA context blurs the boundary of using two languages, which could provide affordances for different linguistic and social activities and interactions. As a starting point, this study has raised important questions about the interrelationship between people's individual uses of online and offline environments and it is only with further case study investigations we begin to see how L1 users are able to effectively interact in their L2 while studying abroad.

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Chapter 5
Narrative Inquiry into Teacher Identity, Context, and Technology Integration in Low-Resource ESL Classrooms

Cynthia C. James and Kean Wah Lee

1 Introduction

In 2016, we initiated the formation of a learning community called the *Going Digital* in Kota Kinabalu, Sabah, Malaysia where a group of English as a Second Language (ESL) practitioners with a common passion and interest in technology integration met regularly through a series of teacher-sharing sessions. Through this community, the teachers learned from one another and collaborated on projects to integrate technology in their language classrooms. In addition to face-to-face meetings, the community members also communicated online through a WhatsApp group chat. Data captured through reflective logs, surveys, and interviews revealed that the teachers perceived the professional development sessions through the learning community as effective in enhancing technology integration practices in their ESL classrooms (see Lee & James, 2018). The community's activities were documented in its official website www.goingdigital-elt.com.

The successful execution of *Going Digital* inspired us to "zoom-in" on the individual experiences of its members. To do this, we embarked on a study to capture the learning experiences and the development of technological pedagogical content knowledge of the teachers as individual learners. We adopted narrative inquiry as a strategy to document how the teachers mobilised the knowledge acquired from their learning in the community to their practices in the classroom.

This chapter explicates the exploration of pertinent themes that emerged from the narrative accounts of two ESL teachers, and outlines the implications of this

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knowledge for teacher education and continuing professional development. The two teachers were selected for in-depth study as they represent classroom practitioners who teach in low-resource ESL contexts.

2 Literature Review

Mishra and Koehler's (2006) technological pedagogical content knowledge framework, commonly known as TPACK, provides the theoretical underpinning for this study. The framework incorporates a technological knowledge domain into Shulman's (1986) concept of pedagogical content knowledge (PCK). It demonstrates an interplay among knowledge of technology, pedagogy, and content and describes how this interplay is crucial for meaningful technology integration in the classroom.

Mishra and Koehler introduced TPACK as a framework to help teachers develop "nuanced understandings" of the dynamic equilibrium among technology, pedagogy, and content (p. 1030). They advocated the "learning-technology-by-design" approach that enables teachers to be engaged in educational technology design which encourages them to understand the complexity of the relationships between the three main domains (p. 1038). TPACK acknowledges that technology, pedagogy, and content "do not exist in a vacuum" but are dependent on and influenced by specific contexts of teaching and learning (Koehler et al., 2013, p. 16). Thus, it is pertinent to discuss the role of contexts in TPACK-based studies.

There are three levels of contexts for TPACK enactment, namely: *macro*, *meso*, and *micro* (Porras-Hernández & Salinas-Amescua, 2013). The *macro* level refers to the influences of sociopolitical and technological environments on technology integration practices in the classrooms. Contextual factors such as school culture for ICT use and school policy are categorised under the *meso* level. The *micro* level points to classroom contexts, such as students' profiles and their learning needs. In addition to these levels, Koh et al. (2014) came up with four dimensions for the contextualisation of TPACK and listed as: intrapersonal, interpersonal, physical/technological, and cultural/institutional. They posited that understanding context allows teachers to deepen their "awareness about the contextual influences and how to turn these into opportunities [for learning]" (p. 28).

TPACK-based research also emphasises the importance of understanding the affordances and constraints of technology in the area of teacher professional development and teacher education. For instance, in describing the key competencies of an online language tutor, Hampel and Stickler (2005) listed dealing with constraints and possibilities of the medium as the third level of skills after basic competence and specific technical competence of the software. Building on the notion of a skills pyramid, Compton (2009) proposed a framework for online language teaching skills to guide teacher preparation programmes. At the basic level of this framework, understanding of affordances and constraints was listed as one of the technology skills needed for online language teaching. The importance of considering the affordances and constraints of technology was also reflected in Chun

et al. (2016) guide for language teachers and teacher trainers in computer-assisted language learning (CALL) trainings and practices. They posited that ignoring the affordances and constraints of CALL may lead to "incompatibility between goals and tools…[and]…severely limit the effectiveness of technology as an educational tool" (p. 75).

3 Narrative Inquiry as a Strategy of Inquiry

This study adopts the narrative inquiry strategy (see Clandinin & Connelly, 2000) as a way to represent the teachers' experiences of using technology in their language lessons. It involves the conceptualisation of a metaphorical "three-dimensional narrative inquiry space" which consists of dimensions such as interactions (personal and social), temporality (past, present, future), and places (situations). In Clandinin and Connelly's words: "studies have temporal dimensions and address temporal matters; they focus on the personal and the social balance appropriate to the inquiry; and they occur in specific places or sequences of places" (p. 50). In addition to the three-dimensional narrative inquiry space, Clandinin and Connelly also referred to their earlier work (Clandinin & Connelly, 1994) where they proposed four directions of inquiry: *inward* and *outward; backward* and *forward*. *Inward* refers to internal conditions, such as "feelings, hopes, aesthetic reactions, and moral disposition", while *outward* refers to "existential conditions, that is the environment" (p. 50). *Backward* and *forward* refer to the idea of temporality, i.e. past, present, and future.

Another term that is useful in narrative inquiry is *professional knowledge landscape*. This refers to knowledge that is both formed and expressed in contexts. It also discusses relationships among people, places, and things, as well as exploring teachers' in-classroom and out-of-classroom experiences (Connelly & Clandinin, 1999). In this study, we have extrapolated Connelly and Clandinin's idea of landscapes to refer to teacher communities. This study looked at the interactions within and between two different landscapes or communities, i.e. professional learning community and the school community or the classroom.

To capture how the teachers mobilised the knowledge acquired from their learning in the *Going Digital* community to their practices in the classroom, we reconceptualised Clandinin and Connelly's notions of *three-dimensional narrative inquiry space*, *four directions of inquiry* and *professional knowledge landscape* into a conceptual framework presented in Fig. 1.

The *professional development landscape* in Fig. 1 refers to the *Going Digital* community which both focal teachers attended as part of their continuing professional development, while the *professional practice landscape* represents the schools and the classrooms. In each landscape, teacher knowledge was captured through *inward* and *outward* interactions, which is referred to as *intra-landscape interactions*. In addition, this study also looks at *inter-landscape interaction*, where teachers deal with the mobilisation of their knowledge from their professional development to the classrooms. This *inter-landscape interaction* provides insights on how teachers
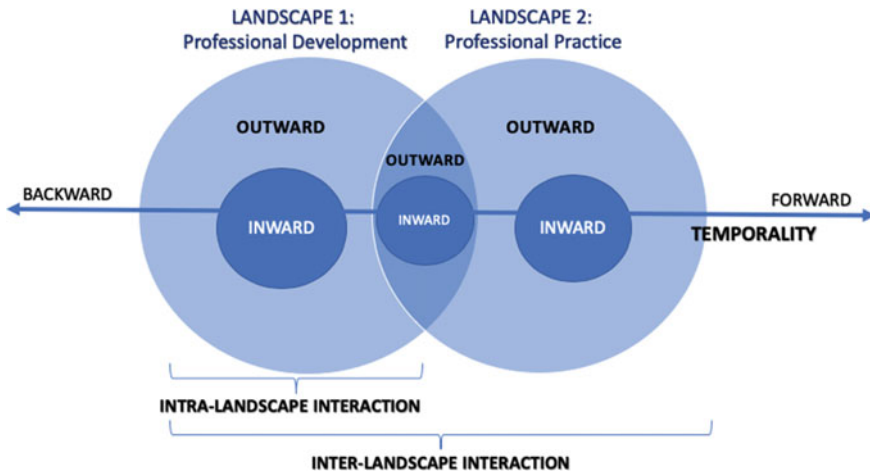
Fig. 1 Three-dimensional narrative inquiry space between two landscapes (based on Clandinin & Connelly, 1994, 2000; Connelly & Clandinin, 1999)

respond to their professional development experience in the transition phase before they moved on to enacting their TPACK in the classroom. To understand this mobilisation experience, inquiries would go *backward* (referring to past experiences) and *forward* (referring to the present moment and the ensuing future), along the horizontal line of temporality (Clandinin, 2013; Clandinin & Connelly, 2000).

4   The Teachers' Narrative Accounts

To construct the narrative accounts, the participants' individual experiences were captured through teachers' project reports and interviews. The participants were requested to write up a report of the technology-based projects that they conducted in their classrooms following their participation in the *Going Digital* community. Interviews were conducted to capture stories and information that were not recorded in the project report. The interviews also provided the participants with the chance to reflect on their experiences of transitioning between the *Going Digital* professional development to their professional practice in the classroom.

Data from the project reports and the interviews were used to construct narrative accounts of the teachers' experiences of participating in the *Going Digital* community and practicing what they learned in the classroom. To ensure accurate representations of the teachers' personal experiences, each narrative went through what was referred to as the first level of analysis. This involved negotiating and re-negotiating the compositions until each participant feels that the account "represent something of who they are and are becoming" (Clandinin, 2013, p. 132).

4.1 Narrative Account 1: The Novice Digital Teacher

The rural primary school, where Erica had taught for nine years, was located about 100 kilometres from the state capital. She was in her early 40's and had been a teacher for 14 years. As far as technology is concerned, Erica admitted that she was probably not very good at it but she loved it very much. She enjoyed exchanging ideas and learning about tools and apps to integrate technology into her ESL lessons with other members of the *Going Digital* community. Although she confessed that not all of the tools and apps shared were directly applicable to her rural classroom, she appreciated the new knowledge she gained from the community. The idea of getting students to be the doer sat well with Erica's teaching philosophy. Erica described herself as a simple person who liked direct and transparent things. As a language teacher, this meant getting her students to learn by doing. In Erica's words: "If they want to learn speaking, they need to speak. It's all about doing it."

This is evident through the technology-based project that Erica chose to conduct with her Year 4 (age 10) students. She wanted to improve her students' narrative writing skills, so she decided to do a digital storytelling project. The inspiration came after learning about an app called Voki, which exploited the combination of images, voices, and texts to tell a story. Erica thought it was a fun app to use in her classroom, but due to the poor Internet connection in her school she was not able to share it with her students. She realised that the same ideas could be used with basic Microsoft Office applications, such as PowerPoint. This app was provided for free in all the school's computers and netbooks and required no Internet connection. Therefore, Erica decided to use PowerPoint as a tool to help her students blend images, voices, and texts to create their own digital stories.

Erica downloaded a collection of copyright-free images, music, and animations and store the files in a folder on the school's computer for students to copy and use for their projects. The choices, however, were a bit limited. Some students preferred to browse the Internet and search for the materials on their own. Although Erica's students enjoyed creating digital stories very much, they were frustrated by the poor Internet connection and low-performing hardware provided by the school. Erica was concerned that this might cause some of the students to lose interest in the project. To keep the momentum going, Erica resolved these issues by allowing the students to use her own mobile Internet hotspots. Although she realised that the outdated equipment and poor Internet connection provided extra challenges to her effort of integrating technology in her ESL lessons, Erica was determined to do it because her students enjoyed learning using computers and that the school is usually the only place where they can get access to computers. Erica also admitted to using technology as a bait to attract students to learn English in a different way—in a high-tech way. Knowing that they would have the opportunity to use the computer to convert their stories into digital format made the students excited about writing, in a way that they had never done before.

The success of the digital storytelling project inspired Erica to consider conducting similar projects in the future, perhaps in a larger scale. For future projects, she hoped to explore the use of digital storytelling in improving her students' listening and speaking skills.

4.2 Narrative Account 2: The Digital Immigrant Teacher

Adele had been teaching English in an all-girls convent secondary school, located in the heart of the capital city, for almost 17 years. Adele adopted Prensky's (2001) term "digital immigrant" to describe her technological competence. She saw herself as someone whose bragging rights are only limited to Microsoft Word and maybe PowerPoint. Adele described her participation in the *Going Digital* community as an experience that had opened up her eyes to the endless possibilities of exploiting the programmes and applications available for classroom use. Despite being greatly inspired, she also believed that it was something that was totally out of her comfort zone. She described it as a "plunge into the deep end of the digital ocean from the highest cliff." However, the peer support that she received from other members of the community enabled her to derive the optimal benefits from the learning experience.

Despite her lack of confidence in her technological skills, Adele was motivated to explore ways she could use technology to enrich the classroom experience. She decided to explore the potentials of *PowToon*, free online software for creating animated presentations, which she was introduced via the *Going Digital* project. Adele decided to take the plunge with 28 students in her Form 4 (age 16) class. Working in groups, the students had to design and develop animated presentations to describe themselves and their group members using metaphors, riddles, and imagery. Through this project, the students were able to learn how to use metaphors, riddles, and imagery to describe someone or something. But more than that, Adele was also happy that the students were able to exploit a digital tool to make their presentation more interesting, which would be valuable for their future, especially in college or university.

Just like any other technology-based project, Adele's *PowToon* project was not immune to challenges. Internet connection seemed to be the main problem, despite the school's urban location. As an animation creator software, *PowToon* requires a high-speed Internet connection for it to function effectively. Adele solved the problem by seeking permission from the school administrators to allow the students to bring their mobile hotspot or portable wi-fi to school.

Another big challenge was the lack of computers. The school did not have a computer lab, and the laptops available for student use were limited. Again, Adele managed to resolve this issue by getting the school administrators to grant permission for students to bring their own laptops to school. Since not every student was in possession of a laptop, Adele needed to make slight rearrangements to the students' groupings. This was to ensure that every group had at least one laptop to work with.

At the inception of the project, Adele did not have a lot of confidence in using and teaching her students how to use *PowToon.* However, as the project progressed, Adele discovered that these initial worries did not actually matter. To make up for her lack of technological competence, the students took the lead as they explored the programme together. Adele believed that in order to make her digital migration successful, she needed to keep an open mind and an open heart. She needed to pick up the courage to conduct trials and errors and so as to improve her competence level. For her future projects, she hoped to explore other programmes that are less demanding on Internet speed to ensure a more seamless experience for all the students.

5   Unpacking the Narratives

These narrative accounts reveal how both participants projected their identity and beliefs about being a teacher. Erica, the Novice Digital Teacher, preferred to keep things as easy as possible. Her projected identity as a teacher was evident through her way of handling the issues with tools and facilities in her school. She recounted how she found inspiration from the sharing sessions at *Going Digital*, and how she brought the knowledge she learned into her current teaching practice. Erica described how her outward interaction with the community inspired an inward interaction which moved her to unearth all the Netbooks in her school's ICT lab. She speculated that these Netbooks had remained untouched for years because the teachers in her school were too afraid to implement technology into their lessons and also thought that the students might destroy them.

Teaching in a rural primary school required Erica to drive for about three hours to the capital city whenever she wished to attend the *Going Digital* sharing sessions. This required a huge sacrifice, especially given the fact that much of the knowledge shared in the sessions were not directly applicable to Erica's classroom. Erica's context of place is also interesting as it involves an array of paradoxes. For instance, the massive and elegant building blocks of Erica's school bore very little resemblance to the dilapidated and under-resourced nature of schools typically associated with rural areas in Malaysia. This atypical grandeur, however, was only superficial in nature as there was evidence of neglect due to the school being seriously understaffed. This strikes a resonance with the existence of a relatively well-equipped ICT lab with dozens of Netbooks that were practically unusable due to the equipment being outdated, and Internet connection that was almost non-existent.

Adele was more aware of her identity as a teacher who used technology and referred to herself as a Digital Immigrant Teacher. This awareness caused her some real anxieties associated with being competent in her use of technology. She recounted issues of unfamiliarity and navigating on her own learning journey of exploration into the unknown. She reminisced on her past experience of being in the safe cocoon of the *Going Digital* community and contrasted this with the uncertainty of her anxious situation in the digital classroom. She described the *inward* and *outward* interactions when she made the comparison between the nurturing

support that she received from her peers with the terrifying encounter with her digital-native-students. She shared her innermost reflection: "Will I sink and drown as I take the plunge, or will I swim with the technologically savvy Generation Z children?" Adele approached the journey with extreme caution at the outset. The cautiousness, however, gradually transformed into courage, as Adele made the decision to take the plunge from the highest cliff and swim alongside her digital native Generation Z students. Adele's metaphors were all about her movement between two places, i.e. the safe place of *Going Digital* to the tumultuous digital ocean of her classroom. Adele saw herself as an immigrant and described her experience of mobilising her learning from *Going Digital* to her classroom as a migration between two places.

Both teachers identified increasing their learners' engagement and motivation, providing opportunities for the teaching of real-life skills, and improving classroom efficiency as among the affordances technology offered. The constraints included lack of equipment and facilities as well as teachers' self-efficacy. The findings reflected the first-order and second-order barriers posited by Koh et al. (2014) dimensions of contexts in TPACK-based lesson design. The teachers' understanding of the affordances and constraints of technology integration influenced how they might plan their future technology-based projects.

Evidence in the narrative accounts suggested that the responses presented in the transition phase, i.e. the phase between professional learning to classroom practice, are influenced by factors such as teacher identity, context, and the affordances and constraints of technology. These factors should be taken into account when considering effective mobilisation of knowledge from professional development to classroom practice.

Teacher identity plays a role in how a teacher chooses to integrate (or not to integrate) technology in his or her classroom (Shelton, 2018). This is developed through the articulation of personal and professional beliefs about being a teacher (Bukor, 2015) and is rooted in various sources such as experiences, personality, professional practice, and emotions.

As for context, Somekh (2008) contended that: "Teachers are not free agents and their use of ICT for teaching and learning depends on the interlocking cultural, social and organisational contexts in which they live and work" (p. 450). This view is echoed by other studies on the role of contexts in technology integration in the classroom (e.g. Ertmer & Ottenbreit-Leftwich, 2010; Swallow & Olofson, 2017). It is obvious from the narrative accounts of the participants how the distinctive context of every school determines the choices of technology tools, pedagogical approaches, and curricular content. For example, due to the unavailability of good Internet connections in Erica's rural school, the project had to be conducted using tools that require no Internet connection. Although Adele also experienced more or less the same challenges of lack of equipment and Internet access, she was able to solve these problems by allowing her students to able to bring their own laptops and mobile Internet connections from home.

Giving due considerations of the affordances and constraints at the outset of every technology integration practice is pertinent as it gears teachers towards proper appropriation of knowledge. From the teachers' narrative accounts, mobilisation of knowledge is not just visible through the teachers' descriptions of their experiences being in the transition phase where the professional development ended and classroom practice started. A glimpse of how new knowledge can be seen through the participants' depiction of their future plans. As pointed out by Mishra and Koehler (2006), the understanding of affordances and constraints of technology integration assisted teachers in representing content and identifying pertinent teaching approaches. The participants gained an enhanced understanding of the affordances and constraints after executing their first technology-based projects following their participation in the *Going Digital* project.

6 Implications for Teacher Education and Continuing Professional Development

The two narrative accounts presented in this chapter demonstrate how the teachers' learning in the *Going Digital* community and their subsequent classroom practices were influenced by factors such as identity, contexts, and the affordances and constraints of technology. In this section, we would like to share our reflections on what this means for teacher education and continuing professional development to enhance technology integration in the ESL classrooms.

First of all, we believe that it is important for teacher education and continuing professional development to provide opportunities for teachers to self-assess and evaluate their pedagogical beliefs and self-efficacy in order to understand their professional identity. According to Curwood (2014), "professional development is marked by questions such as 'Who am I as a teacher?' and 'Who do I want to become?'" (p. 157). This strikes a resonance with Connelly and Clandinin's (1999) notion of "stories to live by", which describes how teachers addressed questions of "who they are" and "what they are becoming" as they enact their personal practical knowledge in their professional knowledge landscapes (p. 4). Ertmer (2005) stated that examination of how teachers' instructional practices are grounded in and mediated by their beliefs, values, and identities is essential in increasing teachers' use of technology which positively impacts students' learning.

In addition to self-evaluation, we believe that teacher education and continuing professional development should afford opportunities for context evaluation. We propose that teacher education and continuing professional development be grounded in the communities where the teachers conduct their professional practices. For teachers, identity is more than a representation of who they are at a particular point in time. Identity is also teachers' responses to their social contexts (Akkerman & Meijer, 2011). In other words, "understanding teacher identity should originate from the overall communities and teachers' experiences…in the communities" (Teng, 2019,

p. 50). Context evaluation should involve thinking about their school and classroom's unique circumstances, their learners' needs, aptitudes, competency or dispositions, as well as other contextual factors such as organisational routines, policy, the milieus, and sociocultural backgrounds.

Lastly, teacher education and continuing professional development ought to offer guidance for teachers in conducting pre-evaluations of the affordances and constraints of technology integration from the outset. As evinced in the narrative accounts, taking into consideration of the affordances and constraints at the beginning of every technology integration practice is vital as it directs teachers towards proper appropriation of knowledge. It also provides teachers with the opportunities to enhance their understandings of the isolated domains of TPACK and the interactions between and among these domains as these have been shown to improve technology integration practices in the classroom. As pointed out by Mishra and Koehler (2006), the understanding of affordances and constraints of technology integration assisted teachers in representing content and identifying pertinent teaching approaches.

7 Conclusion

This chapter sheds light on the importance of understanding how teachers respond to community-based professional development and how they mobilise as well as enact the knowledge they acquire from professional development activities to practice when using technology in the classroom. More research into recognising the diverse factors that influence teachers' professional development experiences and the social contexts that mediate individual implementation is needed in order to better understand teachers' contextual appropriation from professional learning experiences. Through the inquiry into teachers' narrative experiences of integrating technology in their ESL classrooms, this study hopes to pave the way towards exploring the possibility of an emphasised focus on teachers' contexts, the shaping of teachers' identities and the development of self-efficacy through teacher professional development, mobilisation of knowledge, and enactment of knowledge in the classroom. In doing so, teachers will hopefully gain a more nuanced understanding of TPACK, and better understand how they might be able to use technology to benefit learners in more practical and contextualised ways.

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Part II

Chapter 6
Case Study 1, Thailand: "For the World to See and Learn"—Motivating Learners Through Purposeful Writing

Richard Watson Todd and Stuart G. Towns

1 Background

In an ideal writing class, the students would be highly motivated, would challenge themselves to maximize their learning opportunities, and would willingly produce extensive written texts. This ideal may seem to be a pipe dream, but in this case study we show how it is possible to move towards this ideal by using a large-scale authentic writing task addressing a real-world audience through Web 2.0 affordances.

How students perceive a writing task influences how they approach the task and what they can learn from it. A useful framework for understanding how students perceive and approach tasks is achievement goal theory focusing on goal orientation. Achievement goal theory argues that students generally have one of two main types of orientation towards a particular task: a mastery orientation or a performance orientation (Dweck & Leggett, 1988). In a mastery orientation, students focus on learning for its own sake and aim for a deep understanding; in a performance orientation, students aim to be perceived as competent. These orientations may be related to the concepts of intrinsic and extrinsic motivation familiar to language teachers.

The type of orientation students have influences what they gain from a task. A mastery orientation often leads to higher self-efficacy which in turn leads to improved writing achievement; a performance orientation can cause students to avoid challenges meaning that there is little improvement in achievement (Yilmaz Soylu et al., 2017). Usefully from a teacher's perspective, orientations are context-specific and so can vary from task to task. This means that a teacher can purposefully design a task to promote a mastery orientation.

A key aspect of tasks that can promote mastery is authenticity. More authentic tasks typically result in more student engagement and effort, both of which are linked to mastery (Magnifico, 2010). In mainstream education, this relationship is illustrated

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in the seminal study of Cohen and Riel (1989). In two classes, students completed the same writing task with the same assessment and impact on their course grades. In one class, the task was written for the teacher; in the other, the audience was overseas pen pals. When writing for a real-world audience, the students put in much more effort and devoted more time to planning, resulting in higher quality writing.

To promote a mastery orientation with its attendant benefits, then, using authentic tasks is a promising approach. However, it is not the case that simply using a task that mirrors the real world is sufficient. In addition to the task being authentic, the learner response should also be authentic. In other words, the students' written work should have a real-world purpose (Guariento & Morley, 2001). This can be most easily achieved when students are writing to a genuine audience (Tran, 2007). When Cohen and Riel conducted their research in the eighties, arranging for a genuine audience for student writing required effort and organization on the part of the teacher. With advances in technology, especially Web 2.0 democratizing knowledge production, designing real-world tasks with a genuine audience has become more straightforward.

The context we examine in this case study is an introductory English for Academic Purposes course at a Thai university in which students write a Wikipedia article as the main assignment. Wikipedia was deemed an appropriate medium for the course because it is the best-known academically-oriented Web 2.0 application with a massive genuine audience and is also the archetype for the democratization of knowledge production. Previous research into using writing for Wikipedia as an English language learning task has suggested that students can gain certain academic skills, such as resourcing and citation skills, from the experience (Tardy, 2010), and that the task can lead to student empowerment and engagement (Konieczny, 2014). In an academic context, writing for Wikipedia may be an appropriate task for promoting a mastery orientation in students. In this case study, then, our main goal is to answer the following question: *How does a Wikipedia writing task influence students' orientations?*

2 Case Study

2.1 Participants

At the Thai university where this case study was conducted, the vast majority of undergraduates are Thais with an incoming proficiency level of A2 or B1 on the CEFR scale (elementary to intermediate). Given the importance of English for academic studies, the university administration requires all undergraduates to study English courses in their first three semesters. Each year, however, a few undergraduate students, such as those coming from international schools, enter the university with proficiency levels of C1 or C2 on CEFR (advanced). These students are required to study English, but the usual courses are not appropriate for them. A special course focusing on academic skills was set up for these students, and the students in one class on this course are the

participants in this case study. There are 18 students aged 17–20 in the group with about half being Thais, and the rest coming from other Asian countries including Cambodia, China and the Philippines. In the data presentation, pseudonyms for these students are used.

2.2   The Academic Reading and Writing Course

With little need for traditional English language objectives to be covered, the course is similar to preparatory study skills courses offered by universities in English-speaking countries. The objectives, therefore, cover academic skills, such as researching academic sources, writing a report in an academic style and citing sources. A quick survey of the study skills courses offered at UK universities shows that they generally aim to prepare students for essay and report writing. Although it is not explicitly stated, it is likely that the written output on these courses will only be read by the course teacher meaning that it is possible that these courses promote a performance orientation.

To promote a mastery orientation, we believe that the same objectives can be covered using an authentic writing task with a real-world audience. For novice academic writers such as the first-year undergraduate students on this course, the most promising real-world writing task is to produce a Wikipedia article. As a written product, a Wikipedia article is similar to the factual essays targeted on several study skills courses, and the process of writing a Wikipedia article mirrors that of much academic writing moving from resourcing through drafting and revising to publishing the finished article. Unlike most academic writing, Wikipedia articles have a very large potential real-world audience with the online encyclopedia being one of the ten most visited websites. In addition to the traditional objectives of study skills courses, using the writing of a Wikipedia article as the course goal allows additional objectives focusing on digital literacy, such as determining the reputability of online sources and following copyright and fair use guidelines, such as those from Creative Commons.

Overall, this course follows a typical process writing approach. The students were allowed to choose their own topic, as long as it was an academic topic which could be researched through reputable sources, followed Wikipedia guidelines, and did not yet have a full article published on the English Wikipedia site. The students then conducted research using various websites and local university libraries to find information on their topic. The next step was to conduct a genre analysis of a Wikipedia model article with a similar topic to their own. Once the students had a basic understanding of their topic and how they might organize it, they created an outline for their article. Finally, the writing stage had several iterations, with feedback from the teacher, their peers, and online grammar checkers. Once the article was finished, it was uploaded to the public Wikipedia site.

Throughout the research and writing process, there were numerous instances of support and affordances. The course used extensive formative assessments at each

step to ensure that students were likely to be successful in their article writing. For example, special care was taken by the teacher in the initial topic selection stage. Once the students started writing their articles, the teacher gave individual consultations and feedback on language issues. Structured peer feedback was also used.

The use of technology in this course also enabled additional affordances. Since the students were using the public Wikipedia sandboxes to write and edit their work, the teacher had full access to the current state of their work as well as a detailed edit history. In the later feedback and revision stages of their writing, the students were introduced to Grammarly, an online grammar and plagiarism checker. Once the students had published their article to Wikipedia, there was additional support such as online discussions with other Wikipedia contributors and editors to gain writing advice and tips.

Example of Wikipedia articles created by students in this course include:

- Khrua In Khong: a famous Thai artist from the nineteenth century.
- Diotima's Ladder of Love: a philosophy from Plato's Symposium which discusses different types of love.
- Seub Nakhasathien: a Thai conservationist, environmental activist and scholar.
- Structural Support: the structure of a building that supports it against internal forces.
- Thaeng yuak: Thai banana stalk carving.

2.3   Data Collection and Analysis

To see the impact of the course on the students and to gain insights into their orientations, we collected data from two sources at the end of the course, after the students had submitted their article to Wikipedia. The first data source is from a group interview with five students. The interview was conducted by an instructor who had previously taught the course, but who was not involved this semester. The students were asked to give their opinion on three main topics: (1) the course in general, (2) the goal of the course, which was to write and publish a Wikipedia article, and (3) the research and writing process. The interview was recorded and transcribed. The second data source is from reflective essays written by each student individually. Students were asked to reflect on three main topics: (1) their personal feelings about the topic they chose and about writing for a global audience, (2) the perceived difficulty of writing to meet the standards of the Wikipedia article genre and (3) the steps of the research and writing process and the tools that are used in each step.

In analyzing the data from both the group interviews and the reflective essays, we were concerned with three main issues. First, since writing for Wikipedia was a new experience for the students and since Wikipedia articles, although similar to other types of academic writing, are not what the students are expected to write in their studies, we were interested in their reactions to being asked to write a Wikipedia article as the goal of the course. Second, if other teachers are to use Wikipedia writing as the basis for their academic skills courses, it would be useful to know about the

potential problems and benefits of the supports used in this course. Third, to answer the research question, we looked for evidence of the students' orientations in the course. We, therefore set up these three issues as the themes for analyzing the data. We separately coded the data for these themes and discussed points where we had coded differently until an agreement was reached. We then looked for frequently mentioned or notably salient points within the themes to identify the main findings.

3 Results

In this section we present quotations from the reflection essays (marked RE) and the group interview (marked GI) which are either typical of the views of several of the students or are particularly salient. The results are categorized into the three main issues apparent in the data: Wikipedia as a class assignment, supporting the students, and the students' orientations.

3.1 Writing a Wikipedia Article

In prioritizing the promotion of a mastery orientation through writing for a large real-world audience, we chose to replace the traditional reports and essays used in study skills courses with the writing of a Wikipedia article as the main task. This is a potentially problematic choice since many teachers do not believe that Wikipedia articles have the same rigor as traditional academic writing (Meishar-Tal, 2015). In our case study, however, the students clearly viewed the Wikipedia article as academic writing distinct from the personal and opinion essays they had written in their prior education:

> *Since it's a Wikipedia article, so it's more academic like and I can't put my feelings into it* . (Kannika, RE)

The students also saw the experience of writing for Wikipedia as useful preparation for their future writing:

> *We actually could probably use what he is teaching for something else. Right now we are studying about Wikipedia writing page and I think that can be applied to other … especially in architecture I could use it for other architecture documents and maybe for some formal piece I could write.* (Chayan, GI)

Writing for Wikipedia also led to a shift in the students' attitudes towards knowledge sources which could lead to more desirable habits in the future:

> *When I did research before this class, I mostly read Wikipedia articles but now I am the one who is writing one article so I have to research on many sites so it gives me the habit of looking into other sites other than Wikipedia.* (Shein Aung, GI)

While the vast majority of the students' responses show that writing for Wikipedia provides valuable preparation for academic writing and opportunities for learning study skills, there is one potentially demotivating issue. Wikipedia upholds certain standards, and submissions that contravene these can lead to the Wikipedia editors banning contributors. This is especially the case for articles concerning living people who need more care than most articles, as was the case for one student:

> *I was banned. Just disappointed. I will do my very best next time to have my article in Wikipedia. It does not really discourage me.* (Daniel, GI)

Despite this problem, the student retained his motivation and mastery orientation. Overall, then, our decision to use the writing of a Wikipedia article as the main goal in the course seems justified as the focus for a study skills course.

3.2   Supporting the Students' Learning

For the students whose previous educational writing experience had been with the teacher as the sole audience, writing for Wikipedia with a potential audience of millions was daunting. The course design, therefore, emphasized the provision of support that was relevant and timely to increase the likelihood of the students producing publishable articles at the end of the course.

Following Sharpe (2006), the supports used on the course can be divided into planned macro-level scaffolds and contingent micro-level scaffolds. The two main macro-level scaffolds are the use of a process approach to writing which breaks the work down into a series of manageable sub-tasks, and the use of existing Wikipedia articles as models for genre analysis allowing students to create templates for their own articles. Both of these macro-level scaffolds were mentioned as being useful by the students, but their main concern was the micro-level scaffolds:

> *The writing process that we followed in class was quite useful, was in a good order and all makes sense in the end. I personally want more consulting time with the professor.* (Kannika, RE)

A variety of contingent micro-scaffolds were available. These are used when needed, meaning that the extent to which different students used these scaffolds varied. One set of micro-scaffolds concerned advice or tips available at various stages of the course. For those stages which were expected to be particularly challenging, such as choosing a suitable topic and referencing and citation skills, the scaffolds were planned but their use was contingent:

> *The first task to start writing an article is finding topic. During that time, I was experiencing a very hard time because there are too many articles to choose and when there is a suitable topic it'd be too broad or have already written. However, I got my topic because the teacher give me the way to find a short article in Wikipedia.* (Sotheara, RE)

Other tip-style micro-scaffolds were accessed autonomously by the students, such as finding help with using the Wikipedia editing interface:

Also, the help section on top of the sandbox gives codes that I can look on immediately. (Prisana, RE)

To improve the surface features of their writing, students were introduced to Grammarly, an automated online grammar program, as support they could use contingently when they were not certain about their writing. The students showed a high level of critical awareness in their use of Grammarly:

Grammarly is handy when I don't know whom to ask but we just have to double check again because some time it will make it miss the context we want to emphasize or express. (Narong, RE)

The most frequently used micro-scaffold was consultations with and feedback from the teacher, which covered many different aspects of writing and was overwhelmingly viewed as positive. The students also gained support through peer feedback but their reactions to this were very mixed:

As for the feedback, both from the teacher and peer is helpful but for the peers feedback it hurts me a lot because it gives me the feeling of being a worthless writer, instead of keeping the negative thoughts in my head I refute everything into positive ones. (Daniel, RE)

Before submitting the teacher also let us feedback to our article. It's nice. I can see my friend's works and I know what I should improve for my article. Especially I can practice more about my English and I can see how they do their assignment. (Sokhem, RE)

Although some comments suggest that peer feedback might better be avoided, they are typical of research findings in the area which generally conclude that the benefits outweigh the disadvantages (Liu & Hansen, 2002).

The use of supports throughout the course meant that what initially appeared to be a very difficult task became manageable with successful outcomes:

At first, I do not feel good to write the article because it is seriously tiring. But now it is not as bad as before since I've finished the article and also showing my writing to others has always been the one thing I wanted to do. (Sotheara, RE)

It was uncertainness at first considering that my work will be public for the world to see and learn but I overcome that and felt the advantages of it by sharing it to the world. (Jacob, RE)

3.3 The Students' Orientations

Our key reason for using the writing of a Wikipedia article as the goal of the course was that the authentic nature of the task with a real-world audience would promote a mastery orientation. There is substantial evidence that the potential readership of the article influenced the way the students worked. They were clearly not simply performing for a good grade as they might in the traditional context of writing for the teacher to read; instead, they were motivated to produce the best work they could:

This time, when I write, I think more about the readers, since there are going to be more readers who read my article. I tried to use the language that is easier but formal. I tried to think about what I want when I search for Wikipedia articles and then write it that way. When

I wrote articles and essays for my teachers, I just wrote what they want to write. (Kannika, GI)

[If I were writing for the teacher] *I think I wouldn't try as hard. I think that the whole publish to the whole world thing kinda helps me to take it more seriously.* (Chayan, GI)

A further influence on the students' orientations was their choice of topic. For some, simply being able to choose a topic that matched their interests was sufficient motivation; for others, their choice of topic gave them a sense of personal involvement in the quality of the finished article:

The reason I choose this topic is because my family was from Northern part of Thailand and one of my ancestor was taken part as one of the inventor of Lanna [Northern Thai] *food. So, I think apart from doing the research and gather the information from the internet, books, etc. I can also ask my grandparents about the details and information of this topic … Another reason of choosing this topic is because I realized how much Thai food is a part of Thai culture … In my opinion, it is something that should be shared to the world and continue to keep this tradition going still.* (Mayuree, RE)

Such mastery orientations through personal investment are perhaps best illustrated by the student who wrote the article on Thaeng yuak or Thai banana stalk carving. This student contacted one of the few carvers still practicing this traditional art and travelled to a distant province to interview the carver and to take photos for the Wikipedia page. By going above and beyond the requirements of the course, this student is an archetype for how using a Wikipedia writing project can stimulate a mastery orientation.

4 Pedagogical Principles

The design of the course discussed in this case study is based on two overriding considerations: to cover the academic preparation objectives of study skills courses, and to promote mastery orientations among the students. The results suggest that the course has achieved both goals, but in this section we will focus on the latter by providing some pedagogical principles that are likely to promote mastery orientations. We will suggest four broad principles applicable across situations and one principle specific to a Wikipedia writing course.

(a) *Using authentic tasks with real-world audiences*: from the results, the students are clearly motivated and they assign much of their motivation to having a large real-world audience for their writing. In this case study we used Wikipedia article writing as the authentic task, but many Web 2.0 applications provide similar affordances. Examples include blogging on a specific topic, creating a multi-platform social media campaign addressing a social issue of concern to the students, and making YouTube videos (see Pinner, 2016 for examples).

(b) *Giving students choice*: students are more likely to attain a mastery orientation when they have a personal investment in their work. Allowing students to choose a topic of personal importance or interest is a relatively straightforward

way of achieving this, as shown in the example of the student who chose to write an article on Lanna food.

(c) *Using macro-scaffolds*: writing for a large audience can be a daunting experience, even for students with high proficiency levels as in this case study. It is therefore crucial that the course design incorporates macro-scaffolds as large-scale support for success in the task. In this course, there were two macro-scaffolds: a process writing approach breaking down the daunting task into a series of manageable steps, and the use of model articles to create a template students can use in writing their own article. The latter macro-scaffold is related to genre-based learning and teaches the students the generalizable skill of analyzing model texts which they could apply to other genres in the future.

(d) *Using micro-scaffolds*: in addition to scaffolding the course design, further specific support in the form of micro-scaffolds was provided when students needed help. In this course, a large variety of micro-scaffolds were used, some planned (e.g., using Grammarly to edit writing) and some unplanned (e.g., using Wikipedia sandbox help functions), some successful (e.g., consultations with the teacher) and some less successful (e.g., peer feedback on writing). Given that the micro-scaffolds enable progress and reduce frustration at specific points in the course, we believe that they are essential for success and warrant serious attention. In this case study, the mixed reactions to peer feedback, even though such reactions are common, encourage us to search for new, potentially more effective, ways of designing, managing and using peer feedback in the future.

(e) *Providing guidance on Wikipedia topics*: although we have highlighted that students should be free to choose the topic to write about, some Wikipedia topics are more likely to lead to a successful article than others. Choosing an inappropriate topic has the potential to cause students numerous problems resulting in demotivation (and possibly a shift to a performance orientation). Articles should be on topics where information resources, in this case ideally academic resources, are available, where the existing article is short (lists of Wikipedia stubs help here) or non-existent, and where presenting the information on the topic is unlikely to lead to problems. In this case study, one student chose to write about a living person, a Wikipedia topic requiring great care in presenting the information. Unfortunately, the student did not follow the more rigorous Wikipedia standards and was banned from contributing to Wikipedia (providing a lesson for the teacher as well). Although students should be free to choose topics, the teacher needs to vet the proposed topics to check that they are appropriate.

Overall, we believe that the course was successful in promoting mastery orientations, and that this success was largely due to using an authentic task with a global real-world audience, allowing students to choose their topics with guidance, and providing extensive support. The Internet played a crucial role in each of these aspects, acting as a gateway to searching for information and as a platform for publishing to the world. The course was not without problems, however, notably the

peer feedback and one student being banned. By reflecting on the course and learning from these problems, we hope that the next time the course is run, it will move even closer to the ideal writing class of highly motivated students challenging themselves and producing extensive written texts.

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Chapter 7
Case Study 2, Hong Kong: Oral Presentations—Stories Behind Students' Use of PowerPoint

Wenhao Zhang

1 Background

As the number of students entering higher education continues growing world-wide, and the number of ESL/EFL students studying via the medium of English in Asia grows (Miller, 2014), there is a continuing debate on the best ways to evaluate these students' learning—in terms of both content and communicative abilities. Recently, apart from the traditional demands on academic written English, oral presentations have also been placed under scrutiny, as these have been increasingly valued as a significant way to make interpersonal, academic, and professional ideas more accessible to a wide audience (Barrett & Liu, 2016). However, this complex oral academic/professional event remains poorly understood (Kobayashi, 2016), as good language skills, in themselves, do not necessarily guarantee a good academic/professional presentation (Morita, 2000). Therefore, the use of semiotic sources (e.g., images, videos, figures) has been given increasing attention in recent research studies (e.g., Rowley-Jolivet, 2015). Typically, as PowerPoint has become a must-have artificial counterpart to support an oral presentation, the question arises as to how our students can take advantage of PowerPoint to reinforce the intelligibility of their academic/professional talks.

The case study discussed here is set in Hong Kong, a city that promotes a policy of "Bi-literacy (Written: Chinese and English) and Tri-lingualism (Spoken: Cantonese, English and Mandarin)" (两文三语) in its schools and universities. According to the Hong Kong Education Bureau (2021), around twenty-five percent of secondary schools in Hong Kong use English as the medium of instruction and 8 of the 11 universities have an English-medium policy. That means that seventy-five percent of students in secondary school study in Cantonese and as such may not be as well

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prepared for their tertiary education as the other students, in terms of their English linguistic competence.

Similar to western tertiary institutions, an oral presentation has become a crucial academic convention and assessment tool in Hong Kong universities. Students encounter different degrees of challenges during their presentations: unfamiliarity with oral academic practices, difficulty in conveying meaning about technical subjects to a non-technical audience, and insufficient English language proficiency (Evans & Green, 2007). Since PowerPoint has become almost a "ritual" within students' presentations, it is valuable to gain more insights upon good practices of how students go about designing and preparing their PowerPoint slides, and how they try to use them during their presentations. This may help tutors teach students how to make their presentations more effective and engaging.

While it is valuable to look at how professionals handle their presentations (e.g., Querol-Julián & Fortanet-Gómez, 2012; Rowley-Jolivet, 2015), and it is tempting to simply make a list of the "do's" and "don'ts" of how to present information (e.g., maintain eye contact with your audience, speak clearly, do not have too many slides, and do not move through the slides too quickly), bottom-up observations of students' practices when preparing and presenting may inform our pedagogy on making such oral presentations while using technology more effective.

As one part of an ongoing research project, this case study employs a mixed-method research design and refers to social semiotic analysis to explore what features students make use of when using PowerPoint as a technological tool during their technical presentations. The goals of this case study are: first, understand the features of students' PowerPoint slides in developing their professional presentations; second, based on findings from the students' experiences provide tutors and students with some principles of effective PowerPoint design for academic/professional oral presentations. The overarching question leading this case study is: *What aspects of PowerPoint do students use in their technical presentations?*

2 Case Study

2.1 Participants

Nine Hong Kong tertiary science students (21–23 years old) whose first language is Cantonese and one native-English speaking language tutor voluntarily participated in this research project. Due to space limitations, I report on only one of the student participants: Vin. This student attended a Chinese medium school and technical college before coming onto an engineering degree program at an English-medium university. Vin commented that he was not confident of his English language skills and the class tutor commented that Vin was an intermediate level proficiency student. Notwithstanding his lack of confidence in his language skills, Vin was a friendly

student and tried his best to use the communication skills he had and was a willing participant in the research project into oral presentations.

2.2   Project Description

The students were taking an undergraduate *English for Engineering* course. According to the course coordinator, this course tries to develop students' language proficiency which may be useful in their professional careers. That is, the course aims at developing students' critical thinking, and oral communicative and written skills necessary for effective academic and workplace communication as professional engineers. It provides students with ample opportunities to develop their professional identity through simulated real-life professional or academic scenarios (e.g., holding company meetings and writing a project design blueprint). The course did cover some aspects of good oral presentation skills (e.g., speak clearly, keep to the time allocation), though due to the heavy course content these were only briefly mentioned. In this course, the technical group presentation task accounts for twenty percent of students' final grade. Therefore, it is considered a high stakes task which can significantly affect the students' overall GPA score. Within the first two lessons, students are guided by the tutor to form project groups of four to five. After that, the tutor posts several technical topics (e.g., problems caused by landfills; the need for a new drone technology for surveillance purposes; the need to improve the design of mobile phones for elderly users) for each group to choose from for their project task and students decide their individual roles within the engineering project (i.e., leader, design engineer, sales engineer, technical engineer) based on their personal preferences and specialty. They then work together as a project team to investigate a scenario and prepare a technical presentation.

During the technical presentation, each student in the team has 10 min to present the part of the project for which he/she is responsible. The overall structure of the technical group seminar presentation follows IMRD (Introduction, Methodology, Result, Discussion), a classic research paradigm of STEM (Science, Technology, Engineering, and Mathematics), and students are expected to consider the following themes:

- *The real-life problem*: nature of the problem, people affected by the problem, what needs to be done to solve the problem, etc.;
- *The technology (solution to the problem)*: some basic conceptual or theoretical background of the technology, the hardware, software, or equipment needed to support the technology;
- *Limitations of the technology*: some major problems associated with the technology that may limit its use and how these problems may be overcome; and

- *Experience of the engineering firm* : e.g., types of solutions developed using the technology, projects completed, clients served, types of services provided (Student's Handbook of English for Engineering: 2018).

While this assigned presentation task does not directly instruct students to use PowerPoint, the students' other experiences of attending content lectures where the professor uses PowerPoint, and their previous use of PowerPoint in other presentations lead students to rely on this technological tool during their oral presentation in this course.

2.3   Data Collection and Analysis

A mixed-method approach was employed with this case study. Questionnaires and surveys that ask students' learning history and language proficiency were collected and semi-structured group interviews of students' perceptions on oral academic and technical presentations were conducted. The students' presentations were video recorded and analyzed by the researcher for features of a good or weak presentation. Then, the processes students engaged with while editing their PowerPoint presentations were screen-recorded and used with a think-aloud protocol between student and researcher (a process where students orally report decisions they took during making their PowerPoint slides) to answer the researcher's questions. To further justify the researcher's and students' interpretations of their use of PowerPoint, students were asked, in follow-up individual interviews after their presentations, to examine and reflect on their use of PowerPoint during their actual performance.

A social semiotic analytical approach was adopted with the data collected. Such a framework enables us to explain correlations between meaning makers and the use of multimodal resources by taking into account the context/moment where the meaning-making process occurs (Morgan, 2006). To enhance the validity of the analysis, this study was triangulated by (1) interpreting students' own use and reflections of PowerPoint, (2) comments made during group and individual semi-structured interviews and (3) the researcher's analysis of videotapes of the presentation.

3   Results

In this section, I present some of the data collected from the focal participant, which he gave me permission to reproduce here, in order to present a view of the features he considered important when preparing his PowerPoint slides. As there is only one case study in this paper, some of the observations tend to be of a more speculative nature.

Before reporting the findings, it is important to point out three contextual factors of the presentation task. This is because the social semiotic approach on which

the analysis is based takes into account potential relations between the context and meaning-making decisions.

The first point is the nature of the course *English for Engineering*. Since this course focuses on language learning within an academic/professional context, it can stimulate students to focus more on their English language use and development. The nine focal students in the study also agreed with this point and commented that they were highly aware of the focus of the course and tried to be more careful of their language use throughout their presentation tasks than they would be in a disciplinary course.

The second point is the nature of the presentation. Since the presentations were grounded on a simulated professional scenario, students also needed to negotiate their student identity and virtual professional identity (e.g., team leader, technical engineer, or sales engineer). Consequentially, their understanding of their "professional" identity was also a factor they tried to take into consideration during their oral performance.

The third point was the background of the audience, as this can have an influence on a presenter's decision-making and how information is presented (Rowley-Jolivet, 2004). In the course, neither students nor the instructor was experts in the technical topics used for the projects, and particularly, the English language tutor was not from a science or engineering discipline. Therefore, this means that a balance between technical information and intelligibility features had to be taken into account for the success of the presentation.

Now we turn to the features from one student participant and examine how he prepared for his talk about drone technology and then how he reflected on his performance and his use of PowerPoint.

3.1 Pictures and Diagrams

Except for the introduction slide, the student's slides were composed of text plus images/photographs/videos/diagrams (see examples in Fig. 1). These modal sources were specifically used for illustrative purposes, typically when it comes to technical concepts.

Within Vin's second slide (Fig. 2) that introduces "client–server architecture," he presented information with a tree-like diagram. Within the diagram, several cartoon-like images of a laptop, a drone, and the cloud entitled Internet, correspondingly represent the server, the admin control panel, drones, Internet, and drones; arrows are used to show the correlation among these elements within the system. This complex interface of photographs, diagrams, and text needed a lot of attention from the audience while Vin explained the concepts.

Vin clearly tried to situate himself as a technical engineer who could explain slide 2 intelligibly. He sought to use the diagrams as supporting materials for his presentation through visualizing particular complex technical concepts into corresponding images. This corroborates with the claim that different types of mode
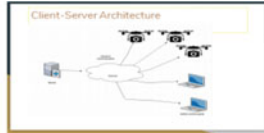
Slide 1 **Slide 2** **Slide 3**

Slide 4 **Slide 5** **Slide 6**

Slide 7 **Slide8** **Slide 9**

Slide 10 **Slide 11**

Fig. 1 Vin's (10-min presentation) PowerPoint slides

Fig. 2 Vin's 2nd slide
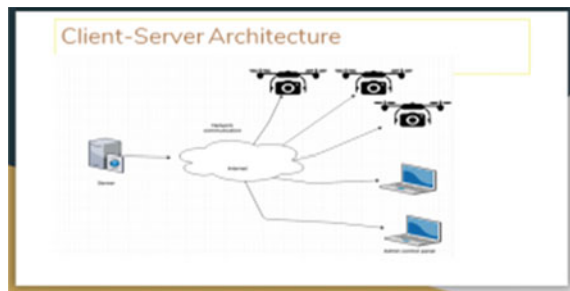
(written language and images) serve different purposes: written language is responsible for linear and sequential relationships (i.e., illustrates an event logically from beginning to end) while images/diagrams help with understanding ideas visually (Hafner, 2014).

In contrast to Vin's multimodal approach in most of his slides, we can also observe how the overuse of visuals can lead to problems. For instance, in Vin's slide 11 there

was little textual information and he relied on five pictures here. During this part of the presentation Vin commented that:

> *First, I think if I put a lot of text on it, it will be very difficult to understand, so I just find some picture of the… how the computer detect your movement…I found that it will analyze through the skeleton…so the computer can analyze your movement accurately, so I add the picture here so people will know what I mean… . (Vin: individual interview)*

However, according to the videotape of Vin's presentation, when Vin made reference to this slide he did not direct the audience's attention to any of the pictures. Instead, he talked off-script and the pictures served simply as visuals. This may be due to the fact that Vin was not reading from a script and he missed out on reporting some of the points that he had prepared earlier.

While Huckin and Olsen (1983) believe that more visuals on the slide equal to a more interpersonal presentation, we may notice that only using images and graphs can be unproductive, particularly when the students try to discuss technical and complex concepts. When a student is not an expert in the area of presentation a more controlled and balanced use of multimedia sources, texts, and bullet points may be needed.

3.2 Use of Bullet Points

Very often, bullet points are used to bring up and elaborate key aspects within students' slides. The use of bullet points was a feature of Vin's presentation slides. However, the overall language structure and register of his bullet points lacked consistency and accuracy. In a post-presentation interview with the class instructor, he mentioned that in Vin's presentation there was sometimes a lack of coherence between the texts and points on the slides. For instance, some bullet points were complete sentences and so the audience received a clear idea about the information presented, this, though, was followed by bullet points of short phrases or only one word, and the audience had to guess the intended meaning (as indicated in post presentation interviews with the audience). These unsystematic bullet points also involved eye-catching errors: no punctuation, and gross grammatical errors. For example, among the five bullet points within Vin's 6th slide (Fig. 3), three short sentences, one verb-noun phrase, and one complete sentence were used; and there were no punctuations for either short or complete sentences. Short phrases like "using the admin control panel," and a discourse marker "just" may be appropriate when speaking but not when presented as a written text. Such inconsistency of his PowerPoints is interesting considering that he spent approximately 4 h preparing his slides. This probably means that the student used most of his time thinking about the content of this slide, and not so much on how the information could be presented clearly.

With respect to such varied linguistic structures of those bullet points, Vin commented that he tried to simplify them by drawing on his limited linguistic resources and tried to keep things simple. In contrast to this comment, Vin also

Fig. 3 Vin's 6th slide
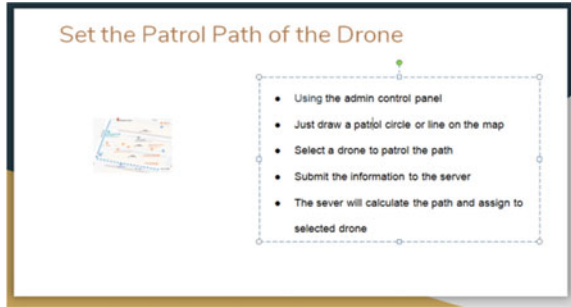
said that he simply copied texts from the script he had prepared for his presentation, without noticing any inconsistency, or errors, in the bullet point design. This direct copying and pasting can result in a mixture of written and spoken registers across the slides. While some may argue that a presentation is mainly a spoken event, the language on a slide is written form and has to, in many aspects, conform to the conventions of writing. This point was not appreciated by many of the students in this study most of whom seemed to be unaware of how to maintain consistency of their written language register and language accuracy on their PowerPoint (teacher observation).

3.3   Pictures and Texts

Generally, we find that effective usage of visuals in science presentations follows specific systems: we expect to first see familiar and known substances (either written or pictorial) on the left side and then the right side of unknown or specific particulars (Rowley-Jolivet, 2002). Across the 26 slides made by the nine students, texts and images were interchangeably positioned for either general or specific representation of ideas.

Although previously we have pointed out the potential negative effect of having a slide only filled with pictures as Vin proceeded onto his 11th slide (which led him to forget some important information), Vin did take into account his audience and creatively adopted the general-specific rule within the design of his 11th slide. The 11th slide (Fig. 4) reflects how he managed to use pictures of the human skeleton to logically talk about how technology can be applied to identify violent actions. On the left side is one amplified image in which a male is tagged with several red lines based on the human's skeletal structures; the word "skeleton" in red is placed at the top of the picture. Within the four small pictures on the right, several males are tagged with red and green lines under skeletal structures, performing different fighting actions (e.g., punching, kicking) against each other: the amplified picture on the left side provides a technical umbrella for the other four on the right side, then the right specifies how violent actions appear under the spectrum of Artificial

Fig. 4   Vin's 11th slide

Fig. 5   Vin's 5th slide

Intelligence (AI) technology. Vin mentioned that the reason why he chose images over texts in this slide is that pictures are easier to understand than texts and that the use of four different pictures helps specify examples of violent actions to the audience. From Vin's recall, we notice how he dealt with the 11th slide in his actual performance (i.e., presenting without referring to those pictures) needs improvement, and his awareness of the burden that written text may have on his presentation gave credibility to his use of pictures.

However, not all Vin's slides represented such mindfulness. In his 5th slide (Fig. 5) introducing how the client–server architecture appears and how it works, five bullet points, which were directly copied from Vin's written script, were presented on the left of the slide:

- *An Interface to access server function*
- *Control drone*
- *Set the patrol path of drone*
- *Montior drone*
- *Access by web browser*.

On the right side, there hung an animated image of a laptop attached to a short phrase Admin control panel. Below was a web browser image of the control panel. While Vin mentioned that these two pictures on the right side were used to decipher simple ideas in bullet points, they (i.e., cartoon-like laptop, browser of the control panel) would have been more appropriate to be on the left side since they are more familiar to the audience than written technical points.

From these examples, we notice that designing PowerPoint is a rather complicated process since it involves considerable decision-making and negotiation of professional/academic identity. We need to consider the potential audiences' background knowledge and try to achieve a selective summary. Effective use of visuals on the PowerPoint can significantly compensate for a speakers' weak oral skills when communicating their ideas (Rowley-Jolivet, 2002). In the case presented here, due to the student's immature understanding of the technical field, and how to use his academic/professional English language proficiency, he would have benefitted more if there had been a pedagogical focus on how to make use of PowerPoints in a professional context, and their complementary nature to spoken texts, in the course.

4 Pedagogical Principles

While pedagogical focus significantly varies from English for Specific Purposes (ESP) courses to disciplinary courses, the pedagogical principles of how to use PowerPoint when making a presentation can share some common ground. Based on the single case study above, and observations by the teacher and researcher, five pedagogical principles are presented:

(a) *Disciplinary practice and PowerPoint design*: more detailed guidelines should be given to students on how to present like a professional in a discipline. More active communication between English language teachers and disciplinary teachers is recommended in order to establish disciplinary patterns of how such information is usually presented via PowerPoint.

(b) *Summary skills*: posting heavy texts and long sentences on PowerPoint can be confusing for the audience. Therefore, it is important that students learn how to summarize their information so that it is focused and relevant to their talk. One suggestion may be to identify 3 or 4 key aspects for each slide, and then present them as short phrases or sentences. This would help students make decisions about what is and what is not important in their presentation.

(c) *Use of texts*: students need to be aware of logical reading habits in English: from left to right, from general to particular, from familiar to unfamiliar. Tutors of ESP courses can bring these reading strategies to the students' attention and make them aware that they need to follow established reading conventions with their PowerPoint slides.

(d) *Use of visuals*: it needs to be clear to the audience why the presenter is using visuals in the PowerPoint slides. The speaker has to decide if he is going to

make direct reference to the visuals, or if they only serve to illustrate a point made being made orally. Alternatively, a visual may simply be to maintain the interest of the audience and have no direct meaning to the information presented.

(e) *Language accuracy and PowerPoint*: inaccurate language use and inconsistent language register on PowerPoint can be problematic for the audience and shift the focus of the presentation away from the content. Criteria related to language use and register should be more clearly stated in assessment and used to raise learners' awareness of: consistency of the way information is presented (sentences vs phrases vs words), typos, use of punctuations, grammar, and proper use of technical terms.

Tutors often spend considerable time teaching the format of good writing skills in an ESP course, for example, how to write a good lab report, but little or no time is given to how to organize information on PowerPoint. As the importance of oral academic and professional presentations is increasingly valued worldwide, and PowerPoint is the most used technological tool during students' presentations, it is perhaps time that we reevaluate how we prepare students to make use of technology for this important performance skill for the success of their academic learning and future professional career.

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Chapter 8
Case Study 3, Singapore: "To Blend or Not to Blend—That Is Not the Question"—Blended Delivery to ASEAN Teachers of English

Marie Yeo

1 Background

The move from face-to-face to blended delivery of courses is one of the most significant changes in teacher professional development that has occurred in the past two decades (Curtis, 2017). The question for many institutions now is no longer *whether* but *how* to deliver blended courses. Essentially, a "blended" course is one that integrates face-to-face classroom teaching with an online component (Bowyer & Chambers, 2017; Curtis, 2017). The online component typically involves asynchronous learning through recorded presentations, videos and podcasts, course readings, and forum interactions complemented by group or individual emails, text messaging, and online chats. It may also include synchronous online interactions, for example, virtual classrooms.

There are many reasons for the rise in the popularity of blended courses in higher education, particularly in professional development (PD). Combining such benefits as flexibility, unrestricted access, ease of submission, removal of geographical barriers, affordances of multimedia, and lower cost, blended learning has been found to offer the best results compared to fully online or fully face-to-face delivery (Hockly & Clandfield, 2010). Recently studies have shown improved learning outcomes, increased pass rates, and better retention rates especially for students from non-traditional backgrounds (Bowyer & Chambers, 2017) as further benefits of blended learning. In their meta-analysis of the literature on the effectiveness of online and blended learning, Means et al. (2013) found that "purely online learning has been equivalent to face-to-face instruction in effectiveness, and blended approaches have been more effective than instruction offered entirely in face-to-face mode" (p. 53). Simply put, blended learning is more effective than either face-to-face or online

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instruction alone. This raises questions about how the effectiveness of blended learning can be evaluated.

While evaluations and questionnaires are commonly used in many educational contexts to check the effectiveness of a course, Bowyer and Chambers (2017) note that "there is no one particular instrument that is seen to be the most effective for evaluating blended learning" (p. 20) because of a "diversity of reasons" (p. 22). Borg's (2018) list of reasons for evaluating professional development initiatives (of which blended teacher education courses are considered) include accountability, e.g., to identify and measure the impact, achievement of targets, utilization of resources, and effectiveness of learning and improvement so as to inform the design, delivery, and resourcing of future courses.

Though not specifically designed for blended learning, Guskey's 5-level framework for evaluating professional learning (Guskey, 2016) has been used for evaluating professional development initiatives (PDIs) in English language teaching (ELT) and English language teacher education (Borg, 2018). Level 1 evaluates participants' reactions to the course, usually through end-of-course evaluations which include a rating scale and open-ended questions inviting further comments. Level 2 evaluates participants' learning in terms of knowledge, skills, and attitudes, often through formative and summative assessment activities such as written assessments and reflections. Level 3 looks at the participant's organization, particularly whether it has the characteristics and attributes to support the participant in implementing changes. Level 4 measures the impact of learning, that is, whether the course has brought about a change in professional practice. Finally, at Level 5, the evaluation looks at how effectively the learning from the course trickles down to the students of the participants who attended the course.

To sum up, although there are no prescriptions for evaluating the effectiveness and impact of blended learning, it is an area that requires some attention. Borg (2018) reiterates that "questions about whether a professional development initiative actually makes a difference are eminently justified" and evaluation should not be "an administrative formality or superficial afterthought" (p. 197). This evaluation answers the call for evaluation that is deliberate and purposeful and which seeks to provide accountability and identify areas for improvement.

2 Case Study

2.1 Participants

The study involved five cohorts, totaling 65 teachers of English from the 11 countries that form the Southeast Asian Ministers of Education Organization (SEAMEO) (see Table 1).

The minimum course entry requirement was at least two years of full-time English teaching experience and a first degree in English, teaching, or language education

Table 1 Course participants (5 year-cohort)

Country	Number of participants
Brunei Darussalam	1
Cambodia	5
Indonesia	7
Lao PDR	2
Malaysia	6
Myanmar	12
Philippines	5
Singapore*	14
Thailand	4
Timor Leste	1
Vietnam	8
Total	65

*Including foreigners living in Singapore

(or the equivalent). Participants also had to meet a language proficiency requirement (equivalent to an IELTS band score of 6.5 overall) or pass the institution's English language selection test.

The lecturers involved in the project all held doctoral degrees in Applied Linguistics, TESOL, or Education. Each lecturer had substantial teaching experience of at least 25 years. However, at the start of the project, none had experience of online teaching, and only one had any experience of online learning as a participant. The lecturers were given training by the vendor who supplied the Learning Management System (LMS), but such training focused on the technical affordances of the system rather than pedagogical principles of course design and delivery.

2.2   Project Description

Lincoln and Guba (1986) note that in order to provide transferability, a quality of trustworthiness in qualitative research, thick descriptions of the research site are needed so readers can judge the transferability of the findings. Hence, the project is described in considerable detail below. This case study looks at a Postgraduate Diploma in Applied Linguistics (PGDAL) course delivered by SEAMEO's Regional Language Centre (RELC) in Singapore. RELC began operating in 1968 with its specific mission to develop language teacher education in the region and promote international cooperation among language professionals, mainly through the provision of scholarships to teachers to attend courses such as the PGDAL. This background information about RELC's mission is significant because of its impact on course design and evaluation.

Before the inception of the blended course, the PGDAL was offered as a 22-week residential course in Singapore. However, the requirement for scholars to be away

from work and family for 22 weeks appeared to be a barrier especially for female applicants, who are generally expected to manage family responsibilities, and applicants from less-developed economies, who would have to forego the income from their second jobs for the duration of the residential phase. Such drivers influenced the decision to redesign the course and deliver it in a blended mode. Other reasons were to give participants an opportunity to develop important twenty-first-century learning skills such as digital literacy and collaboration. From an institutional perspective, the blended mode was more cost-effective. Most important was the desire to leverage the affordances of technology and join the worldwide move toward e-learning.

A question that may be asked is why the institution decided to move to blended rather than fully online delivery. Three reasons contributed to this decision: Firstly, as the institution's mission is to promote international cooperation among language professionals, a residential component allows participants to meet their lecturers and classmates face-to-face and to develop relationships. Secondly, as the mission extends to all SEAMEO countries, it was necessary to ensure that learners from different countries, backgrounds, and resource levels would have equal opportunities to succeed. Purely online delivery would disadvantage participants from low-resource countries who may be less familiar with online learning and have limited access to online resources. Thirdly, as the PGDAL is recognized by renowned international institutions such as the Nanyang Technological University (NTU) in Singapore and the Victoria University of Wellington (VUW) in New Zealand, with graduates eligible for credit transfer toward a Master's courses, to maintain this recognition, it was necessary to ensure academic integrity of assessment, so examinations had to be administered on-site.

Pedagogically, the blended nature of the course allowed for technology to complement rather than replace face-to-face classroom teaching, discussion, and individual consultations, allowing students to experience "the best of both worlds."

The main technology tools used were a Learning Management System (LMS), presentation slides with audio and visual recordings and links to videos from public domain sources such as YouTube and TedTalks. As shown in Fig. 1, within the LMS were a range of tools, allowing teachers to create, store, and curate such resources
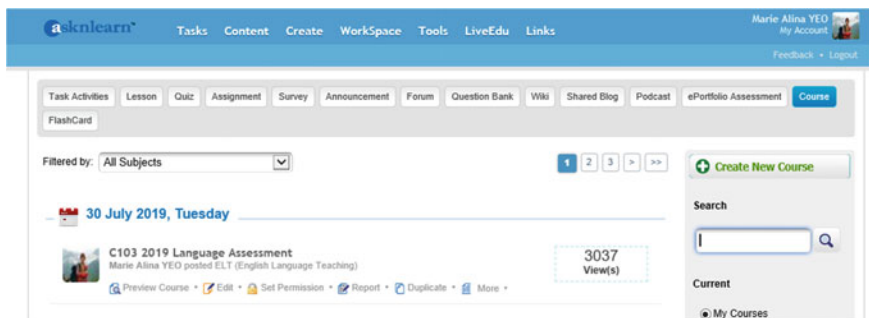
Fig. 1 Screenshot of LMS

Fig. 2 The "sandwich" model
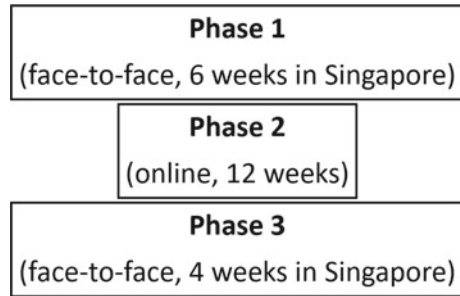
as lessons, quizzes, assignments, forums, shared blogs, and e-Portfolios and deliver them on a single site.

The configuration of the course was guided by the priorities and requirements described earlier. As well, principles of situated learning (Lave & Wenger, 1991) within "communities of practice" (Wenger, 2010) influenced the "sandwich" model of the course, which consisted of two residential phases with an online phase "sandwiched" in between (see Fig. 2). The initial residential phase aimed to promote the establishment of a community of practice, in this case, a group of teachers with a shared aim (to complete the course) and who could provide mutual support in the learning process especially during the online phase. The online phase allowed the learning to be situated within the learner's workplaces; as part of their course assessment, participants were required to put into practice ideas from their online lessons within authentic situations and contexts and then to evaluate the effectiveness of these approaches. Had the course been fully residential, there would not have been such potential for situated learning.

In specific terms, as shown in Fig. 3, in Phase 1, participants spent six weeks in Singapore, during which they received learner training for e-learning, completed two face-to-face modules, and took the respective examinations for these modules. They also attended three introductory lessons for each online course. The objectives of this phase were to ensure that learners could use the system competently and confidently, were clear about the requirements of the online courses and, perhaps most importantly, established relationships with their lecturers and co-learners. During Phase 2, participants returned to their home countries and completed three modules, each lasting one month. Each module consisted of eight lessons with recorded presentations, readings, eight compulsory forum postings, and two assignments. Finally, in Phase 3, participants returned to Singapore for four weeks for their final face-to-face module and revision sessions for their online modules prior to taking four examinations (see Fig. 3).

At the end of the first five years of delivery, an evaluation was undertaken to determine the effectiveness and impact of the blended delivery of the course. Specifically, the evaluation sought to determine if the PGDAL had successfully met the missional and education goals of the institution and to identify areas for improvement.
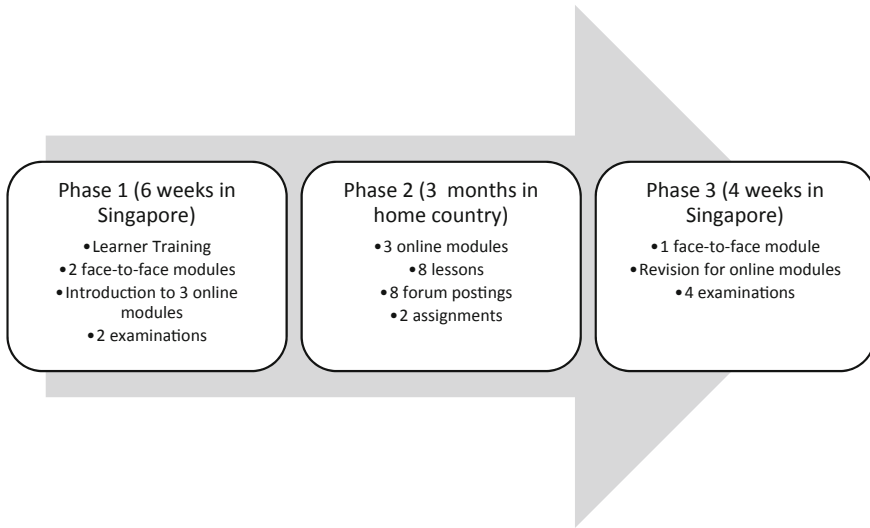
Fig. 3 Structure of blended PGDAL

2.3 Data Collection and Analysis

2.3.1 Data Collection

The evaluation employed a mixed methods approach. Quantitative and qualitative data from end-of-course evaluations were analyzed. On a 4-point Likert scale, participants rated their satisfaction with the course and lecturer. In addition, 29 out of 45 participants responded to an email questionnaire and 13 out of 14 took part in a face-to-face focus group discussion, representing a 71% response rate for both data collection methods. The email questionnaire and focus group discussions asked about respondents' experience of the course, how the institution could have better supported them, and about the impact of the course on participants' professional practice.

It should be mentioned that six participants were excluded from the study: one had moved overseas with no forwarding contact and five had dropped out of the course. It was felt that inviting these five to recall their experience of failure may cause emotional distress, hence they were not sent the email questionnaire.

As for the lecturers, three out of four who had taught the blended course (excluding the researcher) responded to an open-ended email questionnaire. The questionnaire asked lecturers about their prior experiences of online learning and teaching, the benefits of teaching the PGDAL online, obstacles they faced, how they overcame the obstacles and what the institution could have done to better support them in the transition from face-to-face to blended delivery.

2.3.2 Data Analysis

Quantitative data from the end-of-course evaluations were calculated by averaging the scores given on the Likert scale. The qualitative data from the email responses and verbatim transcripts of the focus group discussions were analyzed. Thematic analysis was employed, following the "step-by-step approach for conducting a trustworthy thematic analysis" (see Nowell et al., 2017).

3 Results

The results reported here were derived from the comments in the end-of-course evaluations, the email questionnaires, and transcripts of the focus group discussions. They pertain to the effectiveness of the "sandwich" model and the implementation of the blended course. Evaluation scores are not reported because of confidentiality policies.

The main themes that emerged during the coding were benefits and impact, obstacles and coping strategies, and recommendations. As this study seeks to provide insights for learners, teachers, and administrators, the findings are presented in the following categories: benefits, obstacles, and recommendations from various stakeholder perspectives.

3.1 Benefits

Of the many benefits identified were some common to online and blended courses in general, such as those mentioned earlier. However, the "sandwich" model shown in Fig. 2 amplified three specific benefits: the formation of strong Communities of Practices (CoPs); the opportunity for situated learning; and the transferability and recognition of the course. Firstly, participants were able to form effective CoPs. Arnold et al. (2007) cited in Hubbard (2008) claimed the presence of virtual CoPs in teacher education on the basis of "high amounts of mutual awareness and group cohesion [indicating] that students did try to connect with and support each other" (p. 184). As the comments below show, these characteristics were present among learners in the course:

> What helped me get back into the flow of learning were my course mates who dropped me a line of support/reminder/motivation whenever I disappeared online. They really helped a lot. (ELT Trainer, Philippines)

Secondly, the course afforded opportunities for situated learning, or "learning that takes place in contexts close to those in which they will be used … providing links to the classroom setting" (Hubbard, 2008, p. 183). As one participant stated, because he and his course mates were "immersed in their actual teaching environment" (ELT

Trainer, Philippines), he could integrate learning from the course in his teaching. The "sandwich model" with the online phase between two residential phases afforded opportunities for situated learning in the way that a fully face-to-face course could not have.

The third and, possibly, most important advantage of the "sandwich" model was the recognition and transferability it provided. DeFleur and Adams (2004) and Adams and DeFleur (2005) found that degrees earned through online or blended learning were not as well recognized as those earned in face-to-face setups, with admissions officers and employers favoring traditional delivery. Because academic integrity could be assured through face-to-face assessments, such as microteaching and proctored examinations during the final residential phase, institutions were willing to recognize and award advanced standing to graduates of this course. One participant was "able to take up and eventually finish my Master of Arts in Applied Linguistics from the National Institute of Education … I was given 4 courses as exemptions" (Private English Teacher, Singapore). Another added "two of my courses have been credited to the M.A. Program at the University of Santo Tomas" (High school teacher, Philippines).

The "sandwich" model also allowed the institution to provide training in how to learn online, ensuring that all learners were familiar with the LMS and able to use the main assessment tools. Furthermore, during Phase 1, participants could access soft copies of resources, and this was especially helpful to those from countries with poor internet connections. Third, face-to-face interaction enabled lecturers to identify learners' individual needs and preferences instead of teaching "faceless students," as happens in many fully online courses.

In sum, the model of blending described in this case study amplified benefits in terms of building communities of practice, providing opportunities for situated learning, assuring academic integrity, and levelling access to resources.

3.2 Obstacles

Many of the problems identified by the respondents were general to online courses, such as having to balance study with family and work. However, the ones discussed below are specific to the "sandwich" model, course design, lecturer practices, and the LMS that was used.

As explained above, during the first six-week residential component, participants had to complete two face-to-face modules, take the respective examinations and attend introductory lessons for three online modules. This was found to be too demanding and confusing as there were times when participants were attending lessons for five different modules in the same week because of timetabling constraints.

During the online phase, participants were required to complete eight graded forums and two assignments within a one-month duration for each online course. While the rationale of requiring two compulsory forum postings a week along with

comments to their classmates' postings was to ensure sustained learner engagement, there were many complaints that the workload was too onerous, especially for those who had to return to work during the online phase.

There were also concerns about the assessment. Comments such as these show that some were unhappy with the assessment and feedback practices used in the blended course:

> *The way forums were assessed was too lenient … everyone who wrote something … got 10 marks. The most hardworking participants who actively took part and gave several facts and comments were given the same score as those who wrote "so-called" comments.*   (University lecturer, Myanmar)

> *…we needed to … wait … for our classmates and lecturers to reply. As such, even if we were enthusiastic … the fire would sizzle when we did not have immediate responses.*   (English teacher, Singapore)

Obstacles were also faced by the lecturers who taught the blended course. One complained about the inadequacy of the LMS. As this lecturer held a doctorate in Education Technology and had extensive experience in teaching online, he was frustrated by the inadequacies of the LMS. Conversely, two lecturers admitted that as they had no previous experience of teaching or even learning online, it was challenging to convert their courses, utilize the LMS and manage their online teaching.

In summary, while the concerns of the learners were about the course, mainly the intensity, workload, and assessment practices, which were a result of this model of blending, the lecturers' concerns were more general and pertained to the comparative inadequacies of the system and their lack of training and preparation to teach online.

3.3   Recommendations

Participants' and lecturers' responses to the questions of how they coped with their problems and what the institution could have done to support them more effectively yielded several recommendations.

Reflecting on their experience led several respondents to offer words of advice to current and future students. Firstly, learners need to self-regulate their learning and set their own goals. A Thai primary school teacher reported that she had felt pressurized to write longer forum postings because her friends had done so, even though it was not required. However, she realized that this was her own problem and concluded "you must understand your own goals." Secondly, learners should exercise agency and take responsibility for directing their learning experiences. A Singaporean teacher who felt that the forum discussions were not meaningful enough decided to do the following:

> *I tried to argue from a contrary point of view to elicit more responses from my classmates …while getting them to be more critical and forthcoming in their responses to my views … I tried to get involved in various discussion threads … so as to excite my classmates with new ideas/perspectives.* (Private English teacher, Singapore)

The participants also made recommendations to their lecturers. In relation to the forum postings, they wanted clear guidelines on the expected length and format. One of the most frequent requests was for teachers to give prompt, direct, and discerning feedback.

> *We want honest response, responses that are head on … did I get the answer right or was it too far, what are the additional input that you could give for me to supplement my understanding.*
> (English teacher, Philippines)

Finally, the participants had many suggestions for the institution about making expectations clear, improving the course structure and timetable, and providing technical support during the online phase.

The recommendations made by the lecturers were for better and ongoing training in how to use the technology and to design online learning. Suggestions were also made for the provision of an instructional designer to design the online course and for more training in using the LMS.

Notwithstanding the above obstacles, the first five years of the PGDAL was successful in meeting the goals of the organization, especially in achieving the mission of developing language teacher education and promoting international cooperation among teachers in the ASEAN region. As this was the first time the institution was delivering any courses in a blended mode, it was fully expected that there would be areas that needed to be improved. In fact, the decision to carry out an in-depth evaluation of the first five years of the course was motivated by the desire to learn from mistakes and improve the effectiveness of the blended course.

4   Pedagogical Principles

The results of the evaluation confirm the value of the "sandwich" model. However, comments from course participants highlighted the need for more pedagogically sound timetabling and more effective assessment practices. Some specific changes made as a result of the evaluation were that modules were scheduled in blocks during the first residential phase, reading time was allocated several afternoons a week and a study period was scheduled before the final examinations. Changes were also made to the assessment by reducing the number of graded forums from eight to four and reminding lecturers to provide specific and direct feedback promptly.

In general, the evaluation data provide some insights for learners, lecturers, and administrators involved in blended learning:

(a)   *Insights for learners*: for learners to maximize learning, engagement, and resilience, the idea of "Own Time, Own Target" is helpful as it a reminder that learners should set their own goals and not worry about competing with other learners because they are in different situations. While some were working full-time during the online phase, others worked part-time or not at all. Not only should they set their own targets, but participants should also exercise

agency in how they achieve their targets by directing learning experiences to achieve better learning outcomes.

(b) *Insights for lecturers*: a key insight for lecturers can be encapsulated in "Learning by Doing." Before teaching online, lecturers themselves should experience online learning from the perspective of a participant, as this will give them a better understanding of the obstacles faced by participants and help them to design the course more effectively. The effectiveness of such a practice was borne out in research by Hafner and Young (2007), in which teachers first participated in an online course before becoming tutors in one.

(c) *Insights for administrators*: administrators and institutions might heed the call to "Start well." Beginning with a residential phase or at least a synchronous online lesson would allow participants to form Communities of Practice, the importance of which cannot be over-emphasized in reducing dropout and increasing successful completion in blended learning. As one participant quoted: *we were actively encouraging each other, let's finish as a group …so those who were not able to catch up, we tried to help them* (ELT Trainer, Philippines).

In conclusion, the question for many institutions involved in teacher education is no longer *whether* to offer blended courses but *how* to deliver blended learning effectively. One model of blended delivery, the "sandwich" model, which was described in this case study, has been found to offer considerable benefits to learners, lecturers, and educational institutions.

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Chapter 9
Case Study 4, Japan: Incorporating Virtual Exchange into the English Communication Classroom

Eric Hagley

1 Background

University students worldwide now generally require an understanding of not only English, but also how it is used in the globalized society in which they live and work. No longer can English classes be "just English." In modern ESL and EFL classrooms, language teachers need to be able to develop their students' intercultural understanding along with their communication and other transversal skills. Japan's Ministry of Education, Culture, Sports, Science, and Technology (MEXT) aims "to foster human resources who can positively meet the challenges and succeed in the global field, as the basis for improving Japan's global competitiveness and enhancing the ties between nations" as outlined in The Project for Promotion of Global Human Resource Development (MEXT, 2012). Language education throughout Japan has started to embrace the "establishment of programs focusing on understanding of multiple and different cultures" (MEXT, 2010). However, in regional Japan, actually meeting such goals is difficult as there are almost no opportunities for students to physically meet and interact with foreigners or use a foreign language in everyday activities. This was until Virtual Exchange (VE) methods of teaching started.

The position paper on Virtual Exchange created by the INTENT project group (2014) states that "VE are technology-enabled, sustained, people to people education programs. These entail the engagement of groups of students in online intercultural exchange, interaction and collaboration with peers from partner classes in geographically distant locations, under the guidance of educators and/or expert facilitators" (INTENT, 2014). The benefits of VE have been outlined in Lewis and O'Dowd (2016), such as improvements in language ability, development of intercultural understanding, and improved communication ability, though in the same volume, a number of pitfalls are also detailed. These include organizational issues, problems

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with students not engaging deeply in intercultural exchange and situations where an "illusion of commonality" (Ware & Kramsch, 2005, cited in Lewis & O'Dowd, 2016, p. 277) develops. If the pitfalls can be overcome, the benefits are many. VE helps teachers meet the lofty goals outlined above by MEXT. It gives them the ultimate tool to ensure their students are able to fully participate in a global community and use the language they are studying to be active therein, in addition to improving their intercultural understanding.

The students in this case study are studying to become engineers in several different fields at a regional university in northern Japan where, as outlined above, there are few opportunities to use English in an international setting. To ensure they have such opportunities VE was introduced to the English communication classes that are taught by the author. Lee and Song (2019) note that VE seems to have comparable value to study abroad to ensure development of intercultural understanding. Improvements in pragmatic competence is another of the many positive outcomes of VE (Lewis & O'Dowd, 2016). It is therefore easy to understand why VE would be incorporated into such classes.

Implementing VE, however, can be a daunting prospect for many teachers. This case study outlines a method of incorporating VE into one English communication course in Japan, but could be used as a basis for other countries too. It will illustrate how teachers can easily ensure their students gain benefits therein while also offering a method of integrating it into the syllabus. The research question for this case study is: *How do students who have participated in virtual exchanges react to this mode of learning?*

2 Case Study

2.1 Participants

This case study looks at students who participated in the English communication classes from the past five years, both first and second semesters, at the university in northern Japan. Most of the students starting the course had limited English proficiency in the CEFR A2 to B2 range, and low motivation to learn English. They had all done the mandatory six years of English that is standard in Japanese junior and senior high schools. The English communication class is a compulsory component of their engineering degree and is considered a "small-class" course though there are never less than 20 students in a class and sometimes the class size has been as high as 30. The focus of the class was to improve the students' communicative ability in addition to broadening their understanding of other cultures.

2.2   Project Description

The English communication course is 15 weeks in length. The university's curriculum policy notes that English communication ability, in particular oral communication, needs to be developed and this course is one of the main means of doing that. To ensure that students have to use the English they are learning in class, they participated in the International Virtual Exchange Project (IVEProject—iveproject.org) as part of the course: each class was partnered with another class in at least one other country. All classes were partnered with classes from Colombia and some of them also included classes from one or two other countries. Students then used the English they were studying in class on Moodle forums to exchange information in text, audio, and/or video formats on very simple topics that are related to their own culture. More recent iterations of the IVEProject have developed and the method they are carried out is different but for this research, the method outlined above was used.

To give the students the necessary scaffolding required to participate in the exchange, students had access to the course page provided by the author. This was also created using Moodle. It was used in place of a textbook with all materials in the course created by the author and included creative-commons licensed materials. Students were able to access these materials in class via computers, as the classes were carried out in computer labs, or out of class from any internet-enabled device. Materials included listening, reading, writing, speaking, and intercultural understanding activities. Each activity was closely related in theme to those covered in the IVEProject. Lessons were based on Crabbe's (2003) course design which notes language teaching should involve extensive input, opportunities for output, and negotiation of meaning which should also include opportunities for students to rehearse language forms, specific skills, and communicative routines. Teachers also need to give appropriate feedback and offer ideas on language and how it is best learned. More information on the type of course design used in these classes is outlined in Pang (2018).

A typical class would begin with group work where students would review some of the common mistakes made in the previous week's IVEProject forum posts. After groups had finished their corrections, these would be shared with the other groups via a link on the Moodle course page to a Google Doc. In real time other groups and the teacher give feedback and the best "correction" adjudged. After this, the teacher introduced the topic-of-the-day via a role-play that encouraged students to use a particular language form. The form would then be explicitly introduced and students would work on fluency by practice using the form. Listening activities involving the form would then be carried out, with this class having elllo.org materials embedded in the Moodle course page. These involved student interactions, with students listening to different audio files and sharing ideas with their peers in order to rehearse using the forms. The teacher gave feedback and informed students they could use those forms in the IVEProject to interact with students in other countries.

Assessment of students' interactions in the IVEProject took a number of forms. Firstly, for each topic covered a rubric is used. The rubric gives specific goals for

students to achieve. Rubric criteria include the type of content created, the quality of that content, and whether the student used multimedia such as self-made recordings. Another aspect of assessment revolves around the final exam. This included a speaking part where students participate in a 10-minute role-play. On the day of the test, students are randomly assigned partners and one of two roles. One of the roles involves the student taking on the persona of the students they had been interacting within the IVEProject. Both roles are given to students at the beginning of the course so they know precisely what they have to do. These roles are practiced three times throughout the term. As partners and roles are randomly assigned on the day of the exam students cannot memorize their roles. The role-play is recorded and uploaded to the Moodle course where the teacher assesses it afterwards again using a rubric to assign a grade.

This course requires technology to be used. Obviously, the course itself and its contents are online so technology is required to access it. The IVEProject also requires students to use technology to interact with their partners abroad. The exam role-play recordings are made using Audacity and uploaded to the Moodle platform for assessment. It is therefore essential that students are given enough training to use the technology. In the situation described above, students are given time in class to practice using the various tools and the platform and online video tutorials are also made available to students. As students learn how to use these online tools, their transversal skills are also developed. Some may say this is too much for the students to do while practicing their language skills. However, the data below shows that this is not the case and that students appreciate the online technology and how it can be used for intercultural communications.

2.3   Data Collection

Over the past five years, and using the Moodle questionnaire module, students were asked their views of the course materials and the VE they had participated in. A 4-point Likert scale was used, with "1" being "strongly agree" and "4" being "strongly disagree." The data presented here include the northern hemisphere spring and fall classes' data. It covers students' views of their participation in the VE, the use of only online materials as opposed to a textbook and their views of the speaking exam. A total of 519 students gave valid responses to the survey. These are outlined in Table 1.

Table 1 Students' opinions of an online course ("S" is spring, "F" is fall)

		14S	14F	15S	15F	16S	16F	17S	17F	18S	18F	Av
(N = Student number)		24	26	48	42	65	40	125	40	43	66	51.9
Interacting online with students in other countries has value	%	92	96	84	83	89	86	83	91	86	93	88.3
	M	1.6	1.4	1.8	1.7	1.7	1.8	1.7	1.5	1.8	1.5	
	SD	.65	.58	.87	.87	.74	.70	.85	.68	.74	.75	
Through the online interaction, I believe my English has improved	%	79	74	54	64	73	66	59	60	58	65	65.2
	M	2.1	2.2	2.4	2.2	2.1	2.3	2.4	2.3	2.4	2.2	
	SD	.58	.69	.70	.85	.70	.60	.74	.69	.73	.84	
Using online materials is better than using a textbook	%	88	77	77	89	75	81	78	78	68	71	78.2
	M	1.7	2.0	2.0	1.9	2.0	2.0	2.0	1.9	2.2	2	
	SD	.69	.91	.82	.89	.83	.80	.80	.88	.81	.91	
Overall, the online learning system used was good	%	92	77	71	71	76	71	69	82	59	73	74.1
	M	1.8	2.3	2.2	2.2	2.1	2.1	2.2	1.9	2.3	2.1	
	SD	.56	.73	.71	.88	.78	.86	.76	.67	.75	.83	
If there is a speaking exam I feel I need to speak more in the class	%	92	92	77	76	84	75	78	70	73	71	78.8
	M	1.7	1.8	2.0	2.1	1.9	2.0	2.1	2	2.1	2.0	
	SD	.62	.69	.77	.86	.73	.80	.78	.78	.87	.97	
The speaking role-play exam is easier than a paper-based exam	%	10	20	17	10	12	30	26	28	19	26	19.8
	M	3.3	3.1	3.3	3.4	3.2	2.9	3.1	2.9	3.2	3.0	
	SD	.82	.91	.84	.83	.78	.86	.88	.89	.91	.90	

3   Results

Over a five-year period, the results outlined in Table 1 suggest that students appreciate the value of VE but understand that it is not the only thing required to attain language proficiency. An exceptionally high average of 88.3% of students believed that their participation in the IVEProject was of value. For VE in general, Godwin-Jones (2019, p. 10) notes "the fact that students in (VE) are engaged in meaningful communication with their partners inevitably draws them into the need to go beyond vocabulary knowledge and grammatical accuracy to contextually appropriate language." This is the case for students participating in the IVEProject.

Though positive, with an average of more than 65% believing the IVEProject helped them improve their language competence, students were not as enthusiastic regarding its influence on their language improvement. The average total of 65.2% suggests they understood that participation alone will not lead to better English language ability. Obviously, students need to participate more to improve and these students understand the importance of doing so. This is one reason why participation in the IVEProject is contingent on students being a part of a class with a teacher involved. Teachers are essential to ensuring the success of the exchange and also to developing students' linguistic ability. How teachers do so varies greatly but the figures above suggest that students believe the use of technology in that learning process is beneficial. Over 300 teachers have participated in the IVEProject to date and most continue to use it suggesting they also agree.

An average of 78.2% of students believe the use of technology is better than the use of a textbook alone. The reasons for this perception are many and include the fact that online resources can incorporate easy-to-access multimedia and listening materials, with international communicative tasks also being quick and easy to participate in. Students use textbooks in all their other English classes so understand the difference. It is important to note that this is not a comparison between traditional textbooks and e-books. The platform used was Moodle, the most-used Learning Management System (LMS) in the world. It is not an e-book. Moodle offers much more than e-books do, with students being able to interact with each other, the teacher, quizzes, listening activities, and, via the IVEProject, students in other countries. Thus, all major language skills can be incorporated within Moodle and can be both practiced and assessed therein.

It is important that all the different aspects of an online course come together. It would seem that this particular course's different components did this quite well with an average over five years of 74.1% of students believing that the overall online learning system was good. Students need to be able to access the materials easily from multiple devices—in class computers, smartphones, and their home computers. If the course page looks different on any one of the devices or different browsers, confusion can occur. Throughout the five years a link to the IVEProject was placed on the course page and students could easily access it from there. On only one occasion, an LTI object was placed in the course instead of a link. More research needs to be done on which method was more seamless, but initial student feedback to the

teacher suggested that the simple link was preferred as students wanted to access the IVEProject directly. The comparatively low 59% given to the overall learning system in the spring of 2018 when the LTI was used gives credence to this.

As oral communication is of particular importance in this class it was crucial to include activities where oral communication occurred and include feedback to students. As outlined above, in this course students had many opportunities to speak during the class. A common comment in the comments section of the questionnaires was "*compared to other English classes, I was able to speak a lot in this class*" and "*I enjoyed being able to speak in English.*" However, without the extrinsic motivation of assessment, students often will not participate as fully as they should. The author therefore thought it was important to include assessment of the students' oral production and connect it to their participation in the IVEProject. The results here suggest students saw the benefits of that with an average of 78.8% of students believing the speaking exam was a motivating factor for them to speak more in class.

Though not EFL related, Huxham et al. (2010) note that many students believe oral exams are more useful and can be more inclusive than written exams. The results from the last five years in this class show that students certainly do not believe the spoken exam is easier than the written one, but it motivates them to participate in in-class speaking activities thus showing a positive washback effect. Fewer than one in five of the students believe it an easier assessment task than a written one.

4 Pedagogical Principles

There are a number of important pedagogical principles that arise from this case study: the value of VE; the need to integrate technology into mainstream language learning; and creating authentic contexts to practice speaking.

a. *Realize the value of VE*: firstly, and most importantly, VE is considered valuable by students studying English communication in EFL settings. More and more VE are becoming mainstream with the UniCollaboration group offering several options, SUNY's COIL program being another. The IVEProject outlined here is also a simple way for teachers to access a truly international VE.

b. *Integrate technology into mainstream language learning*: if students are going to participate in VE, they have to use technology. Offering them assistance to understand how to use the technology is an obvious necessity. However, if more of the syllabus already requires the use of technology, students will be less likely to have problems accessing the VE. It is no longer difficult to incorporate technology into the classroom. Moodle, as outlined in this case study, is one of the more popular options but there are others such as Google classrooms. As outlined above, students often see the use of these as both beneficial and better than the use of standard textbooks. Through their use, other transversal skills are developed that include IT use and the ability to communicate well online. It is therefore also essential to include teacher training on a regular basis as part of

faculty development and also for teachers to be pro-active in joining workshops put on by technology-based teaching associations.

c. *Creating authentic contexts to practice speaking*: if teachers want their students to communicate orally in English, they should encourage them to do so with an understanding that English is a lingua-franca on the world stage and that understanding different accents and dialects is a useful skill to have. This can be achieved by participating in an international online exchange where audio and video are used. It follows that teachers should include oral exams as part of their assessment as this is appreciated by students and motivates them to speak more in class. It also improves the authenticity and washback of the exams.

Though there are many positives to take away from this case study, there are also some limitations. The fact that the surveys only used a four-point scale is one. The next five-year plan will use a broader scale. In addition, the questions were all single constructs, meaning construct validity could not be tested. However, that similar results obtained over a five-year period suggests that they are reliable.

To conclude, this case study makes a strong case for incorporating VE into EFL communication courses. It goes further to suggest that technology should also become a part of such classes as it will assist students in their participation in the VE and benefit them in other ways too. If oral communication is to be a part of the EFL course, then additionally, oral exams incorporating technology should also be included and the case study offers a means of doing so.

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Chapter 10
Case Study 5, Macao: Using Google Docs for Peer Review

Alice Shu-Ju Lee and Wing Yee Jenifer Ho

1 Background

Peer review is seen as an integral part of the writing process, particularly in the process-based writing approach in which students are encouraged to exchange drafts at various stages of writing to obtain oral and/or written feedback to enhance their writing quality. The focus of the feedback may include global concerns such as content and organization, and/or local concerns such as grammar and vocabulary (Chang, 2016).

Peer review can be conducted through different modes, including face-to-face and computer-mediated (synchronous or asynchronous). Liu and Sadler (2003, p. 195) argue that computer-mediated communication (CMC) is a "less anxiety-provoking" means of giving feedback than face-to-face interaction. The advantages of using CMC for enhancing participation and sharing are also echoed by Belcher (1999), in the context of graduate seminars. The choice of mode leads to differences in the type and the nature of the comments given, as shown in Liu and Sadler's (2003) study. They found that students made more comments to one another in the "technology-enhanced group" than in the "traditional group." The former group also made more "revision-oriented comments" than the latter group, resulting in an increase in the number of revisions made in the second draft. Grant (2016) compared students' perceptions and attitudes of carrying out peer review in a completely online mode, and in a classroom-based, student-led blended mode. He found that students reported higher levels of motivation and enjoyment in the blended mode than in the completely online mode, despite the fact that students were all capable of carrying out peer review completely online.

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With the advent of Google Docs, a number of studies have investigated its use in peer review lessons. For example, Ebabi and Rahimi (2017) examined the impact of online peer-editing using Google Docs and found that not only does the application enhance students' academic writing skills, students also show positive attitudes toward this mode of giving feedback. Similar findings can be identified in Alharbi (2020), which suggests that certain affordances of Google Docs, such as automatically saving changes and retention of revision history, facilitate learners' development of academic writing skills. Likewise, Neumann and Kopcha's (2019) study found that Google Docs enables students to "communicate back-and-forth with their peers to make sense of and apply that feedback" (p. 13). While these studies focused on students' perceptions of using Google Docs for peer feedback and its effectiveness in facilitating writing tasks in different parts of the world, the current case study focuses on examining the types of peer review comments made by students when using Google Docs for feedback in an undergraduate-level academic writing course in Macao.

This present case study is set in Macao, where English is increasingly being used in the city. In the 2016 population by-census, almost 28% of the population reported they were able to use English even though just under 3% of the population used English as their usual language (Statistics and Census Service, 2016). Despite the growth in English language users, Macao's English language education still has room for development. Mak (2015) reports that English is predominately taught in Cantonese in the Chinese medium secondary schools, which account for more than 75% of all secondary schools in Macao. Additionally, Mak's study of a small sample of university entrance examination papers revealed that the majority of those test-takers utilized word-for-word Chinese to English translation in their writing. Further, a constant pressure point on secondary school teachers is preparing their students for the university entrance examination, which contains timed writing (Yu et al., 2020). It can therefore be assumed that some students may not have had a lot of experience with English academic writing before entering university.

This case study focuses on undergraduate students attending an English for Academic Purposes course at an English-medium university. It reports on how an instructor structured peer review lessons and how students met the lessons' objectives when (a)synchronously commenting on their peers' essays using Google Docs. The anonymous student comments were coded and analyzed to determine the extent to which the lessons' objectives were reflected in the student comments. The goals of this study are to (1) illustrate how such a peer review lesson can be structured, and (2) understand the types of student comments that are produced when peer review is mediated by technology. Our overarching research question is: *How does Google Docs mediate the peer review process of academic writing?*

2 Case Study

2.1 Participants

There were 70 year-1 or year-2 student participants who were enrolled in an Academic English course. Most of the students used either Cantonese or Putonghua as their home language. In an informal classroom survey, many of them had not been exposed to process writing or peer review. Additionally, most had not used Google Docs to complete a collaborative writing assignment.

2.2 Project Description

In the Academic English course, students were asked to complete two major group projects, one of which was a group essay addressing one of the 17 goals of the United Nations' Sustainable Development Goals (SDGs). The teaching materials were developed by various instructors who had taught the course, with Averil Bolster and Peter Levrai as the main developers. The research essay project required that students work in groups of three to establish a problem in a specific context and propose a viable solution. The elements included the following: individual annotated bibliographies, an essay outline by the group, a consultation with the instructor, two drafts, two peer reviews, a final draft of 1,200 words with a minimum of six high-quality sources, and APA style. The lessons leading up to the final draft included the following: outlining, thesis statement writing, source integration, paragraph development, peer review, cohesion, and concise writing.

In preparation of the first draft peer review task, which was conducted using the "Comment" function in Google Docs, students were provided with the following information developed by Randall (2018): a sample paragraph, guiding questions based on a P.E.E.L. (point, evidence, explanation, link) paragraph structure, and constructive criticism sentence examples. Next, each group read the sample paragraph and answered questions such as "Does the evidence support the point?" by adapting from the constructive criticism sentence starters. The instructor first provided immediate feedback on student comments and then led a whole class discussion on the qualities of useful comments.

Further instructions were given to students once they completed the steps above. The instructions were as follows (excerpt from Randall [2018] presentation slide):

1. Quickly read the entire essay. Make sure you understand the thesis statement and the point sentence of each body paragraph.
2. Give at least 1 comment to the main point of each body paragraph:

    (a) Praise what you like, and/or
    (b) Ask a question about what you don't understand, and/or
    (c) Give a suggestion for how to improve.

3. Then give more specific feedback to the paragraphs—focus on the P.E.E.L. and I.C.E.[1] aspects.

Students were arranged in a round-robin process to individually review their assigned essay and were instructed to give a minimum of 10 comments. Each essay was read by two or three students from different essay groups. When the peer review was completed, student writers had the opportunity to discuss all of the comments they received with their group and decide how they should proceed with their second draft. Students also had time in class to ask for clarification from their peer reviewers.

In the lessons leading up to the second peer review task, students were taught how to spot a lack of cohesion in student writing and how to achieve concise writing through various strategies. Students then selected one paragraph in their group essay for practice before checking the cohesion and conciseness of another group's essay. Students read a different essay from their first peer review task. They were instructed to use the "Suggesting" function in Google Docs when making suggested changes in the essay.

2.3   Data Collection and Analysis

This case study used a qualitative approach, specifically grounded theory (Glaser & Strauss, 1999), for the collection and analysis of data. The first author collected the data one year after the course had ended. A total of 2,198 peer review comments was collected for the two peer review activities. Next, the comments were numbered for anonymity. The second author, who also had the experience of teaching the same course, assisted the first author in data analysis. We agreed to use the instructions given to students to help provide focus during coding (Corbin & Strauss, 2008) and answer the research question. Each researcher individually coded approximately 200 of the student peer review comments before meeting again to compare our codes. From this iterative process (Saldaña, 2009), we agreed on the following codes: *compliment*, *improvement needed*, *general comment*, *question-as-suggestion*, *direct suggestion/edit*, *writer response*, *question*, *disagreement*, *polite expression*, and *referral*. Each researcher then completed the coding of the rest of the data individually. Upon completion of the coding, the researchers conferred with each other on comments that did not seem to fit in any of the 10 codes above and resolved any differences.

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[1] I.C.E. stands for "introduce," "cite," and "explain," and is the focus of the source integration lesson delivered as part of the academic paragraph writing practice.

2.4   Results

Depending on the complexity of the peer review comments, some comments received more than one code. For instance, if the peer reviewer complimented the writer before asking a question or suggesting some type of improvement, then the comment was coded as C/IN (for compliment/improvement needed). Table 1 provides definitions for each code as well as examples of student peer review comments that illustrate

Table 1 Codes for peer review comments

Code (number of occurrences)	Code definition	Example (comment number)
Improvement needed (733)	Instances where the comment signaled to the writer some type of revision was needed	I got confused when I reading this. I can not understand what the LTA would like to do (CN272)
Direct suggestion/edit (643)	Comments that instruct the writer exactly what should be done/edits made directly on the essay draft	I think you need to mention where these data come from (CN706)
Compliment (429)	Instances where the comment was appreciative of the student writing	The PEEL structure is well-organized in this paragraph (CN135)
Question (209)	Comments requesting more information	Can you give some examples? (CN1603)
Question-as-suggestion (204)	Comments that appear in question form but contains an embedded specific suggestion	How about making a concision here? (CN536)
General comment (187)	Observational or descriptive comments	the sentence use visible data to clearly show CCS indeed need money (CN349)
Disagreement (33)	Comments that disagree with essay content or organization	Hmmm, I don't think the campaign's website would say something like this sentence, your citation should be what the article is not what you observe, here you may just leave the citation (CN1871)
Polite expression (32)	Polite expressions that could not be categorized as compliments	It would be better if you give the examples for the types of waste in details (CN1013)
Referral (7)	Recommendations to review teaching content or instructor guidelines	Same issue, I think this sentence contains noun string. Check with Day 25 slides number 26–31. There are few examples to correct these types of mistakes (CN1188)
Writer response (6)	Replies from essay writer(s)	what does it mean? (CN1597)

each code. In total, the 2,198 comments carried 2,483 codes (with 1,879 single codes and 604 multiple codes). With 70 students, each student averaged 31.4 comments, or 15.7 comments for each draft. The total number of words used was 24,539, or an average of 350 words per student reviewer for both drafts.

2.4.1 Peer Review Comment Quantity and Characteristics

From the results shown in Table 1, several general conclusions about the quantity of peer review comments can be made. First, as Liu and Sadler (2003) demonstrated in their study, the number of peer review comments made via technology was 1.8 times the number of peer review comments made via traditional methods. In their study, each student averaged 13.1 comments. Students in the current study averaged 15.7 comments for each draft. So, the comparatively large comment numbers support Liu and Sadler's conclusion that technology-enabled peer review activities encourage reviewers to provide more feedback.

Another way to characterize the peer comments in this study is to use Hyland and Hyland's (2006) observation of student agency and autonomy. Rather than acting as passive receivers of knowledge, students actively engage in the review process to help their peers improve both the global and local concerns of their writing. With the use of Google Docs for peer review, students are provided with even more space to express such agency. One way to express this agency is by asking questions to prompt their peers to think deeply about an issue. In this study, questions were posed more than 200 times. For example, one student asked, "Where does this example come from? Why do we believe it?" This question encourages the writer to substantiate claims with more evidence, which is an important feature of academic writing.

2.4.2 Peer Review Comment Purpose

The current study results showed that student comments varied by purpose as well. In all, students used 32 *polite expressions*, 204 *questions-as-suggestions*, 209 *questions*, and 429 *compliments*, for a total of 874 codes that involved some type of politeness strategy when giving feedback as compared to the 733 *improvement needed* and 643 *direct suggestion/edit* codes. Although students were instructed to praise what they liked, they were not explicitly encouraged to embed their critique. The relatively frequent use of politeness strategy echoes the findings of Lin and Yang (2011), whose study revealed the likelihood of students to integrate politeness strategy with critique so as to avoid being perceived as rude. Perhaps partially due to the convenience of technology, students could also take more time to use polite language to embed their critique.

Besides maintaining politeness, student reviewers were focused on highlighting global and local concerns that needed revision. The high volume of 733 *improvement needed* and 643 *direct suggestion/edit* comments indicates a strong level of student engagement. Even when reviewers did not know the types of revisions they wanted to

see, they were able to point out weaknesses, areas of confusion, and logic problems. They were even able to see what was not there. For example, one reviewer pointed out, "I can't really understand the structure of your essay. The PEEL and ICE format should be use in each paragraph of the essay in order to have a clear structure and it will be easier for the reader to understand the content and the main point of your essay." Comments such as this show that the reviewer retained the technical knowledge of an academic body paragraph structure and also could notice it when the expected parts were missing.

In closer detail, the variety in the purposes of comments given extended beyond the instructions provided to the students to include hedging. It seemed that the peer reviewers were able to take the instructional cue of "praise what you like" along with sample constructive criticism sentence starters to create their own politeness devices. For instance, students were given the starter clause, "I really liked the way you…," but a search for this clause yielded zero results while a search for "I appreciate…" yielded 17 results. Reviewers also used quite a bit of hedging even though this was not explicitly taught as a means of achieving politeness. Devices commonly used for hedging included the use of *can* (162 times), *could* (70 times), *may* (64 times), and *might* (8). Additionally, hedging was achieved through the use of conditionals such as *if* (118 times). For instance, a student wrote, "In my opinions, if you need to shorten your draft, this paragraph is a good choice." All of these examples served to support the idea that student peer reviewers were cognizant of how their comments may be received by their peers and did what they could to maintain a cordial relationship between classmates (Lin & Yang, 2011).

2.4.3   Peer Review Interactional Spaces

The results further demonstrated that peer reviewers interacted with the written text, with each other, and with the teaching content. Instead of treating the peer review process as "one-way" communication, in some cases, students sought follow-up clarifications from the reviewers. Some of the comments may be a result of the use of CMC, which offers an interactive, open platform for students and reviewers to engage in a two-way discussion of the comments (Wu et al., 2015). As the six writer response comments illustrated, student writers wanted to receive clarification on their peer comment, agreed with peer reviewers, acknowledged their mistakes, and disagreed with reviewers. Although student writers had the option to ask for and receive clarification in person from their peer reviewers in class, writers with questions opted to use the "Reply" function to respond to peer comments instead. In a sense, some student writers treated the peer review comments as text messages, replying to them because that option is available. It may be possible that the students are accustomed to texting and thus preferred this means of communication. It may also be possible that students were concerned with potential face-threatening issues as they may feel uncomfortable disagreeing with someone to their face (Lin & Yang, 2011). In addition to the writer response comments, reviewers directed student writers either to the instructor's teaching materials or guidance, demonstrating another means

of interaction and engagement with each other and with content. These two types of interaction could lend support to Wu and Chen's argument that peer review done through CMC allows for multi-directional communication and engagement.

Even when peer reviewers were uncertain about how to evaluate their assigned essays, they were still interacting with the text through identification. In the coding, these types of interactions were coded as *General comment* due to their observational and descriptive nature. Contrary to the types of comments that identified missing details, these general comments were attempts at identifying the purpose of the detail as it related to a paragraph or the function of a paragraph as it related to the essay. For example, one student wrote, "The paragraph can slightly describe which group presented the campaign, the campaign they presented and what did they explain," as a way to describe what s/he understood to be the purpose of the paragraph. Although there was no overt evaluative language or suggestion, these types of descriptive comments could still benefit student writers as a means of checking whether the message and purpose they wanted to convey were received by a reader.

3 Pedagogical Principles

Google Docs can be a powerful tool for peer review, and when considering implementation, instructors should consider the following pre-, while-, and post-steps. Preparing students:

1. Scaffolding is necessary, and students need to be guided step-by-step through the process.

    (a) Students should be introduced to the purpose of peer review as a way of helping each other think about their rhetorical situation and how they want their writing to be perceived by readers. In this sense, peer review should perhaps be reframed as reader review. Focusing on reader reaction with a rubric as the basis of such reaction helps reduce students' concerns that they are not capable of judging a piece of writing.
    (b) Students should be given opportunities to analyze the effect of peer comments from the perspectives of both a writer and a reader.
    (c) Students should have ample practice on Google Docs so that they can become familiar with its functions.
    (d) Students need to be shown how to give comments in a constructive and supportive way, with the instructor acting as a facilitator to monitor the process.

Instructor preparation:

1. Setting up the peer review assignment requires planning, especially if the goal is to allow students to read essays from different writers for different drafts.
2. One way of ensuring that students are prepared to do peer review is by checking their understanding of basic academic essay structure. The course instructor

uses a Google Forms quiz, where students have unlimited attempts to get a perfect score before they can begin the peer review process.

3.   Implementation includes thinking through the essay collection and redistribution process. In Google Docs, the granting of access rights of all essays to all students in class can become an issue. The benefit of doing so is that students can have the opportunity to learn from each other. The drawback is that some students may inappropriately borrow other students' writing/comments.

During peer review:

1.   Some of the peer reviews should be done in a classroom computer lab setting so that the instructor can monitor student progress and answer student questions. The instructor can use concurrently generated comments to discuss comment (in)appropriateness for the first draft.
2.   The instructor can also monitor student reviewers as they comment on their assigned essays "in private." That is, the instructor can "reply" to a comment to reinforce its value to the student writer or to redirect the reviewer back on track.
3.   Depending on how Google Docs is set up, the instructor can receive email notifications for each document that is commented on. Although some may consider this notification a nuisance, the instructor will have the ability to reply to a comment directly from the email inbox.

After peer review:

1.   It is important to inform writers that they are not obligated to accept all comments. Rather, their job is to think about each comment from both a reader's and a writer's perspective. Ultimately, the decision to revise lies with the group.
2.   Instructors should remind students that they should take the ultimate responsibility for their writing.

This case study has demonstrated that Google Docs can be an effective means of conducting peer review. Peer comments were found to be not only robust but also multifaceted. What Google Docs contributes is the ability for everyone in class to have access to all of their essays, peer comments, and edit suggestions. This access creates a constant, multidirectional channel of communication between those involved in the activity, helping to make engagement an easier process.

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Chapter 11
Case Study 6, Korea: Flipped Content Courses in the Korean Higher Education Context: Benefits and Challenges

Sung Yeon Kim

1 Background

With the advent of the fourth industrial revolution, the drive toward smart learning has been accelerated in higher education in Korea (Kim, 2017). This trend is strongly influenced by the fierce competition between Korean colleges to secure their rank in the annual national college ranking. Prestigious universities in Korea have invested in instructional technology and provided various incentives to faculty members for adopting innovative teaching strategies, such as flipped learning.

Flipped learning (FL) is organized in such a way that students are supposed to view lectures at home but tackle "homework" together in class with the teacher on hand to help. Class time is spent on interactive activities and problem-solving tasks to which students apply their content knowledge. In this way, students have more time to interact with their teachers (Cockrum, 2014; Sung, 2015), become more autonomous and self-directed (Vaughan, 2014), and develop higher order thinking skills while solving problems and sharing different perspectives (Bretzmann, 2013; Sung, 2015). Affectively, they become more active, motivated, and willing to communicate (Hung, 2017; Zhang, 2015). In addition, they can achieve better outcomes in language learning, experience deep learning through engagement, and contribute to creating collaborative learning environments (Ahn, 2016; McBride, 2015).

It is therefore not surprising that Korean universities have increasingly invested in the flipped learning approach. With lavish support from the Korean Ministry of Education for educational reform for the fourth industrial revolution, many universities in Korea have been pursuing the expansion of FL. Some universities even make it mandatory for newly hired faculty members to teach flipped courses, regardless of discipline. This enforcement, however, can become problematic as the need for

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FL can vary according to the field of study. FL is generally more popular in science-related programs (e.g., math, science, engineering), as shown by studies in those fields, where instructional contents can be transformed into problem-solving tasks more easily (Clark, 2015; See & Conry, 2014). In contrast, relatively few studies have been conducted in the context of language teacher training programs probably because pre-service teachers mostly learn principles of teaching or practice teaching methods, instead of tackling problem-solving tasks (Vaughan, 2014). In light of this situation, the present study is an attempt to examine flipped learning in a teacher training context. The study evaluated flipped learning in two content courses for pre-service language teachers at a college of education in Korea. The study explored the benefits and the problems of flipped learning from teacher trainer perspectives. The research questions were the following: *What were the perceived benefits of the flipped courses? What were the perceived problems of flipped learning?* and *What strategies are useful to ensure successful flipped learning?*

2 Case Study

2.1 Participants

Two female Korean professors in a college of education participated in the study. They had more than 10 years of teaching experience in training pre-service language teachers to become secondary school teachers. One of them, with the pseudonym, Susan, is in the department of Korean education while the other, with the pseudonym, Linda is in the department of English education. Susan, the Korean professor, was in her mid-50s and had a doctoral degree in contemporary fiction from a Korean university. She conducted her classes in Korean. Linda, the English professor, was a highly proficient English language user and delivered her classes in English. She obtained a doctoral degree in linguistics from a university in an English-speaking country, and she was in her early-50s. Both teachers had highly motivated groups of students since these students had chosen to major in Education with the aspiration to become language teachers. The students were in the top 3–5% in humanities and social sciences at the time of admission to university.

2.2 Project Description

Hanyang University is one of the top universities in Korea and has always been at the forefront of educational reform and technology-enhanced teaching methods. As a smart learning initiative, the university implemented pilot flipped courses in 2016. Since then, flipped learning has been actively promoted. Initially, compensation of US $10,000 was provided for tenure-track faculty members who implemented flipped

learning for their content courses. This strong incentive had an immediate effect on producing 373 flipped courses in 2017. Although the incentive has been reduced down to US $500, the university still encourages teachers to implement flipped learning. In 2019, 433 courses (8.3%) were offered in different fields of study via flipped learning. The university has also invested in improving the infrastructure to support technology-enhanced learning.

The university initiated flipped learning with the expectation that this instructional approach would improve student learning outcomes. The present study examined how flipped learning was carried out in two different content courses for pre-service language teachers: "Curriculum and Materials Evaluation" (CME) for English education majors and "An Introduction to Contemporary Fiction" (ICF) for Korean education majors. Susan, the Korean professor, rationalized that ICF was most appropriate for flipped learning because it was a theory-based literature course that involved reading texts. On the other hand, Linda, the English professor, selected CME because it required hands-on activities. She believed that independent online lectures would allow her students time to work on problem-solving tasks or application tasks in class. Although the two professors worded their approach differently: theory-based vs. task-based, they both decided to flip the courses to promote student-centered learning by using "theory-based" online lectures as a springboard for "task-based" offline classes.

The goal of the CME course was to cover the theory and practice of materials evaluation and development. As the course was based on a flipped learning approach, the students were instructed to preview videos as well as assigned readings, worksheets, and questions prior to class. The instructor of the course used Tomlinson (2014) as the main textbook, from which she covered eight chapters on standard topics such as materials evaluation, materials adaptation, and materials development. Student achievement was assessed through a mid-term quiz (20%), final quiz (20%), group project (20%), in-class discussion (20%), attendance (10%), and a reflection paper (10%).

In contrast, the ICF course aimed to help students develop aesthetic appreciation skills by understanding the fundamental theories of contemporary fiction and applying them to the critical analysis of literary work. The course covered the following topics: general theories of fiction, components of fiction, in-depth analysis of fiction, and the intertextuality of fiction and movies. The course had a specific focus on the components of contemporary fiction, such as background, themes, characters, plot, conflict, and point of view. The instructor used two Korean textbooks on contemporary fiction, and she also used Korean fiction and movies as supplementary materials. Student learning was evaluated by a mid-term exam (25%), a final exam (25%), the average of two quizzes (15%), attendance (10%), learning attitude (5%), and assignments (15% for presentations and 5% for literary analysis).

Regarding the flipped course design, the teachers followed the standardized format prescribed by the university. According to the guidelines, they produced two sets of materials: one for the online class and another for the regular class. For FL, they both had a 20- to 30-minute online lecture and a two-hour-long offline class. As the teachers made video lectures available online, they met their students only once
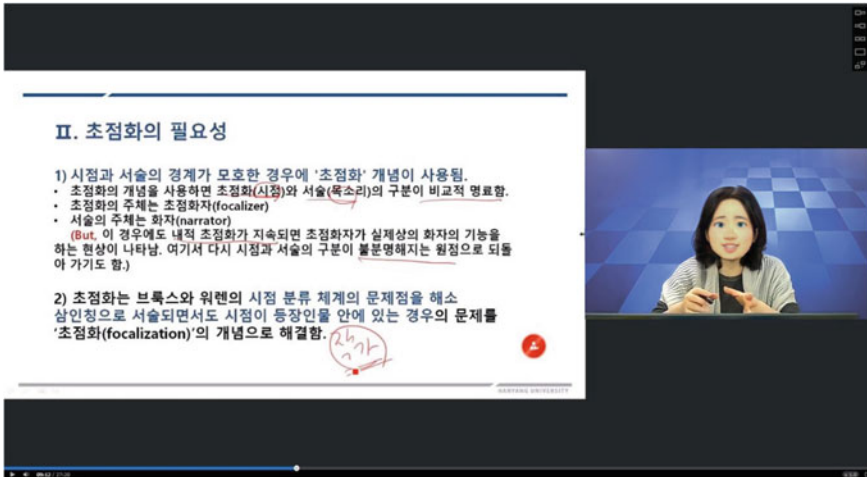
Fig. 1 ICF online lecture on "point of view"

a week for two hours. Susan conducted flipped learning for 12 weeks, for which she video-recorded 12 weeks of online lectures and prepared presentation slides for her lecture every week. She connected her video lectures with offline classes by having students present the topics covered online or watch relevant movies with a specific focus, such as "point of view." Each week two groups of students gave group presentations of their own analysis of the literary work. If the video lecture covered the concept of characters, the assigned groups were asked to present their findings on the unique characters in the work. In addition to the group presentations, the students sometimes watched movies and discussed the link between the movies and the books (Fig. 1).

In contrast, Linda implemented FL for eight weeks. Face-to-face sessions were carried out in three phases: student-led discussion, summary of an online lecture, and application tasks. During the student-led discussion, the students participated in group discussions on the readings for about 40–50 minutes where they performed one of four roles in groups: discussion leader, connector, summarizer, or word master, as shown in Table 1.

While playing different roles in the group discussion, the students clarified their understanding of the assigned readings with their peers. Afterward, Linda summarized her online lecture for about 10–20 minutes to fill in possible gaps in the students' understanding of the course content. Then the students performed application tasks for the remaining time, where they applied their content knowledge to task performance. For example, the students evaluated a given set of materials after learning about materials evaluation criteria, or they were instructed to revise existing materials by using appropriate adaptation techniques presented in the video lecture. They also examined how the principles of materials design had been realized in listening, speaking, reading, writing, and vocabulary textbooks. For instance,

Table 1 Role division in group discussion

	Role	Activity
Discussion leader	Lead discussion and manage member participation	Bring a minimum of three questions about the readings, and initiate and maintain the discussion
Connector	Connect the theories in the readings with the practices	Identify the connection between the theories and the practices, and share the findings and further discuss them
Summarizer	Summarize the assigned readings	Write a summary of the readings and share it
Word master	Find core words and phrases in the readings	Present the meanings of the core words and phrases from the readings

after learning about the psychological conditions of vocabulary learning, such as noticing, retrieving, and elaboration, they examined vocabulary materials to identify activities that exemplified the concepts. In summary, the Korean education majors performed mostly group presentation tasks face-to-face whereas the English education majors performed varied application tasks, such as materials evaluation, materials adaptation, and principle identification exercise.

2.3   Data Collection and Analysis

Interviews were conducted in Korean with the two instructors. It took about an hour to interview each teacher. As the researcher had established rapport with the respondents, they were comfortable about sharing their experiences of the flipped courses and to share their teaching resources, such as course syllabi, materials, and classroom tasks. For the in-depth interviews, the study used a structured interview guide composed of questions on their reasons for implementing FL, lesson plan and task design for their flipped courses, benefits and problems of FL, and suggestions for successful FL.

The interviews were audio-recorded with consent from the participants and transcribed afterward. Their responses to the questions were initially open-coded to identify commonly occurring themes and ideas, and were then categorized according to the research questions. Afterward, the relationships between the ideas and the categories were examined and interpreted. In addition, the contents of other materials, such as the course syllabi and instructional materials were examined to scrutinize how they planned their online and offline lessons and what types of tasks they designed and employed for face-to-face sessions.

3 Results

3.1 Benefits of Flipped Learning

Both professors perceived FL as beneficial for teachers and learners. Regarding the benefits for teachers, Linda reported that FL made it easy to make up for missing classes, and that she could recycle the ready-made contents for at least four years. In the same vein, Susan pointed out the efficiency of class time management as one of the benefits for teachers. She could just meet her students once a week face-to-face for two hours unlike other offline-only course instructors who were obliged to have two classes per week, each time for 75 minutes. She also reported that FL contributed to her professional development as it led her to proactively update course content to better accommodate learner needs.

As to the benefits for students, Susan argued that the flipped course was useful for her students because it increased the amount of learning materials. When asked whether her students would not complain about the increased learning contents, she shared an interesting insight: *These kids are Internet lecture generation who are already used to this kind of learning mode. So even when online lectures often exceeded 30 minutes, they did not complain about the amount of materials they had to deal with.* She also mentioned more frequent interaction with the teacher as one of the advantages. As the students met their teacher face-to-face only once a week, they scarcely had time to ask questions in class. For this reason, Susan arranged consultation sessions outside of class so that students preparing for group presentations could visit her in person for her coaching. This contributed to fostering student-to-teacher interaction as the students asked questions and clarified content with her, and the teacher offered feedback regarding their plans.

Similarly, Linda mentioned that FL rendered classroom instruction more interactive as it allowed students more chances to ask questions in offline classes: "I've witnessed students tutoring one another in offline class… When I walked around the classroom, there were always students who asked me questions." These students, who would have been seated still in the teacher-led, lecture-oriented class, were active and interactive as they had to do their part in group discussion or group project. This confirms earlier findings by Ahn (2016) and Sung (2015) that flipped classes enhanced interaction among students. In addition, she addressed many advantages related to language practice and content comprehension, as in the following excerpt:

> *Students tell me that online lectures are effective for summary, review, test preparation… (I think it is) good for those deficient in listening skills as they can repeatedly use the materials once recorded. Listening to the lectures over and over again helps to develop listening skills and comprehend the content better.*

As Linda delivered her instruction in English, her online lectures were useful for language practice. In particular, the students with limited proficiency were able to repeatedly listen to them at their own pace. This helped them prepare for the course content better and develop their listening skills. This is in line with Zhang's (2015)

finding that Chinese students were able to practice listening and speaking skills and acquire lexical knowledge as a result of taking a flipped business English course. Linda noticed that her students transferred the listening input to spoken output when performing discussion tasks in class. She also stated a plausible relationship between the repeated practice and the reduced speaking anxiety. She reported that her students became less anxious and more comfortable about speaking as they got better prepared for content over time. She also mentioned that her students used the readily available online materials for preview, review, and test preparation.

Linda also believed that the course was particularly useful for pre-service teachers, in that it offered an experiential learning opportunity and a good instruction model for her students. She reported that they would be able to apply this cutting edge approach to their own classroom instruction and lesson design when they become in-service teachers, as the following excerpt shows:

> *The students were quite content with the fact that they learned the content with this state-of-the-art approach, flipped learning … They also seemed to have got some ideas from this course that they can use for their classroom instruction in the future, for example, how to implement FL in classroom settings. Now that they had a chance to experience different types of application tasks, I hope they learned how to design classroom tasks and use them for their prospective teaching.*

In the case of Korean majors, as the language was not a foreign language that they had to practice or acquire, the benefits Susan mentioned were quite different. Susan believed that through FL, her students as pre-service teachers were able to learn how to make instruction more comprehensible by observing how she used paralinguistic features, such as tone, volume, and rate of speech, for effective presentation. She thought that FL helped her students develop an awareness of what constitutes good instruction. In general, the two teachers were quite favorable about FL as they both perceived that FL contributed to fostering student-teacher interaction. They also believed that FL led students to use disciplinary thinking skills while applying acquired concepts to literary analysis or classroom tasks. These findings are consistent with the findings from previous studies (Bergmann & Sams, 2012; Bretzmann, 2013; Cockrum, 2014).

3.2   Problems of Flipped Learning and Suggestions for Successful FL

Despite the advantages, the teachers both agreed that FL had some limitations or problems. They both noted that it was quite demanding to prepare lessons as mentioned in previous research by Ahn (2016) and Sung (2015). Susan reported that it took more than six hours each week to create presentation materials out of her lecture notes. Linda stated that flipped courses would mean more workload for teachers and students, compared to regular classes, in that teachers have to develop tasks, and students have to watch videos and read texts. She said, "FL is quite time-consuming

and labor-demanding for both students and teachers. Students have to read texts and preview videos, and the teachers have to design tasks related to the readings."

One of the commonly noted problems had to do with flexibility in course content management. Susan mentioned that online lectures had to be good enough in the first shooting because she was not allowed to edit or update contents on her own. She also found it inconvenient that she would have to stick to the same contents for at least four years once recorded. This may be why Susan paid keen attention to designing her course with the latest materials. Similarly, Linda expressed concerns about the lack of flexibility in uploading the course contents. As the smart center for teaching and learning at the university had control over the recorded contents, it was quite difficult to revise the course contents and adjust the pace of instruction. Namely, it was not easy to change the teaching schedule in the FL context once all the contents were uploaded at the beginning of the semester. This rigid and fixed schedule triggered confusion among students and the teacher from time to time.

While the two teachers displayed a similar reaction to these problems, their views differed regarding the effectiveness of the online or offline portion of FL. Susan noted the problem of the absence of question and answer (Q & A) sessions, compared to normal classes composed of two face-to-face sessions. According to her, as there was only one offline session per week, which was used mostly for student presentations, it was not easy to hold Q & A sessions in class. As a result, they were always pressed for time and consequently had little time to clarify their understanding regarding the online lectures.

In contrast, Linda mentioned that 20-minute online lectures were not sufficient to cover the contents in adequate depth and breadth. In fact, this problem was repeatedly mentioned to her by her students, who were saying that online classes were not as effective as face-to-face classes. Maybe she could have assigned more readings to supplement the short video lectures or used more extensive instructional materials instead of online lectures. While it is true that FL is usually implemented in a combination of video lectures and offline tasks, it can also take place without the video portion (Talbert, 2017). Thus, students can be instructed to read a wider range of texts instead of relying on short video lectures and apply their content knowledge to problem-solving tasks.

Another problem noted by Linda was that her students were not as alert and attentive in offline classes because they were easily swayed by other distractions. According to her, some students neglected assigned readings and came to class without reading the materials in advance. She related such negligence to learner autonomy, and claimed that learner attitude, particularly autonomy was a crucial factor for successful FL. She cautioned that it was challenging to keep students self-directed in the online learning context. The students, as they were used to a teacher-centered class, preferred face-to-face classes to online classes.

> *Some students told me that online lectures did not fully cover the course contents. Others told me that they tended to either lose attention or neglect assigned readings and … In fact, one student explicitly mentioned that the online lecture was not helpful … FL cannot be successful without learner autonomy. Students can stay logged on without viewing materials and there is no way to track who is watching and who is not.*

Other problems addressed included technical problems such as non-compatible connections between the links on the PPT slides and the Internet, sudden shut down in the middle of online lectures, and unstable learner management system (LMS) for monitoring online attendance. There were also problems with the physical environment, such as inefficient classroom arrangement for TBI and the restricted use of an air conditioner while recording lectures.

As to the strategies for successful implementation of FL, the teachers offered some valuable suggestions. Linda proposed that existing institutional support should be enhanced in the form of raising the incentives or endowing some points for faculty evaluation, and that the university should provide some guidelines about how to use copyrighted materials in flipped courses. She also recommended that teachers' constant monitoring and feedback are essential for promoting learner autonomy.

Unlike Linda who stressed the value of learner autonomy as a determinant for successful FL, Susan highlighted the importance of teacher attitude: teachers should have intrinsic motivation for professional development and for adaptation to the changes in the educational environment. She also emphasized the importance of computing skills and expressed her desire to improve her skills, making a confession that she did not get to utilize different features of online video lectures, such as highlighters. She believed teacher's desire for professional growth would positively affect their willingness to voluntarily update course contents and manage FL effectively, as shown in the following excerpt:

> *There's nothing but to develop yourself as a teacher to raise the degree of student satisfaction. Teacher willingness to change and their will for professional development should be the prerequisite. Without it, other kinds of support will not bring about expected changes.*

4 Pedagogical Principles

The findings of the study have the following pedagogical implications:

a. *On-line vs Off-line learning*: Language learning is a complex phenomenon that is to be realized through various channels including both online and offline tasks and resources. Classroom teachers should carefully connect the online lectures with offline tasks. Tasks should be designed to supplement learners' incomplete knowledge, solidify their understanding, and facilitate their language use while learning course content (Zhang, 2015).

b. *Learner Autonomy*: The success of FL is also dependent on learner autonomy as not every student will engage in FL, as Correa (2015) and others have cautioned. For this reason, teachers, when dealing with passive students, should show genuine interests in their work, provide ongoing feedback, and consider their learning preferences. They can foster learner autonomy by designing meaningful and engaging tasks.

c. *Institutional Support*: For successful flipped classes, institutional support in various forms is important (Gerstein, 2015). Institutions have to provide

adequate financial and technological support. It will be extrinsically rewarding if the teacher initiatives for innovative teaching approaches can be compensated with higher incentives or credited for faculty evaluation. Institutions also need to find a way to allow teachers more control over their contents. It will be useful to offer some training sessions on video production and editing so that faculty can update, edit, and upload contents on their own.

In implementing a new instructional program, it is necessary to understand the rationale and principles behind the techniques and methods. Universities may be motivated to promote the new program for various reasons, including cost-effectiveness. They may not want to count the online portion as teaching hours after some time lapses or have different instructors recycle the ready-made online contents. In this sense, FL can become an economical option in the long run, although it may require some expenses at the entry-level. The cost-effectiveness of FL may thus lead them to enforce FL policy across disciplines.

However, FL should not be enforced because it can heighten psychological pressure or stress on the part of teachers. Some teachers can feel threatened with the drastic change in their roles, thinking that their role has been marginalized or trivialized to that of assistant teachers. Therefore, it is important to guide and convince classroom instructors, and to let them decide whether FL would work for their courses. In addition, university administrators should not just pursue FL for cost-efficiency but also promote its pedagogical value. They may have to conduct a large-scale study that investigates the effectiveness of learning from learner perspectives, specifically focusing on the effects of reduced teaching hours on student learning outcomes.

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Chapter 12
Case Study 7, Brunei: Learners as Educators in the Virtual Absence of Authority

Mayyer Ling and Deyuan He

1 Background

1.1 Introduction

Learner-centric approaches and student-centred learning are desirable traits in twenty-first-century education. However, as much as teachers try to emulate the facilitator's role, there is still a tendency for them to take control of the lesson, perhaps so that the desired outcome of the lesson is achieved. This is perhaps the consequence of the overt significance placed on pen-and-paper-based examination results, deeming the *process* of learning secondary, and also often in tertiary, level education. The situation is exacerbated in the Asian setting where Asian students generally have high regard for authorities (Xu & Carless, 2017), so much so that the content of the speech delivered by teachers is often regarded as universal truths. In many cases, when conflicting evidence is presented by students and there are difficulties in resolving them, teachers are included as a move to seek affirmation (Hewings, 2012). This observation cements the perception of learners' difficulties in becoming autonomous in their learning journey (Mısır et al., 2018).

It is wrong to regard all Asians as a monolithic ethnicity as there are over 4.6 billion people that can be categorised as Asian. The geographic span of China accounts for more than 30% of the Asian population compared with Brunei Darussalam contributing to only 0.01% of the population. Therefore, the current study should be interpreted as a bridge towards attaining an inclusive perspective, rather than a contrasting one, on the use of the internet in promoting the growth of engaging and meaningful Asian learner experiences.

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Fortunately, in a technology-driven learning environment, norms of learning are constantly negotiated. Lee (2015) claimed that non-traditional platforms for learning such as blogs can be used to develop authority and authorship. In addition, Wu and Miller (2020) found that peer pressure within the online learning context is beneficial as students feel the need to meet the expectations of their peers. This drives the students to be strategic and thoughtful in their online contributions. After all, new generations of students entering universities today are often described as digital natives (Prensky, 2001). It then follows, e-learning technologies such as online management systems like Canvas can act as a quasi-academic platform to breed the next generation of studentship who are able to assume proactive roles in their own digital learning. Generally, previous studies have reported favourably towards the use of online learning as an additional source of interaction channel between learners and the educators, as well as their peers (Hew & Cheung, 2014; Wu, 2018), also between the learners and the content knowledge, and its importance (Jung, 2001). Therefore, the current research further investigates interactions in the e-learning platform, Canvas, to map the variables that contribute towards quality discussions that promote engagement and meaningful online learning.

1.2 Framework for Analysis

The framework chosen for the analysis in this study is Garrison's Model of self-directed learning (SDL) (1997). This model is comprehensive in order to explain the phenomenon observed in the data collected. There are three dimensions to this model, which are self-management, self-monitoring and motivation. Each of these dimensions constitutes several variables, as demonstrated in the visual adaptation of Garrison's Model of SDL (1997) in Fig. 1:

Engaging and meaningful learner experience is key to the academic success of students as it brings about purposeful knowledge applications and enhancement of learner autonomy in their learning process. Hence, the objective of the current study is to apply Garrison's Model of SDL to Canvas discussions in order to account for variables found in interactions between learners. We then use this model in order to investigate: *To what extent can Garrison's SDL model encourage engaging and meaningful learning on Canvas discussions?*

2 Case Study

2.1 Participants

The participants were 30 final year undergraduates on the Professional Communications and the Media programme at the University of Brunei Darussalam (officially
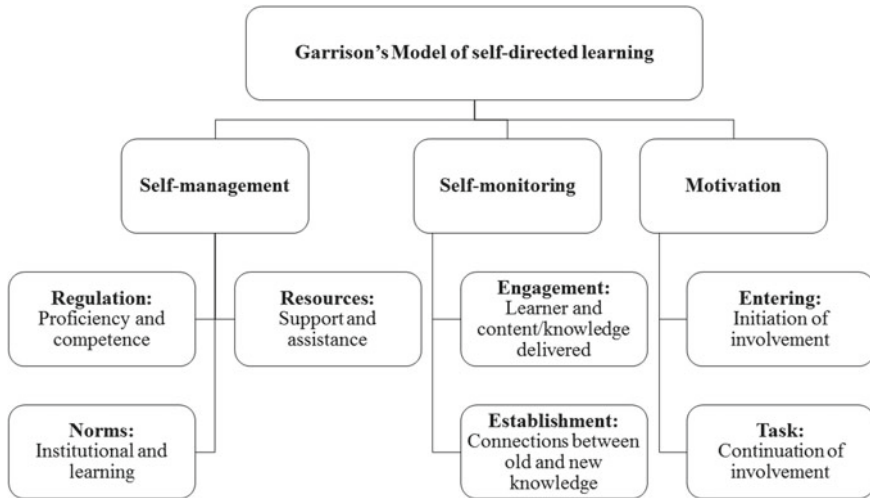
Fig. 1 Adaptation of Garrison's model of self-directed learning (1997)

named as Universiti Brunei Darussalam). As an entry requirement for university-level study, all the participants had to obtain at least a C6 grade (O-level *pass* grade) in their Cambridge GCE English O Level examination, or equivalent (an IELTS score of 6.0 or a TOEFL minimum overall score of 550), to enter the university. Due to this entry requirement, and that the participants are in their final year as undergraduates, they are assumed to have adequate specialised knowledge and skills in their major disciplinary field and a reasonably good level of proficiency in English to take part in most discussions.

2.2 Task Description

In one of the final year courses that the students had the option to take as part of the major requirements (AC-4303: Film Studies), Canvas discussion was a voluntary additional activity that the students can participate in. The instructor of this course posted weekly instructions on Canvas and allowed students to discuss the topic for one week. The weekly instruction to the students was similar: 'To take part, for Week 1 you are expected to post ONE discussion post, and leave at least ONE comment on your peer's discussion post'. Then, students were informed that they were expected to post more on a weekly basis (i.e. at least two comments in Week 2, at least seven comments in Week 7). The rationale for the increase in comments was to push the students to interact more with the other participants over the length of the course. In order to create space for learners to express themselves freely, there were no specific instructions on what exactly the participants should include in their discussion posts.

Students are all familiar with Canvas as it is the e-learning platform that the university subscribes to and all students must use during their university programmes.

2.3   Data Collection and Analysis

226 posts were received throughout the period of the study: 96 discussions and 130 comments. Extracts of the discussions are included in this case study verbatim, where both language and contents were left unaltered. Each of the comments found on Canvas was allocated numbers (#1 to #130) to ease the process of cross-checking the content during data analysis. Names and identifying features were removed from the dataset, and were replaced with ANON (for anonymous) to ensure the participants' and their referents' anonymity.

   Textual analysis was performed on all discussion and comment posts to identify if they matched with the three dimensions and the subsequent variables of Garrison's Model of SDL.

3   Results

In reality, these dimensions are intertwined and it is not always possible to have a divisive perspective, as is presented in this case study. It is important to remember, however, that we should be able to identify all three dimensions in order to demonstrate that the aims of encouraging self-directed learning are accomplished.

3.1   Dimension 1: Self-Management

There were five types of textual indicators that reflect the dimension of self-management in the dataset. First, the acknowledgement of content, or lack of, on the subject matter as a form of the conscious regulation of a learner's proficiency. It was found that learners use Canvas as a platform to explain the relevant concepts to others, and this is often subsequent to a discussion contribution that was seen as incorrect, for instance:

> *ID is related to primal desires that breaks all boundaries for a need and the need to protect that need, somehow I'm not too sure if it's really a primal desire to actually 'run from shame'. Something to give thought about.* (#73)

The learner who supplied #73 was emulating an authoritative, teacher's role and demonstrated the process of regulating his/her knowledge level in order to provide the required assistance in the comment section.

Second, the recognition of competence was also demonstrated in the dataset when the comment provider added value to the current discussion:

> *In addition, I'd like to add that the location of this film was in France (from the newspaper). By hearing France, people automatically thinks it is a romantic country and people would relate France with Paris, which is the city of love.* (#3).

In many instances, this was found when the comment providers agree with what is being included in the discussion post, and that the content does not require correction. Instead of simply stating that the discussion post was good, additional thoughts and ideas are presented that complement the fellow contributor's train of thought. This demonstrates that the comment provider not only understands the subject matter, but also has the ability to add value to the discussion. Interestingly, what often follows posts that demonstrate the regulation of learner's competence are acceptance of corrections and critiques, appreciation of the contents/perspectives added which further supplies the literature of having respect for authority, where learners largely 'show positive reactions even when their work is critiqued' (Magno, 2010, p. 72). In these cases, however, the person (or persons) in authority are among the learners themselves. The subsequent types of textual indicators are reference resources, which include the more knowledgeable other or online/offline resources outside of the current discussions (resources to support and/or assist in learning). In the current research, support resources carry the connotation of being extra material which adds value to the learning process, such support includes reference to YouTube videos that offer further explanation of a concept, research papers that provide empirical evidence and demonstrations of application of theories learnt. These kinds of resources are essentially learner-obtained, and they are very likely to be different between learners. In the dataset, it was found that some learners provided a link or links in the discussion that his/her peer may not have access to had he/she not provide it:

> *Well that is what I've found through my readings and if you want to read more of it please check this link*
>
> https://www.theatlantic.com/entertainment/archive/2013/11/what-really-makes-a-film-feminist/281402/. (#12)

Assisted resources, on the other hand, carry the connotation of having been given or provided by another, and thus in the current study the assist resources will refer to materials provided by the more knowledgeable other (i.e. lecture notes from tutors, mentorship advice from senior students). It should be emphasised that such distinction (i.e. support and assist) may not be seamlessly done in reality, but it is worth distinguishing them for research purposes. In the dataset, references to a class previously attended: *I think your idea…is totally different from what we learned in class…* (#69), and to a more knowledgeable other: *I remember ANON telling us that mise en scene only includes these three. You don't really see sound or the lighting equipment, so that is my understanding* (#107) were found. These resources are seemingly available to the learners partaking in the discussions as the pronouns 'we' and 'us' were used, respectively. In such cases, the resources are provided to the learners, and all learners would have the same access to them. This contrasts with the

support resources discussed earlier. Assisted resources are probably used to establish some form of authority prior to assuming the responsibility in correcting peers, with the use of explicit reference to the 'reality' that happened in class. In fact, the action of referring to the class can be interpreted as a move to seek affirmation of 'new' application or direction taken by the discussion post's contributor. This serves as an establishment and differentiation between truths and non-truths. The move of seeking affirmation is consistent with Hewings' (2012) findings that such move is used 'to strengthen a claim by linking it to a wider group such as teachers, thus giving greater authority to anecdotal evidence' (p. 191). Perhaps the participants were not entirely comfortable in correcting their peers, or were unsure of whether or not the new application would be acceptable. Irrespective of the motivation that leads to the employment of assisted resources, the resource is certainly accessible to all learners should they see the need to resort to it.

The fifth and final type of textual indicator found for the self-management dimension was the demonstration of norms in the learning environment. Supposedly the learning process takes place online, such as the case from which the dataset was collected, and the expectations would be included in the instructions provided at the beginning of each task. The expectations for this particular dataset were twofold, increase in the rate of interactions and provision of comments on posts by others week by week. Learners were free to choose the nature of their interactive practices. One of the most common practice is the critique of discussion content:

> *I liked your explanation of queer theory … However, I felt that referring to Alex as a lesbian did not seemed accurate since it is also entirely plausible that she is bisexual or pansexual … or whatever it is that this fictional character may have chosen to identify with, if anything at all*. (#13)

In reference to #13, the comment provider critiqued the lack of accuracy of the discussion post. This practice is often followed by suggesting other possible conclusions. The practices of providing valuable critique and adding values to the discussion (use of support and assist resources) are some of the norms expected in a learning process. These practices are authoritative traits and hence it was consistent with what Bloch (2007) found when examining blogs: that they inculcate authoritative characteristics in learners.

3.2 Dimension 2: Self-Monitoring

This dimension was found to be represented by two types of textual indicators. First, textual indicators that demonstrate the engagement of learners with the content delivered. A common feature is the reiteration of theories or concepts learned: *I surely can understand fully the film you analyse…* (#43), and its subsequent application for others to evaluate. This is seen to be a bold practice as the learners are basically allowing others to criticise them openly, both in interpretation and application. This practice allows learners to monitor their progress of learning, hence exercising their

autonomy in the learning process. The learners may have received assistance in their initiation of knowledge application from their peers, but they chose to take charge of their learning after receiving sufficient knowledge to initiate their knowledge application. The learners are taking that risk, despite the fact that there is still a possibility that their interpretation of their knowledge may be wrong.

The second type of textual indicator establishes connections between knowledge. Learners may start their post by clearly acknowledging a new application of a certain concept or theory after enlightenment presumably found in a discussion post by their peer: *Now that you've mentioned it, I think this could also be related to…*   (#111). This is a conscious process of development in the learner. In such a case, the comment post altered thoughts previously established. Normally, in a four-walled classroom there is not enough time for learners to react and thus recalibrate their learning, which demonstrates the interactive significance of online platforms for quality learning (Roulston & Halpin, 2020).

New applications of knowledge can also come in the form of criticism for other's work: *As for your opinion in regards to the editing being sloppy…I believe the editing style suits it as it is…*   (#114). Often, such a comment provider does not just argue against the discussion provider, but also supplies evidence to prove his/her point that would hopefully make the latter change his/her mind about his/her conclusion. This certainly is a beneficial practice that can be afforded in online interactions as an additional resource to learning (Picciano, 2019). We could even argue that learners could go through this lengthy process of proving his/her case due to the nature of online learning where there are no restrictions in time, space or even cultural expectations (e.g. politeness).

There were instances where old–new knowledge connections were polished when a learner tries to clarify his/her position in the discussion: *…but what I am trying to say is that…*   (#47). The clarification of ideas and position is usually the outcome of two situations, first after a discussion post was seen to have reached a conclusion that may not have been what was intended, or second, when part(s) of the discussion was unclear and the comment providers seek clarifications on quoted extracts. Either way, the learner will use Canvas to respond to these demands by reiterating their ideas for clarity. This variable is exceptionally important especially as it enhances flexibility, and suggests that learners are not adamant about the absolute correctness of current thoughts or delivery. Evidence supplied so far is certainly in agreement with what was found previously by Jung (2001) where interaction between learners is key in building academic competencies, maintaining social relations and, of course, creating a space for self-growth in the learners themselves.

3.3   Dimension 3: Motivation

Textual indicators for this dimension include positive reinforcements and other encouraging practices by or for other learners to initiate (entering) or sustain (task) the participation in a learning process. Entering motivations have a range of variations of indicators. On one hand, it is from a positive comment on the discussion presented by his/her peers: *That's an interesting perspective…*   (#40)—for contributions that made sense, or is interesting, that it attracts other learners to contribute as well. On the other hand, it stems from the discussion posts that do not make sense, or need further elaboration to reach the learner's expectations: …*could you elaborate further on what you mean by…*   (#60). It appears that the current results correspond with Littlewood and colleague's (1997) findings where comfortable learners lead to quality contributions, as Canvas provides ample space and time for learners to think, plan and construct their contributions prior to providing comments. This leads to an arguably braver approach to learning, which even includes the questioning of peers' contributions.

Perhaps complimenting the discussion post provider would be just as easy to perform online or face-to-face, which explains the abundance of cases for positive reinforcements in the dataset. Learners express appreciation for good quality contributions: *I love how poetic your synopsis is* (#96) and provide elaboration of the agreement: *thanks to your [contribution] I am able to … relate to the film*   (#65). It does seem peculiar that thanking peers for their assistance in improving the understanding of the learner to be categorised as a task motivation. However, such function adds to the gratification factor wherein learners feel appreciated for their effort in supplying a high-quality contribution. The learners are essentially adhering to the expectations of the other learners (Lowenthal & Dunlap, 2020), or, arguably, their own. To demonstrate, when a learner has taken some time to plan, construct and deliver a well-written response, it is undeniable that the learners would expect some form of appreciation for such effort. In truth, the two functions of positive reinforcement and thanking peers are valuable to improve the self-esteem of the learners as they possibly sustain the involvement of the learners throughout the learning process.

4   Pedagogical Principles

Canvas discussion can be an effective tool to distance learners from 'the educator's way' and allow them to assume responsibilities and independence to become self-directed learners. Teachers can consider the following prior to the implementation of online discussions, such as the use of Canvas, as a pedagogical tool.

(a)   *Students' perception of the online platform* : before using the platform, instructors need to briefly introduce the many uses of Canvas to students, with the emphasis that this learning platform is a free space for them to interact with each other. This can be done briefly in the first lecture of a module. This is an

important step as Canvas is most likely seen as an educational management system and not a regular social media platform, thus they may see it only as a pedagogical tool, i.e. formal, restrictive, bound by norms. In reality, those perceptions may be true, but Canvas can also be used by these digital natives to interact with each other in a less formal manner about issues related to their lessons.

(b) *Teacher's preparation of Canvas discussion* : to arrive at a fruitful discussion, teachers need to have a clear content knowledge goal for the specific task, expectations of application for this knowledge, and, perhaps most important, real, meaningful and engaging context to which the content knowledge can be applied to. For example, choose one main content theme to focus on in the weekly discussion, prepare a simple rubric to gauge and guide the quality of the discussion, and include real-life examples as a point of reference. This planning process for Canvas is relatively time-consuming, but is also useful to enable the simultaneous learning of content knowledge and its application. Engaging with peer's discussions on Canvas may simply act as an extra platform for learner interaction and knowledge acquisition or it could even become a form of extra credit for the students.

(c) *Teacher's retrospection of Canvas discussion* : the efficiency of the application of Canvas as a learning platform, as with any other pedagogical tool, will be realised in retrospect. As mentioned above, preparation is key. However, teachers can extend the application of the online discussions by gauging their own performance, the level of engagement of students and how much of the lesson was understood from the online discussions. Such feedback allows teachers to grow as educators, and keep up with the perspectives of new generations of learners. To confirm the results of one's retrospective reflection, instructors may also discuss with students or peer instructors on how to improve future Canvas discussion.

This case study has demonstrated that there is a promising potential for online management systems like Canvas when used as a platform to exercise self-directed learning, in accordance with the three dimensions in Garrison's (1997) Model of SDL. In the final years of their university, students are getting ready to enter the workforce and become part of a community of practice, such online platforms allow the honing of traits for the development of independence, accountability and authority in specialised knowledge applications.

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Chapter 13
Case Study 8, Bangladesh: Ubiquitous Learning Through Technology—A Bangladeshi Story

Muhammed Shahriar Haque and Md. Masudul Hasan

1 Background

The increasing use of technology in language education has necessitated the integration of technology in the pre-university English language classroom in Bangladesh, particularly through the nine-year English in Action project that began in 2008 (see Chowdhury & Kabir, 2014). With the government's desire to achieve digital Bangladesh by 2021, generally, more emphasis has recently been put on technological development. Private universities, in particular, seemed to have embraced this trend. In the last few years, several independent researchers (see Iftakhar, 2016; Islam, 2019; Rabbi et al., 2017) have explored English language learning and teaching through technology at private universities in the tertiary level. The increase of technology-based research in these universities could be due to a number of things that happened simultaneously. In 2009, the University Grants Commission (UGC) of Bangladesh initiated the Higher Education Quality Enhancement Project (HEQEP), followed by the Institutional Quality Assurance Cell (IQAC) project. At the same time, the number of English language teaching/learning conferences increased, particularly in Dhaka where the British Council and The American Center were involved. One of the common sub-themes in these conferences was technology-enhanced language learning/teaching. In 2017, the Bangladesh English Language Teachers Association (BELTA) organized a conference titled 'The Use of Technology in ELT.' In addition, and at the same time, English language teachers started using Facebook and podcasts, and subsequently Google Classroom as a part of a blended learning approach to help their students learn English. Furthermore, some universities started offering

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'Computer Assisted Language Learning/Teaching' (CALL/CALT) and 'Information Technology for Language Teaching' courses. All of these things happened in the last decade or so. Consequently, tertiary English language teachers have made concerted efforts to make use of different types of technology, such as Learning Management System (LMS), Facebook, blogs, forums, and discussion boards to facilitate the teaching/learning of English.

This shift to using technology contrasts with the early days of private universities in Bangladesh: the situation of learning English was quite different fifteen years ago. Teachers tended to use the Grammar Translation Method (GTM) to teach English (Farooqui, 2007) with a focus on teacher-fronted explanations and little to no student engagement. However, over the last decade and a half, there has been a shift in English language learning and teaching approaches, particularly spearheaded by the advancement in technology. Contrary to the sophisticated adoption of technology in classrooms in developed countries, *the trend of learning the English language through technology has only emerged in Bangladesh in the past few years* (e.g., Haque & Akhter, 2014; Parvin & Salam, 2015).

In Bangladesh, university teachers have started using Google Classroom as a Learning Management System (LMS) to facilitate English language learning. Google Classroom has potential in a developing country like Bangladesh for its ubiquitous features and because Google Classroom can create a platform for educators to create and teach various courses via this innovative tool (see Alim et al., 2019; Heggart & Yoo, 2018; Muthmainnah, 2019). Unlike *most of the previous studies that looked at pre-university English language learning through technology or focused on one skill (e.g., listening or writing) at a time in tertiary-level English learning through technology, this case study explores the use of Google Classroom in learning three language skills (listening, speaking, and writing) in a university English course.* The objective of this case study is to explore whether it is possible to use Google Classroom with university students who are basically 'technopeasants' to learn and be taught English language skills, on the go. The expression technopeasant may have several meanings as explained through an anecdote by Carter (2010, p. 1):

> "A comedian once performed a skit during which he referred to himself as a 'technopeasant.' Technopeasant is a neologism used to describe individuals who lack knowledge about computers, are unwilling to use computers, and/or are resistant to keeping up with rapidly advancing technology."

In the context of this study, we perceive technopeasants to be young adult students who did not have much knowledge about computers or experience of e-learning.

The case study is based on Bangla/Bengali medium learners who mostly come from semirural locations and have never been taught foreign language skills by means of technology through ubiquitous learning. The mobile device is an integral part of ubiquitous language learning that has the potential of leading to student autonomy (see Wu, 2019; Wu & Miller, 2019). This study is mainly inspired by the connectivist learning theory (Downes, 2008; Siemens, 2006) which suggests that learning resides in networked connection, and people learn through connecting with the ubiquitous network. Moreover, connectivism provides learners "to exploit the affordance of

Web 2.0 and to facilitate personal choices, participation, collaboration, and creating production" (McLoughlin & Lee, 2008, p. 51). Besides, connectivist learning theory elaborates the nature of learning in the virtual environment as a process of making connections with people, networks, resources, and enhancing networks of personal knowledge mediated by ubiquitous technology (Downes, 2008, 2010; Siemens, 2005, 2006).

2   Case Study

This study adopts a quantitative paradigm to understand the phenomenon of English language learning through Google Classroom. This case study explores whether it is possible for a particular group of private university students, who are technopeasants, to develop their English language skills 'on the go' through technology in a developing country like Bangladesh. More specifically, this study seeks to answer the following research question: *What are students' and course teacher's perceptions of English language learning through Google Classroom?*

2.1   Participants

The participants of this study are 29 first-semester English major undergraduates at a private university in Bangladesh and the course instructor; their first language is Bangla. The reasons for students choosing to attend this particular private university are: it is near to their homes ($n = 11$); it is affordable in comparison to other private universities ($n = 10$); they heard good things about this institution ($n = 8$).

The age of the students ranged from 17 to 25, and the instructor's age is 37. Overall, female participants seemed to be younger as fifteen of them fall into the 17–20 age range as opposed to seven males in this category. Only two males fell into the 21–25 age range in comparison to five females. Since the majority of students were female, their actual age could not be asked due to cultural factors, and thus they have been categorized in terms of range. All the students had attempted to gain admission into public universities, as these are state-funded institutions that provide literally free education. However, most of the students either did not get their preferred majors or did not qualify in the admission tests. All the participants studied English language as a compulsory subject for 12–15 years (i.e. from nursery to class 12), beginning from pre-school education until tertiary level. Even though the participants engaged private tutors or attended coaching centers to study English during their pre-university education, their proficiency levels were quite poor (Approximately IELTS band score 4.5–5.0). The reason for this is that students in Bangladesh take help from professional private coaching not to enhance their English language skill, but rather to produce good results in their Secondary School Certificate (SSC) and Higher Secondary School Certificate (HSC) examinations. Good results in SSC and HSC are needed in

order to be able to sit for admission tests in public and private universities. Admission tests are considered as critical in Bangladesh in order to get places in universities. Though all the 29 participants each own a smartphone with Internet connection, they were not tech-savvy enough to enroll in any online and/or blended learning courses. Therefore, for the present study, all the participants were provided with the necessary briefing and training to register and complete *ENG 100: English Language Lab* (an English department course), by means of Google Classroom. Participants of the study came from various rural locations around Dhaka, Bangladesh. Dhaka, apart from being the bustling metropolitan capital with a population of over 21 million people, is also the best place for higher education and employment in this country. The instructor holds a doctoral degree in computer-assisted language learning and is active in this research field.

2.2   Project Description

This project focused on using Google Classroom to teach 29 participants who took *ENG 100: English Language Lab* (ENG 100) during Spring-2019 semester in a private university in Dhaka, Bangladesh. Originally, *ENG 100* was taught in a traditional language lab in a face-to-face teaching/learning environment. One of the most telling problems in such a circumstance is the lack of communication with students during unpredictable political turmoil (e.g. political strikes). In such a situation, it was not possible to stay in touch with students, and this affected their homework, classwork, exams, quizzes, and so on; in other words, the entire academic calendar is often disrupted.

To overcome these problems in the traditional face-to-face learning and teaching contexts, Google Classroom was adopted in this university for four major reasons. Firstly, Google Classroom has been found useful in improving the learning process particularly because of the ubiquitous affordances (see Heggart & Yoo, 2018). Secondly, learners can be better motivated by learning in a networked community, which is in conjunction with the connectivist learning theory (see Downes, 2008; Siemens, 2006). Thirdly, Google Classroom enables learners the best to both learning environments: virtual and blended learning. Fourthly, Google Classroom is easy to use and enables us to execute the aims and objectives of the course, that is, to develop student's oral communication skills, as well as their listening and writing skills.

The overall learning goal is to make students more comfortable and proficient in using English as a foreign language primarily for academic purposes, and subsequently for employment purposes. The first introduction to the course *ENG 100* was in the real classroom where all the students were present. The first task was already uploaded on the Google Classroom platform. The first response from one of the students was posted two days after the lesson (see Snapshot 1):

The overall objective of this course was explained, and the purposes of learning the three English language skills with Google Classroom were highlighted. Students
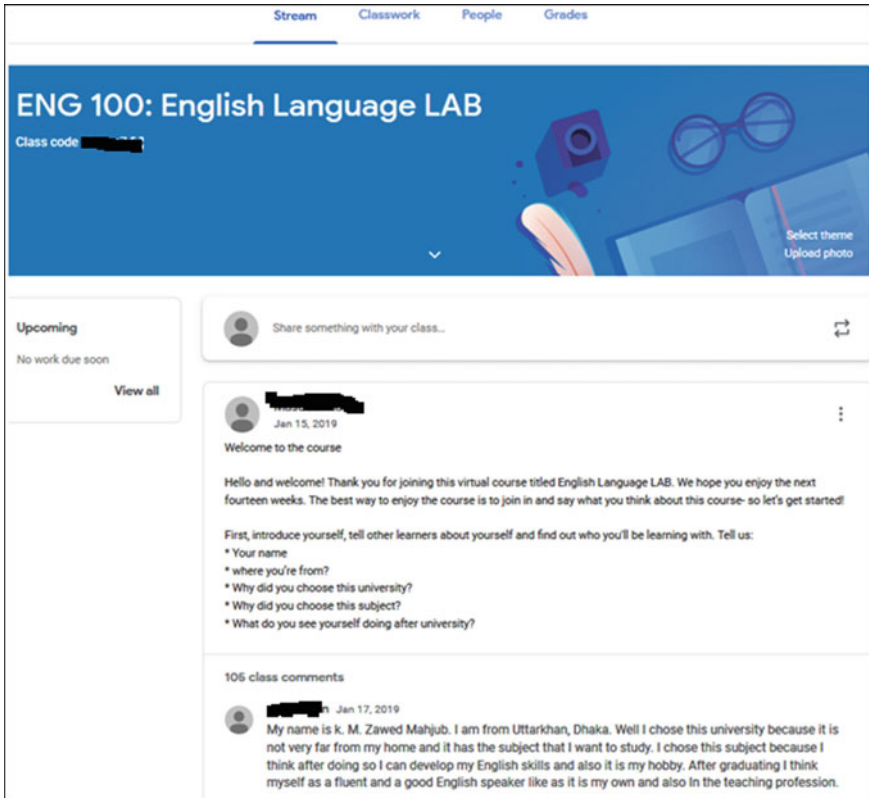
Snapshot 1 First response of the first task

were told that learning materials will comprise podcasts, YouTube video links, vocabulary.com, VOA (Voice of America) learning English website, IELTS listening and writing materials, and songs with clear audible lyrics. For instance, a task from IELTS writing module was posted on Google Classroom and the students were instructed to respond within 150 words (see Snapshot 2):

The golden rule of doing well in this course was to meet deadlines as specified in the instructions. The students who face problems have the option of meeting the instructor face-to-face or calling him. After the completion of each task, the face-to-face feedback was mostly given on the university premises.

Assessment is an indiscernible part of a course like this. To the individual tasks based on listening, speaking and writing skills, of the 29 participants, as well as the overall course, various types of rubrics were used. For assessing IELTS speaking, listening, and writing tasks, IELTS band descriptors (public version) were used. In general, for speaking/presentation, criteria like language (accuracy, appropriacy, vocabulary), paralanguage (gesture, posture, pronunciation, articulation, enunciation, voice projection, eye contact, etc.), content, honorifics, time management,

Apr 3, 2019
Name:
Id : 02
Topic: In some countries young people are encouraged to work or travel for a year between finishing high school and starting university studies.

So many people have so many opinion about this very topic. Well, I do agree about encouraging young people to work or travel taking a year off to experince life. Because in this way they can learn more about life and they will get the idea about what is actually good for them. This will prepare the students for higher education. In the school students are no fully matured. Even some remain childish in thinking and behaviour. So to gain knowledge one should travel or do a job so that he/she can gain knowledge about the world and about people. Working at a office or small shop will teach the students to understand working pressure, cooperation with co-workers and complete the task in schedule. Travelling or doing a job will later on prove to be valuable experience in university level.

Finally, it gives the chance to improve communication skill. Communication skill is very important in job sector also in learning sector. And travelling broadens our mind and makes a person share views with others. Exchanging opinions enriches ones speaking ability.

So, it is clear that pre university jobs and travelling are vital experiences. These prepares us to face real life and also helps us to communicate better.

Snapshot 2 Task from IELTS writing module

were all part of the rubrics. For general listening tasks, the following features were included in the rubrics: vocabulary recognition (synonyms, antonyms), paraphrasing, predicting, activation of prior knowledge or schema, listening for main ideas, listening for details, and listening and making inferences. Finally, for assessing various writing tasks, language (accuracy, appropriacy, vocabulary), structure, punctuation, coherence, cohesion, clarity, topic, context, idea, originality, and so forth were included in the rubrics.

2.3 Data Collection and Analysis

Our research questions particularly sought to explore students' and the course instructor's perceptions of English language learning through Google Classroom. Therefore, data from students was gathered throughout the semester, more specifically in three stages. At the very outset, their demographic information was gathered, as this would help to explain and elaborate their learning perception through technology. While students were doing the Google Classroom tasks, a record was kept of all the discussions with the course instructor. At the end of the semester, focus-group interviews were conducted to get more insight into the learning experiences of the students. The data to understand the teacher's perception was also gathered throughout the semester. He kept specific logs (audio and written) of all his interactions with individual students. He also kept notes of class discussions and in-class-pep-talks regarding the Google Classroom tasks that were given to students.

A personal journal was also maintained by the teacher to record his challenges of conducting a course like *ENG 100*, opinions regarding course contents, activities, advice that was or was not given to students, the obstacles that he had to overcome, and so forth.

Date analysis was a nitty-gritty affair. In order to systematize and analyze the basic data, a thematic analysis approach was used (Judger, 2016; Maguire & Delahunt, 2017). Based on this approach the following stages were conceptualized:

- Familiarizing ourselves with the students' and teacher's data
- Transcribing all the data
- Manual coding was employed
- Theme identification
- Theme recategorization
- Report production.

Among the themes that emerged, related to students' use of the Google Classroom to learn English were: motivation, technology challenged, poor economic condition, self-reflection, optimism, and learner autonomy. The pertinent themes that could be considered in order to understand the teacher's perception of conducting a blended course like *ENG 100* are as follows: motivation, autonomy, time-management skills, and coping with course overload. Based on the important themes connected with students' and teacher's perceptions that emerged, the connectivist learning theory was used to explain how learning takes place in ubiquitous settings/situations through a networked learning environment. In other words, how people learned independently through a blended learning platform. In this case, the ubiquitous settings/situations could be from anywhere where the students had access to Google Classroom.

2.4 Results

The section starts with data gathered from the focus-group interview discussions on Google Classroom and an online questionnaire regarding their demographics. Furthermore, the instructor's perceptions and opinions of learning and teaching *ENG 100* to 29 technopeasant participants through Google Classroom are also discussed.

During the focus-group interview discussions, participants' perception toward the use of Google Classroom was mostly positive, despite the fact this approach was new to them. Students mentioned that their experience of learning through this new technology was enjoyable, as it was user-friendly, and they had no problems navigating through the course content. This was the overall sentiment. One participant specifically mentioned that: *the instructional design of Google Classroom was similar to Facebook, and that is why it was not that difficult to follow and navigate the course contents on this platform* (St1). Furthermore, other reasons for enjoying this new approach was that they were connected with everyone through the virtual classroom, which transcended their physical classroom. This virtual platform enabled them to

complete tasks, assignments, and quizzes on the go from anywhere. Furthermore, if they encountered any learning difficulties, they were able to engage with their peers. The peer support and feedback from the instructor played a significant role in their learning process, and they were able to complete all of their tasks on time. This finding seems to support Iftakhar (2016), who claims that Google Classroom enhances interaction among the teachers and learners.

All 29 participants mentioned that they preferred this blended learning format where they met their classmates and instructor twice a week in the physical classroom and spent the rest of the week in the virtual classroom. However, some participants encountered a few obstacles. One of the sentiments expressed by various students was that it was difficult and irritating for them to read materials on their smartphone while traveling. Since most students did not possess laptops or tablets, they felt that the small screen of their phones was difficult to read especially when traveling on busses over bumpy roads. One of the students particularly referred to this when she mentioned: "Reading course contents through mobile phone is sometimes frustrating, especially when I travel" (St5). Sometimes, a few of the participants did not comment on posts, as they felt insecure regarding their English language accuracy. Overall, the participants were able to learn the three English language skills (listening, speaking, writing), and complete the assigned tasks in ubiquitous situations, particularly the listening and speaking activities. The students who did not possess a laptop or tablet faced problems completing the writing tasks on their cell phones while traveling on buses. They had to do those tasks either at home or in the computer lab at the university. Sometimes, they also encountered difficulties due to slow or no internet coverage while traveling to and from the campus and their homes in the countryside. Furthermore, some said that they did not always receive timely reply/feedback from the course instructor. Due to course overload, the instructor admitted that sometimes he was late in replying to participants' queries or giving feedback. He lamented that in general, administrators in Bangladesh still do not have a comprehensive idea regarding the amount of work and time involved in conducting online and/or blended learning courses. If they knew, they would reduce the overall course load of online/blended learning course instructors. Furthermore, the instructor said that due to course overload, he was unable to plan appropriate activities for all the three skills that were taught through Google Classroom. Consequently, spoken English activities were not as effective as listening and writing activities.

The instructor's perception of how these 29 technopeasant students learnt the three English language skills taught in *ENG 100* through Google Classroom is quite significant. The greatest benefit for him is teacher autonomy. He can develop course content and upload them, check assignments, give his feedback, and monitor students in a more comprehensive manner either in his office or at home. Autonomy over teaching and or learning seems to be a major feature of Google Classroom and is a feature commonly referred to by both teachers and students.

Engagement in their learning was another feature noted by the teacher and students. As some of the students came from very conservative families they found it difficult to express themselves in face-to-face learning situations, shy students also found such communication difficult. However, on the Google Classroom platform

both groups (those from conservative families and shy students) seemed to lose their inhibition, became quite responsive, and participated actively with other students and the instructor. For instance, the teacher noted that one student who covers herself from head to toe, including gloves and netting to cover the eyes, hardly ever volunteers to answer questions in class. However, this same student became quite active on the Google Classroom platform. When asked, why she felt more liberated on the virtual platform, she replied: "I generally do not like to express my thoughts in public in my class, and only like to listen to other people. However, on Google Classroom I felt that no one looks at or stares at me. I do not feel shy. I can take my time to think and come up with a relevant response" (St9). This was a major benefit for the instructor. This student's experience was matched by other such female students who came from very conservative families. It is usually difficult for teachers to get these students to open up and respond to classroom questions or interactions.

Iftakhar's (2016) study in Bangladeshi institution of higher learning supports the fact that participants become more responsive on the virtual platforms: "Google Classroom features enable him and his learners to have better interaction" (p 15). On the downside, the online platform of Google Classroom proved to be a cultural shock for a few participants, as they were used to being taught through the traditional chalk and talk approach. However, over time they too adapted to the new virtual platform.

3 Pedagogical Principles

This case study endeavored to explore whether it is possible for university students, in a developing country like Bangladesh, who are characterized as technopeasants, to learn English language skills on the go through Google Classroom. Based on the case study the following pedagogical principles are suggested.

(a) *Participants' Background* : the participants of this case study cannot be generalized with students of public universities or other private universities. The demographics of these participants must be considered when offering a blended learning course. If participants are technopeasants, appropriate training should be provided before commencing a course.

(b) *Instructor's efficacy* : instructor's ability to foresee the outcome and anticipate impending untoward problems is significant. Based on the findings, it seems that the activities for speaking skill need to be fine-tuned in order for it to be taught through Google Classroom. Teaching course load for instructors offering blended learning courses should be reduced, as they need time at the institution for face-to-face teaching, as well as at home on the virtual platform for their learners.

In general, it may be said that participants of this case study felt that Google Classroom combined with face-to-face learning was a new concept for them, and took some time to adapt to; however, this blended learning format has potential for

teaching/learning English. The instructor feels that a blended learning approach has promise as it leads to learners' autonomy, and increases participation of conservative and shy students on the virtual platform; though it needs additional time management and training of staff, and the necessary resource facilities along with technical support should be made available.

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Chapter 14
Case Study 9, Japan: Influence of Tasks on Student's Interaction and Learning in a Telecollaboration Project Between Japan and Spain

Lluís Valls Campà and Juan Manuel Díaz Ayuga

1 Background

As the contact between people of different countries has increased for business, tourism, and studying abroad, the promotion of the intercultural communicative competence (ICC) of students, which is their "ability to understand and relate to people from other countries" (Byram, 1997, p. 5), has become an important objective of foreign language teaching. In Japan, a country with a relatively homogeneous culture and little foreign population, since 2014 the Ministry of Education has carried out the Top Global University Project, which supports selected universities to reinforce their international competitiveness and "to develop human resources with a global mindset, who are tolerant and accepting of different cultures, who can contribute to solving global problems and opening up a bright future, [and] who can play a leading role in international society" (MEXT, 2019). To achieve its objectives, however, this program does not take into account the possibilities of online exchanges, focusing on the physical mobility of students and academic staff and the establishment of joint educational programs. In addition, because of the aging of Japanese society and the increasing problem of a workforce shortage, in 2018 the government eased the admission of unskilled workers into Japan (Cabinet of the Government, 2018). All these measures have increased the situations in which Japanese and people from other countries must cooperate and integrate into the same community. Because of this, Japanese universities, especially those with faculties of foreign studies, like our university, should not only help students learn a foreign

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language but also play an important role in promoting their students' ICC and produce people able to become intercultural mediators.

In this case study, we discuss a telecollaboration project between students in Japan and Spain that we carried out because the few opportunities that our students have to interact with Spanish are a handicap for the development of their ICC and competence in Spanish. This was the first experience for both teachers and students. Telecollaboration here is defined as "the engagement of groups of students in online intercultural interaction and collaboration with partner classes from other cultural contexts or geographical locations under the guidance of educators and/or expert facilitators" (Lewis & O'Dowd, 2016, p. 3). However, research has found that "missed opportunities for communication" (Ware, 2005), or "limited student contribution" (Hew & Cheung, 2012), which consists of few interactions and superficial reflection in forum discussions, is a frequent outcome of telecollaborations.

The goals of our action research study are to know the degree of interaction between students and the depth of reflection in the forum discussions of our project, to understand how tasks affected both, and to think out some measures in order to improve future telecollaborations in which Japanese students participate. Our key research question is: *How do the features of pedagogical tasks affect Japanese students' performance when discussing intercultural topics with Spanish students in online forums?*

2 Case Study

2.1 Participants

Participants in Spain consisted of twenty-seven Spanish learners of Japanese of different ages (17–50 years old) and occupations (high-school and university students, and workers), studying in a Japanese Cultural Center associated with a public university. They voluntarily participated in the project, along with two teachers: one Spanish and one Japanese. Participants in Japan were thirty-four Japanese undergraduate students of Hispanic Studies (20–21 years old), and two native Spanish teachers, who, on the one hand, designed and monitored the exchange, and, on the other, participated occasionally in the online forums to foster interaction when it was observed that participants were reluctant to start or continue the conversations. Although participants were divided into six binational forum groups, we will only analyze one group, formed by 11 students (seven Japanese and four Spanish), and focus on explaining the behavior of our seven Japanese students. Among them, JMu, JKo, and JMa were the most proficient students, with a B1 level in Spanish (according to the CEFR), followed by JMh, with an A2+ level, and by JKy, JKa, and JA, with an A2 level. While most of them had never been to any Spanish-speaking country, JMu and JMh, had spent six months in a Mexican university, whereas JMa

had taken courses in Spain for an academic year. Spanish participants were all beginners in Japanese (approximately an A1 level), and only EP had visited Japan. The participants, ED, EA, and EC, stated that they were learning Japanese as they were interested in different aspects of Japanese culture. Due to Spanish participants' low level in Japanese, the exchange was carried out in Spanish, although Spanish students were encouraged to use Japanese to practice their language skills.

2.2   Project Description

2.2.1   Methodology

Students in Japan were taking a third-grade undergraduate course, *Practice of Spanish.* The course aimed to improve students' level in Spanish toward a B1+ (according to the CEFR), and to develop their ICC. The telecollaboration was a compulsory activity which, according to the course's syllabus, represented 80% of the course's mark and lasted for eleven weeks (April–June 2016). We based it on the *Cultura* model (Furstenberg et al., 2001), because it offered a well-structured methodology that allowed better control of the exchange.

As in *Cultura*, in this project, groups of students from both countries discussed in online asynchronous forums their cultural practices, after comparing similar materials from both cultures. *Cultura* recommends an equal usage of L1 and L2, but Spanish was mostly used in this telecollaboration as students in Spain were beginners in Japanese who had only studied the language for six months, three hours a week.

The exchange was organized into nine units with topics promoting comparison between both cultures: (1) Self-introductions, (2) Image of the other country, (3) Stereotypes in the media, (4) Body language, (5) Reaction to situations, (6) Family, (7) Gender roles, (8) Food, (9) Table manners. Each unit was one week long, except for the first two units, which lasted two weeks each so students could familiarize themselves with the project. There were online and in-class tasks for every unit. This, however, only applied to students in Japan, as the exchange could not be implemented in any course of the center in Spain, because its syllabus mainly focuses on language acquisition. And because its teachers are only paid for hours in class, they could not monitor the exchange, apart from an introductory meeting with participants where they explained the characteristics of the telecollaboration, something they organized voluntarily.

During unit 1, students became familiar with the methodology and *Canvas*, the online platform of the project, and introduced themselves to their partners in one general forum. Units 2–9, however, followed a five-step pattern of online and offline activities. First, guided by a set of instructions (Fig. 1), students had to complete an online pre-discussion task (e.g. fill a questionnaire) (Fig. 2) which would provide them with materials for forum discussions.

Objetivo de la actividad	Reflexionar sobre la imagen que tenemos de nuestra cultura y la cultura del país vecino.

Pasos de la actividad	1. ¿Qué imagen tenemos de la cultura de nuestros compañeros? Completa la siguiente encuesta para descubrirlo (**antes del 29 de abril**):
	 • Si participas desde el Centro Hispano-Japonés, haz clic **aquí**.
	 • Si estudias en KUFS, haz clic **aquí**.
	 2. Observa los resultados de las dos encuestas.
	 3. En el **foro de tu grupo**:
	    a) Explica con qué elementos de la imagen que tienen de nosotros los compañeros del otro país estás de acuerdo y con cuáles no, y por qué.
	    b) Pregunta a tus compañeros por qué piensan de esa manera y da tu opinión sobre sus respuestas.
	    c) Lee sus comentarios sobre la imagen que tenemos de ellos y contesta a sus preguntas.

La actividad finaliza a las 12 de la noche del 8 de mayo en Salamanca (las 7 de la mañana del 9 de mayo en Kioto).   Si queréis, podéis seguir con vuestros diálogos a través del correo de Canvas.

Fig. 1 Instructions to unit 2

Fig. 2 Questionnaire to unit 2

Foros en grupo "Más allá del flamenco y el sushi"   30 de abr de 2016 en 17:05

Juan Manuel Díaz Ayuga

1. Explica con qué elementos de la imagen que tienen de nosotros los compañeros del otro país estás de acuerdo y con cuáles no, y por qué.

2. Pregunta a tus compañeros por qué piensan de esa manera y da tu opinión sobre sus respuestas.

3. Lee sus comentarios sobre la imagen que tenemos de ellos y contesta a sus preguntas.

Fig. 3 Questions for discussion in unit 2

Secondly, students analyzed individually such materials with the help of guiding questions (e.g. "Name which aspects of the image your exchange partners have about your country and culture you agree and disagree with, and explain why") (Fig. 3). They did this as a homework task in order to have enough time to read and reflect on the questions.

Thirdly, divided into six binational groups of 9–11 students, participants discussed the unit topic in online asynchronous forums, and contrasted their individual analysis with the others. The fourth step was devoted to an in-class face-to-face plenary discussion entirely in Spanish, which could only take place among students in Japan. Each class was 90 minutes long, and, in the first half, guided by their Spanish teacher, students expressed what individual conclusions they had drawn from their online discussions and compared their answers with their partners'. During the discussion, the teacher showed relevant data from official information sources (e.g. OECD, Japanese Statistics Bureau) so learners could check their conclusions with reliable information.

Using the information shared in the discussion, students had to arrive orally to some common conclusions. At the end of the discussion, each group of three and four students posted its observations and conclusions from the lesson in a new online forum, available to all participants, so their partners in Spain could react to what they had talked about in class (Fig. 4).

In the second half of the class, students were introduced to the next unit, and undertook pre-task activities which focused on the linguistic and cultural resources they would need to engage in the following individual online discussion in Spanish (Fig. 5).

While Spanish students were not assessed by their teachers, Japanese students, who were taking a credit-bearing course, were evaluated for their involvement in the online forums, on a scale of 0–50 marks, based on the completion of tasks, the level and depth in their analysis, and their competence in written Spanish. In their in-class discussions, also on a scale of 0–50 marks, along with their level in oral Spanish, their ability to understand and draw conclusions from the online interactions was assessed. Both online and offline tasks represented 80% of the course's mark. The remaining 20% was for an oral group presentation of one of the topics studied, where students' abilities to establish contrasts between cultures and to argue using data from the exchange were assessed, on a scale of 0–100 marks.

Fig. 4 Conclusions written by Japanese students

Fig. 5 Pre-task activity for unit 2

2.2.2   Task Content and Task Design

In order to describe task features, a useful concept is task content. One element of task content is the topic. Discussion topics in our project were selected by teachers in both countries together. We did not include highly controversial topics (like religion or politics) because conflicts may hinder the discussions (Helm, 2016; Ware, 2005), but we included gender roles, stereotypes, and the image of the other's country, which are "riskier" than the rest. Furthermore, the interest students have for the topic can affect their performance. A second element is the type of activity required, which can be information exchange, comparison and analysis, and product creation (O'Dowd & Ware, 2009). In our project, tasks focused on the two first types because the third one is more complex and requires high involvement of all parties.

A second concept for characterizing tasks is task design, which is composed by task complexity and task structure (Samuda & Bygate, 2008). Task complexity is affected by many factors, but we only consider the level of abstraction that the discussion requires and the level of difficulty perceived by students. Task structure refers to the organization of instructions and data provided to complete the task. Concrete instructions about what to do and how, concrete prompt questions in the guidelines, and questionnaire results focusing on few issues as material for discussion increases the organization; while looser instructions and more open questions, and a wide range of materials or issues to analyze reduces organization. Task features in each unit of our project are presented in the Appendix 1.

2.2.3   Data Collection and Analysis

Before starting the project, students had a guidance session on the aims and the methodology of the project, and how to use *Canvas*. Then, they did the online activities and posted in the forums every week following the guidelines of each unit (see Sect. 2.2.1). We collected and analyzed the data after the project ended, proceeding as follows.

First, we conducted a questionnaire on students' evaluation of the project. Data on task interest and difficulty of each unit according to the Japanese students (see Appendix 1) come from this questionnaire.

Second, we did a quantitative analysis of the students' postings in order to examine the degree of participation and interaction between students in each unit. As an indicator of participation, we analyzed the number of postings per student. Regarding interaction, we used two types of indicators. One is the percentage of replies that students of one country did to the postings of the students of the other country. The second one is the length of the threads (chains of postings). If one posting does not receive any reply, the length of the thread is only one post; if one posting receives two replies, or there is a chain post-reply-reply to the reply, the length of the thread is three posts. For the analysis of interaction between students we excluded the postings of threads in which instructors participated, in order to avoid any influence on the results of the interaction between students and instructors.

Third, we did a discourse analysis of all postings' transcripts of each unit in order to evaluate the type of learning associated with each message. Byram (1997) distinguishes between shallow and deep learning in the acquisition of ICC. Shallow learning consists of the uncritical acquisition of knowledge coming from other people, and the learner only repeats it without showing understanding. For example, in the message: "Well, according to the questionnaire results, the Japanese are hard workers, respectful, serious, punctual…" (JKo, Unit 2), the student shows the acquisition of knowledge on the image about Japanese people held by Spanish, but he does not do any analysis. And, in the message: "Hello, EP. What you say is very interesting. Now I see that I had a false image [about Spain] that I got from the media. I thought the employment system was not strict" (JMu, Unit 2), the Japanese student acknowledges having acquired new knowledge from her Spanish partner.

On the other hand, deep learning consists of the learner's active search and critical analysis of new knowledge in order to understand it. Deep learning is shown by the learner's "ability to use ideas in new situations, to relate factual knowledge to an argument, to draw upon logical relationships within frameworks of knowledge, to interpret and come to sound conclusions" (Byram, 1997, p. 95). For example, in the next message, a Japanese student, elaborating on the postings of two other students, suggests a hypothesis to explain the difference in the way of expressing feelings in Spain and Japan:

> *According to ED, the Japanese way of expressing feelings can look like cold or strange to foreigners. Although we feel happiness or sadness (…) we have the tendency to hide our real feeling and do not use much body language. And, as JKo said, we are not used to hugging and kissing. I think that this is because such greetings [skinship] were not introduced into Japan from other cultures until the 19ths century after a long period of isolation (…) (JMa, Unit 6).*

In addition, we include a third category, null learning, which are the postings with contents that do not show any learning related to the project (although their contents may contribute to other students learning). For example, the message: "Hello everybody. I send [the video with] my gestures?" (EP, Unit 4) is just social talk for sending a video. Also, in the message: "I like the atmosphere in this video. Everybody is happy dancing and eating. Do people dance when they have a party?" (JKy, Unit 3), the student just describes what he has seen, without showing any relevant learning.

In order to guarantee the reliability, the two teachers in Japan separately classified the posts according to previously decided criteria (see Appendix 2), reaching a 71.4% of coincidence, and then discussed the classification of posts further until reaching a 100% agreement.

3   Results

3.1   Participation and Interaction in the Forums

Along the project, students did 159 postings, 73 were from Spanish students and 86 from Japanese students. However, the participation of the Japanese students is low, with less than two postings per participant in each unit except in units 3 and 4 (Table 1). Unit 3 stands out for the high number of postings, but this is because, misinterpreting the instructions, Japanese students commented on each video in separate postings.

The results of interaction between students are presented in Table 2. The interaction of the Japanese students with the Spanish students is also low, as shown by

Table 1   Participation (in descending order, according to the number of posts per student)

Spain				Japan			
Unit	Posts	Students*	Posts per student	Unit	Posts	Students*	Posts per student
6	8	2	4	3	28	4	7
4	11	3	3.7	4	8	3	2.7
3	14	4	3.5	2	9	5	1.8
2	11	4	2.7	7	8	5	1.6
5	11	4	2.7	9	9	6	1.5
7	8	3	2.7	6	10	7	1.4
9	6	3	2	5	6	5	1.2
8	4	3	1.3	8	8	7	1.1
Total	73	3.25	2.82	Total	86	5.25	2.29

*Spanish students in the group: four. Japanese students in the group: five (units 2 to 5), seven (units 6 to 9)

Table 2   Interaction per unit (in descending order)*

REPLIES								THREAD LENGTH	
Spain				Japan				Total	
Unit	Replies	Posts	%	Unit	Replies	Posts	%	Unit	Average number of posts
5	8	9	88.9	4	7	8	87.5	4	3.8
6	6	8	75.0	9	5	7	71.4	9	3.25
3	10	14	71.4	6	4	10	40.0	5	3.0
9	4	6	66.7	5	3	6	33.3	6	2.25
4	7	11	63.6	7	2	6	33.3	3	1.86
7	3	6	50.0	3	8	25	32.0	7	1.71
2	5	10	50.0	2	2	7	28.6	2	1.70
8	0	4	0.0	8	0	5	0.0	8	1.0
Total	43	68	63.2	Total	30	74	40.5	Total	2.06

*17 postings of the students in interaction with the instructors are excluded

an average reply of 40.5% to the postings of the Spanish students, while the average reply of Spanish students to the postings of the Japanese students is higher: 63.2%. Besides, the discussions do not develop much through the threads (chains of posts and replies, see Sect. 2.2.3): the total average length of the threads is 2.06 posts, and only three units (4, 9, and 5) have a thread length average of three or more posts. These results showing limited and surface-level online participation are consistent with those reported in similar telecollaboration projects (e.g., Hew & Cheung, 2012; O'Dowd & Ritter, 2006).

There are important differences between the results of different units. Focusing on the percentage of replies from the Japanese students and the average thread length of each unit, we see that the higher level of interaction in units 4 (body language) and 9 (table manners) contrasts with the lower interaction in units 2 (image of the country), 3 (stereotypes in the media), 7 (gender) and 8 (food). One cause of this difference is that the topics of units 4 and 9 are "safer" and more familiar to the students than the topics of units 2, 3, and 7, and were evaluated by students as more interesting. Though O'Dowd (2016) believes that the inclusion of critical discussion themes such as politics may serve better at promoting in-depth discussion and critical thinking in telecollaboration, the current finding reminds educators of the importance of topic familiarity and students' interest in learning. A second cause is the difficulty (according to students) of units 2, 3, and 7, in which Spanish students posted some long and complex messages. In addition, in units 4 and 9 the guidelines explicitly encouraged participants to interact with each other (e.g. "Ask your partner how they behave when eating with other people"), whereas in units 3, 7, and 8 we allowed more flexibility in how participants interpreted the guidelines (e.g. "Explain your opinion. Do you share your partners' opinions?"). Although unit 2 has also concrete guidelines, the lack of familiarity with the project at that early stage probably affected students' interaction. Lack of interaction in unit 8 is due to the fact that it just requires students to present information. Finally, units 5 and 6 present a medium level of interaction. Students reported a medium level of difficulty (unit 6) and interest for these units, topics are not risky, and questionnaire results facilitate discussion; however, guidelines are less concrete about what to ask to other students in the forum.

3.2 Types of Learning in the Forums

The results of the discourse analysis show that only 16.3% of the posts involve deep learning, while 48.4% is shallow, and 35.2% is null. This is one of the most common outcomes in telecollaborations: exchanges of information without reflection (Hew & Cheung, 2012).

The low level of deep learning can be explained, in general, by the scarce percentage of interaction, which reduced the opportunities to develop reflections. However, the reluctance to question others' ideas, which may cause a threat to others' face, also lead to "low-level knowledge construction" (Hew & Cheung, 2012, p. 23).

In addition, due to the proficiency level of the Japanese students, the use of Spanish may also hinder their ability to develop and argue their answers.

However, the distribution of types of learning varies from unit to unit. Table 3 presents the distribution of deep learning in front of shallow and null learning in each unit.

In general, levels of deep learning shown by Japanese students in the various units are lower than those shown by Spanish students; being the only exception of the latter units 9 and 4. This is because most messages posted by Japanese students only superficially describe materials or state an opinion without arguments. Units 9, 6, and 5 show higher levels of deep learning, but only four students (JMu, JKo, JMa, JA) write deep learning messages.

If we focus on Japanese students' performance and their type of learning, we realize that differences between units where they show a higher level of deep learning (9, 6, and 5) and those with a lower level can be explained by the following factors. (1) *Students' familiarity with the topic* : In units 9, 6, and 5, Japanese learners discuss familiar topics (Japanese family, habits, and manners), while in units 7 and 3 they engage in more abstract issues (gender roles and stereotypes). (2) *Task structure*: Unlike units 7 and 3 that include a various range of materials (different topics in the questionnaire, a list of 16 videos), and loose instructions and aims ("discuss," "describe," and "comment"), units 9, 6, and 5 offer learners limited learning materials (one video or subtopic) and instructions are more concrete. Students, thus, may have encountered challenges such as the overburden of pre-telecollaboration reading and loss of directions in discussion, when they attempted to engage in meaningful telecollaborative exchange. (3) *Task type*: Low percentages of deep learning in units 4 and 8 can also be the result of the task type (exchange of information) which does not require any deeper analysis.

4 Pedagogical Principles

Based on this case study of a telecollaborative project, six pedagogical principles are presented:

(a) *Pre-telecollaboration training*: before the exchange starts, students should be instructed in how to interact with their partners, so they may avoid posting long or complex messages, with too many ideas, or unrelated to the rest; and how to analyze and reflect on cultural materials, so they can develop more deep learning posts. For this reason, teachers should explain the differences between deep, shallow, and null learning posts by adopting an exemplar approach (e.g., Carless & Chan, 2017).

(b) *Activities design*: activities should be designed in a way that requires learners to go beyond simple information exchange. In-depth discussion such as reflection about cultural practices or proposal of practical solutions to problems is more constructive to telecollaboration learning.

Table 3 Types of learning per unit (in descending order, according to the percentage of posts)

Deep						Shallow/Null					
Spain			Japan			Spain			Japan		
Unit	Number of posts	%	Unit	Number of posts	%	Unit	Number of posts	%	Unit	Number of posts	%
5	5	45.5	9	2	22.2	9	6	100	8	8	100
6	3	37.5	6	2	20.0	8	4	100	7	8	100
7	3	37.5	5	1	16.7	4	11	100	3	28	100
3	5	35.7	4	1	12.5	2	8	72.7	2	8	88.9
2	3	27.3	2	1	11.1	3	9	64.3	4	7	87.5
4	0	0.0	3	0	0.0	7	5	62.5	5	5	83.3
8	0	0.0	7	0	0.0	6	5	62.5	6	8	80.0
9	0	0.0	8	0	0.0	5	6	54.5	9	7	77.8
Total	19	26.0	Total	7	8.1	Total	54	74.0	Total	79	91.9

(c) *Topic content*: topics that may be controversial should be depersonalized, so students can be confident when discussing them, without the need to reveal their privacy, especially when they may not have enough trust with their partners. Also, with non-controversial topics, teachers should consider the design of questions and guide the discussion toward a meaningful and in-depth direction.

(d) *Task structure*: instructions and pre-discussion materials should focus the topic on one issue, facilitate comparison of data and make explicit the aim of the discussion; they should be concrete and present specific prompt questions, and avoid loose directions and general questions. Prompt questions should appear on the instructions page, not in a separate link.

(e) *Completion deadlines*: to guarantee that students avoid late posting and have enough time to interact, deadlines for completing each task phase should be established.

(f) *Teachers' role* : teachers should intervene in forum discussions in order to recommend students how to interact, to clarify unresolved issues, or to focus students' discussions on the task's objective. In addition, teachers' posts should include prompt questions such as "ask your partners" that will foster interaction among students, instead of a direct answer to the teacher's post.

Globalization and the spreading of online relationships are becoming more prevalent in our lives. Universities have the responsibility of preparing students for this by way of promoting their ICC and critical thinking. However, not all students are comfortable with interacting online in their L2, Japanese university students, in particular, show a low level in this competency. We suggest that developing structured telecollaboration projects, such as described in this case study, is a way forward to empower these learners and help prepare them better for future intercultural communication practices.

Appendices

Appendix 1:　　Characteristics of the online tasks

		Task content		Task design		
				Task complexity		Task structure
Topic	Task type	Topic risk	Topic interest* (0-5)	Difficulty** (0-10)	Topic abstraction	Factors increasing (+) or reducing (-) organization
Unit 1: Self introduction	- To record a video - Information exchange	▼	○ (2.9)	▽ (4.3)	▼	▲ + Concrete instructions + Concrete prompt questions - Prompt questions are in a separated link
Unit 2: Image of the other country	- To answer a questionnaire - Comparison and analysis	△	○ (3.2)	○ (5.2)	○	△ + Concrete instructions + Questionnaire results - Several topics
Unit 3: Stereotypes in the media	- To watch videos - Comparison and analysis	△	○ (2.9)	△ (5.6)	△	▽ + Concrete prompt questions +/- Combination of concrete and loose instructions - Prompt questions are in a separated link - Several videos for analysis - Several topics
Unit 4: Body language	- To record a video - Information exchange	▼	△ (3.5)	○ (5.1)	▼	▲ + Concrete instructions + Concrete prompt questions + Focus on one topic - Prompt questions are in a separated link
Unit 5: Reaction to situations	- To answer a questionnaire - Comparison and analysis	○	○ (3.1)	△ (5.6)	○	△ + Questionnaire results + Focus on one topic +/- Combination of concrete and loose instructions
Unit 6: The family	- To watch a movie - Comparison and analysis	○	○ (3.2)	○ (5.2)	○	○ + Focus on one movie +/- Combination of concrete and open prompt questions - Loose instructions - Long video for analysis
Unit 7: Gender roles	- To answer a questionnaire - Comparison and analysis	△	○ (3.1)	△ (5.9)	△	▽ + Questionnaire results - Loose instructions - Open prompt questions -Several topics
Unit 8: Food	- To explain a recipe - Information exchange	▼	△ (3.4)	○ (4.7)	▼	△ +Focus on one topic +/- Combination of concrete and loose instructions
Unit 9: Table manners	- To watch a video - Comparison and analysis	○	△ (3.3)	○ (5.2)	▽	▲ + Concrete instructions + Concrete prompt questions + Focus on one topic

▲ High; △ Medium-high; ○ Medium; ▽ Medium-low; ▼ Low

* Average of students' responses, on a scale of 0 to 5, to a post-project questionnaire.

** Average of students' responses, on a scale of 0 to 10, to a post-project questionnaire.

Appendix 2: Criteria for the classification of the types of learning in the postings

Shallow Learning

- Repeats what another posting said, or acknowledges that the content of another posting was new knowledge, without any analysis.
- Describes the results of the pre-discussion questionnaire (which is new knowledge about the thinking of the students from both countries) without any analysis.
- Identifies some cultural elements in the pre-discussion materials (videos, movies) without interpreting them.
- Provides some data that the student searched for, but does not make any comment.

- Tries to explain something, but the argument is too poor to show understanding, or presents and opinion without argumentation.

Deep Learning

- Analyzes the contents of other postings.
- Analyzes the results of the pre-discussion questionnaire.
- Analyzes other pre-discussion materials.
- Provides data with comments and/or examples that show an understanding of the cultural implications of the data.
- Relates facts to concepts, or to other facts, with logical arguments in order to construct a hypothesis and/or to support an opinion.

Null Learning

- The message is incomprehensible.
- Makes social talk.
- The provided information is nothing more than common knowledge without showing any learning related to the project.
- Describes what the student has seen in the pre-discussion materials without showing any learning related to the project (e.g., makes a literal description of what he/she has seen in the video).

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Part III

Chapter 15
Using Eye Tracking to Investigate Strategies Used by ESL Learners in Reading a Scientific Text with Diagram

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1 Introduction

A large body of literature has shown that the use of diagrams can support students in reading of scientific texts (e.g. Slough et al., 2010) especially analytical diagrams which involve the integration of graphical information with corresponding textual information (Roth et al., 2005). It has been found that if a passage is accompanied by a diagram that explains concepts in the passage, it has the ability to support the reading of the text and the learning of scientific concepts (Carney & Levin, 2002).

In recent years, eye-tracking technologies have been used to investigate the cognitive processes that are involved in learners' engagement and learning with text and diagrams (see Alemdag & Cagiltay, 2018 for a review) as conventional approaches like students' reflections, interviews, and think-aloud approaches were unable to probe into the students' cognitive processes while reading.

Paivio (1990) proposed the Dual coding theory which postulated that while processing cognitive information, humans make use of both the verbal system (which represents textual information) and the pictorial system (which represents visual images). This theory has been used as the underlying basis of subsequent empirical studies that investigated the integration of diagram into text. One of the classic studies

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undertaken in this area was conducted by Hegarty and Just (1993) on students reading a passage with a diagram of a pulley system in their native language. The findings revealed that irrespective of the participants' background knowledge, they generally performed better in a subsequent comprehension test when reading both the text and diagram compared to when having either one of the representations. However, participants with lesser knowledge of mechanics generally had lower scores in the comprehension test. The amount of time their eyes were fixated on the various parts of the diagrams and their eye movements from text to diagram were also comparatively more. This strongly suggests that these participants had more difficulty in constructing a complete mental model of the pulley system. However, Hegarty and Just's conclusion was based only on the reading of a particular content, i.e. mechanics. The same principle may not apply to the reading of other scientific texts.

Jian and Wu (2011, 2012) went a step further by attempting to categorize the strategies that readers would adopt when reading a Biology passage in Mandarin (the participants' native language) containing a diagram. Both studies involved the participation of Taiwanese university students. In the first study, Jian and Wu (2011) discovered other strategies, in addition to the text-diagram referencing strategy proposed by Hegarty and Just (1993). Specifically, they discovered that about 60% of the participants adopted the text-diagram referencing strategy, while 35% looked at the diagram-first before reading the text. In a follow-up study, Jian and Wu (2012) found that 67% of the participants adopted the text-diagram referencing strategy and 21% looked at the diagram-first before reading the text. Interestingly, the remaining 12% completed reading the text before examining the diagram. Based on these findings, they inferred that the reading materials on mechanics used by Hegarty and Just (1993) possessed concepts that could only be mastered through reliance on spatial messages whereas their studies required only preliminary spatial relationship because the text was less dependent on the spatial messages in the diagram.

In a follow-up study, Jian and Wu (2014) undertook another study to investigate whether the various strategies used by the students would lead to different levels of reading efficiency and effectiveness. The study was undertaken on 71 students from the National Taiwan Normal University who majored in education, management, arts, and social science. Students with neuroscience background or knowledge relevant to the passage were excluded. The strategy that was most commonly used was still the text-diagram referencing strategy. They also found another reading strategy, i.e. text-only strategy. The overall findings revealed all readers who had referred to the diagram were equally effective readers, whereas the text-only readers were found to perform more poorly on factual questions.

2 Related Literature

As the number of non-native English speakers learning in English continues to grow, it is imperative to explore and understand their learning processes and strategies in more detail. This paper, as indicated above, particularly focuses on the strategies

employed by English Second Language (ESL) learners when reading an illustrated Biology passage. It is necessary to point out here that despite the growing number of people learning through the medium of English as well as the growing number of research on reading of illustrated texts, little has been done to marry these two together.

Studies that have looked at ESL learners reading such materials indeed revealed interesting findings. Yusof et al. (2019), for instance, found that Malaysian primary school students in general paid more attention to the text as opposed to the graphic part of two graphic novels in English when reading. In another study, Pellicer-Sanchez et al. (2018) found similar results. Native Spanish-speaking children and adults alike displayed heavily text-based reading strategies of illustrated narratives in English. Attention on both text and picture parts of the narratives, respectively, was found to correlate with comprehension performance.

The findings that reading of illustrated texts is heavily text-based are not entirely limited to narratives. A large body of research on those reading scientific expository texts in a variety of first languages has been conducted much earlier and a similar reading pattern has been found. In a seminal study, Hannus and Hyönä (1999) observed that Finnish school children spent 94% of their reading time on the text part of illustrated Biology passages. In a more recent study, Makransky et al. (2019) found their university participants to spend approximately 70% of learning time studying text and less than 15% on illustrations regarding the development of lightning storms.

This brief review of literature has painted a worrying picture in the ways learners (both native and non-native users of a particular language) read and process an illustrated text. If the use of diagrams in addition to text can support learners in acquiring scientific concepts as proposed by the multimedia proponents, predominant attention on text at the expense of diagrams can potentially be harmful to learning. In their study, Jian and Wu (2014), as reported earlier, found some evidence to validate this theory. Native Mandarin speakers (NMS) who failed to attend to the diagram scored more poorly on a subsequent comprehension task compared to those who attended to it. Indeed, a number of studies have found that the more learners integrate information in diagrams with information in texts, the more they come to learn from the illustrated passages. More importantly, this finding appears to apply to materials in a variety of first languages as it has been found among native speakers of Mandarin (Jian & Wu, 2014), Finnish (Hannus & Hyönä, 1999), English (Johnson & Mayer, 2012), and Italian (Mason et al., 2015). If this relationship applies to those reading illustrated passages in their L1, the burning question would be, does this relationship similarly apply when students read illustrated passages in their non-native language?

3   The Present Study

This study used the same approach used by Jian and Wu (2014) in their study. However, some modifications were undertaken. The major difference of this study was that the participants were non-native speakers unlike that of Jian and Wu who

undertook their studies on native speakers of Mandarin. Earlier research studies in this field were also undertaken on native speakers. This means that the findings of this study will offer new knowledge and insights to this field of study.

The two research questions of the study are as follows:

(1) *What are the reading strategies used by the Malaysian English as Second Language (ESL) adult readers when reading a Biology passage containing an analytical diagram in English, and is this dependent on English proficiency levels?*

(2) *Is there a relationship between the ESL learners' reading strategy and their comprehension performance when reading the abovementioned Biology passage?*

4   Method

4.1   Participants

45 undergraduate majors of Social Sciences and Humanities at a Malaysian public university took part in this study. They were all native speakers of Bahasa Malaysia (or the Malay language) and English was their second language. In addition, all participants had normal or corrected-to-normal vision.

The present study also examined whether or not English proficiency levels play a role in the learners' choice of reading strategy. Hence, English proficiency data was collected. This was gauged based on their performance in the Malaysian University English Examination (MUET), an English language proficiency test undertaken for university admissions. MUET has six bands. Students who achieved bands 5 and 6 are classified as high proficiency learners, 3 and 4 as average proficiency learners, and 1 and 2 as low proficiency learners. See Appendix B for the equivalent of these scores according to the CEFR framework.

The study participants all scored either a MUET band 3 or 4. The majority of the students from this faculty have English scores within this range. To differentiate between these groups, band 3 participants were classified as low proficient (LP) whereas band 4 participants as higher proficient (HP) learners. Altogether, there were 32 LP and 13 HP learners. Due to low precision and invalid data, 17 participants were removed, leaving only 28 participants; 20 LP and 8 HP learners.

4.2   Materials

Participants read two Biology texts in English. The first text was on respiration with a labeled diagram of the lungs and arrows showing the processes involved during breathing. The presentation of this text was followed by three comprehension questions. This was an introductory task used to expose and familiarize the participants with the procedures involved.

The second text was the actual stimulus used for the present study, describing the pathways of the fear response and awareness in the human brain. It was a neuroscience passage extracted from the *Scientific American* magazine (LeDoux, 1994, p. 56) and was the same text used by Jian and Wu (2014). This diagram was annotated with arrows as well as labels of relevant parts of the human brain. The last paragraph of the original text was removed from the present stimulus as it was considered too complicated.

A reading comprehension test comprising five yes/no questions was displayed on the screen, one question at a time, after participants completed their reading. Jian and Wu's study utilized ten yes/no questions. The present study only used five of their questions which were deemed clear-cut and also in line with the following classification: two were text-based, two were pathway and one was integrative. Each correct answer was awarded one point, hence, the maximum score for the comprehension task was five (see Appendix A for the questions).

4.3   Procedures

Data collection took place in an eye-tracking research laboratory and each participant was tested individually. Participants were first briefed about the study and its purpose, before their informed consent was obtained. Next, they were asked to complete a background questionnaire. Once this stage was completed, the participants were seated before an eye-tracker, their eyes were calibrated on a nine-point grid, and they were then exposed to the introductory task. Upon completion of this stage, the participants' eyes were again calibrated for the actual reading experiment.

Participants were instructed to read the passage at their own pace. Then they were required to answer the comprehension test. Eye movements while reading and response time for each comprehension question were recorded. The experiment took from 20 to 30 minutes to complete.

4.4 Apparatus

An EyeNTNU-120 eye tracker was used to collect eye movement data. The sampling rate of this eye tracker is 120 Hz and the angle error is 0.3 degree. It has two infrared light-emitting diodes (LEDs) that provide light which would reflect on the cornea of the left eye to detect eye movement. The output energy of the LEDs is 3.5 mW/cm2 at a working distance of 4 cm. The EyeNTNU-120 eye-tracking system includes three software tools: a Hot Zone analyzer, a Region of Interest (ROI) Tool, and a fixation calculator. A participant's eye movement data can be detected using the Hot Zone analyzer. The ROI Tool is used to define the ROIs whereas the fixation calculator generates matrices such as total fixation duration (TFD), number of fixations (NOF), and duration of first fixations (FFD). The eye movement data were collected at a 120 Hz sampling rate.

5 Findings

5.1 Comparing the Findings of the Present Study with Jian and Wu's Studies

Four reading strategies were identified in the present study; text-only, text-diagram, text-first, and diagram-first. The distribution of participants into these four strategies is displayed in the second column of Table 1. Most of the participants (50%) displayed a text-only reading strategy and only one displayed the diagram-first reading strategy.

Table 1 further revealed that the most common strategy used by the students in Jian and Wu's studies (2011, 2012) was the text-diagram strategies (60, 67% respectively) followed by the diagram-first strategy (35, 21% respectively) and text-first strategy (0, 12% respectively). Interestingly, Jian and Wu (2014) found 11% of their students using the text-only strategy, a strategy not used by students in their previous studies. This new pattern is also evident in the present study whereby 50% of the participants used text-only strategy. In the present study, text-only strategy was followed by the text-diagram strategy (32.1%) and text-first strategy (14.3%). Only one student in the present study used the diagram-first strategy.

Another issue worth looking into is whether or not the reading strategies are dependent on the learner's English proficiency level. Table 2 reports the distribution of the LP and HP learners by reading strategies. As can be seen from this table, while the majority of the LP learners (i.e. 60%) used the text-only strategy when reading the illustrated text, only 25% of the HP learners used it. The majority of the HP learners (62.5%) appeared to use the text-diagram strategy, while only 20% of the LP learners used it.

To determine whether these strategies were associated with the ESL learners' English proficiency level, a Fisher's exact test was performed. It revealed no significant relationship between the two variables, $p = .172$, suggesting that the distribution

Table 1 Comparing the strategies of the participants in the present study with that of Jian and Wu (2011, 2012, 2014)

	Present study	Jian and Wu (2011)	Jian and Wu (2012)	Jian and Wu (2014)
Participants	ESL learners	Native Mandarin Speakers (NMS)	NMS	NMS
Strategy 1	Text-only 50% ($n = 14$)	Text-diagram 60%	Text-diagram 67%	Text-first 38%
Strategy 2	Text-diagram 32.1% ($n = 9$)	Diagram-first 35%	Diagram-first 21%	Text-diagram 36.5%
Strategy 3	Text-first* 14.3% ($n = 4$)	Text-only 0% Text-first 0%	Text-first 12%	Diagram-first 14%
Strategy 4	Diagram-first** 3.6% ($n = 1$)	–	Text-only 0%	Text-only 11%

*complete text section first then only look at diagram.
** complete diagram first then only look at the text section.

Table 2 Reading strategies used by the LP and HP learners

English proficiency level	Text-only		Text-Diagram		Text-first		Diagram-first		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
LP	12	60	4	20	3	15	1	5	20	100
HP	2	25	5	62.5	1	12.5	0	0	8	100

of participants across the reading strategies was not associated with whether they had low or higher English proficiency.

5.2   *Examining the Relationship Between Reading Strategies and Comprehension Performance*

Table 3 displays the mean scores of each of the reading strategy groups. The non-parametric Kruskal-Wallis test was used to examine the differences in comprehension scores and it indicated that the differences were indeed significant, $p = .022$. Pairwise comparisons indicated that those who displayed the text-diagram strategy significantly outperformed those displaying the text-first strategy, $p = .033$. No other significant differences were found, all p values $> .05$.

Table 3 Mean scores of reading comprehension test by reading strategy

Text-only ($n = 14$)		Text-diagram ($n = 9$)		Text-first ($n = 4$)		Diagram-first ($n = 1$)	
M	SD	M	SD	M	SD	M	SD
2.71	1.07	3.44	.53	2.00	.82	2.00	0

6   Discussion

The findings are discussed in line with the two research questions.

Research Question 1: What are the reading strategies used by the Malaysian ESL adult readers when reading a Biology passage containing an analytical diagram in English, and is this dependent on English proficiency levels?

Similar to Jian and Wu's studies, the present study also found that the ESL learners employed the text-diagram, text-first, and diagram-first strategies employed by the native Mandarin speakers in Jian and Wu studies. However, another reading strategy was the most dominant among the ESL learners. This was the text-only strategy which was only sparingly employed by the Mandarin speakers in Jian and Wu's (2014) study. Although, a heavily text-based reading of illustrated passages has been found in earlier research with native speakers (Hannus & Hyönä, 1999; Makransky et al., 2019) and non-native speakers (Pellicer-Sanchez et al., 2018; Yusof et al., 2019), it was nevertheless surprising (and worrying) that half of the ESL learners completely ignored the diagram in the present study.

Perhaps, this reliance on text was driven by the ESL learners' difficulty in comprehending the English text. A look at the text's readability scores substantiated this claim. Its Flesch reading ease was 40.6, and its Flesch-Kincaid grade level was 12.5, indicating that on the whole, the text was relatively difficult. The ESL learners might have felt that they needed to spend all of their reading time on the text part of the passage to both understand it and to be able to answer the subsequent comprehension questions. As this is a Biology passage and all the learners are Social Sciences and Humanities students, unfamiliarity with the text content and the structure of such texts might have also contributed to this text reliance.

The above argument suggests that the ESL learners' English proficiency might have explained the reading strategies that they employed. Such relationship, however, was not evident from the findings, despite the indication. However, the findings did indicate that more HP than LP learners used the text-diagram strategy, and more LP than HP learners used the text-only strategy. It is postulated that since both groups of learners fell into the category of average proficiency students and the difference in proficiency levels between them might not be sufficiently substantial to bring about a significant result. Hence, a larger sample of participants with more marked differences in English proficiency could be used in future studies to examine this relationship in more detail.

Research Question 2: Is there a relationship between the ESL learners' reading strategy and their comprehension performance when reading the abovementioned Biology passage?

Research has shown that strategies that learners employed when reading illustrated science passages in their native language do implicate their comprehension and learning of those passages (Hannus & Hyönä, 1999; Jian & Wu, 2014; Johnson & Mayer, 2012; Mason et al., 2015). When it comes to reading in a non-native language, the present study revealed similar findings. More specifically, text-diagram learners appeared to learn fairly well from the passage and this is clearly in line with the idea that diagrams serve to facilitate the reading of the text and the learning of scientific concepts, in general (Carney & Levin, 2002). This idea, therefore, appears to similarly apply to the reading of illustrated passages in the learning of a second language.

Additionally, the present study found a clear difference between how the text-diagram and the text-first learners performed in the comprehension test. To understand why the text-first learners fared poorly in the test, it is necessary to understand how this strategy was computed. A text-first learner was someone who completed reading of the text before inspecting the diagram. It could be the case that these learners have already formed a mental representation of the passage content from their text reading before they inspected the diagram. Upon inspection of the diagram, they might have failed to integrate the diagrammatic information with the mental representation they have already constructed, and worse, this mental representation might have become incoherent. Since the text-only learners did not inspect the diagram at all, their mental representation of the passage remained intact and they could rely on this alone to tackle the comprehension questions.

The text-diagram learners were those who shifted between the text and diagram parts of the passage frequently (Jian & Wu, 2014). It would appear that these learners were able to construct a more coherent mental representation of the passage by combining textual and diagrammatic information than the other types of learners. Since they frequently gazed back and forth between the two, their comprehension would be continuously updated, resulting in a more coherent and integrated mental representation. The superiority of this strategy confirms the necessity for students to learn how to integrate textual and diagrammatic information in order to benefit from reading illustrated materials.

7 Implications and Conclusion

This paper, in general, reaffirms findings on the reading of illustrated science passages in the native language. More specifically, our study found that similar to those reading in their native language, ESL learners also displayed a variety of reading strategies with the text-only reading strategy being the most common. This suggests that reliance on text applies when reading in both native and non-native languages. Unfortunately, as our study and previous native language studies have shown, this strategy is not the most effective for learning with such texts. The text-diagram strategy involving learners shifting their attention between the text and diagram frequently is more effective in enhancing comprehension.

Given these findings, we can therefore see that issues surrounding the reading of illustrated science passages in the native and non-native languages are rather similar. It is worrying to find that what works for comprehension and learning of these materials is not much practiced by the learners themselves. This study therefore has considerable implications for the educational practices. First of all, it would be useful for teachers to remember that a learner's text reliance could have stemmed from their own inattention to diagrams (McTigue & Flowers, 2011). Teachers are therefore recommended to teach how to use diagrams more seriously. Secondly, learners, unsurprisingly, require adequate instructional support to help them learn and master any given strategy. But what is adequate support when it comes to reading illustrated passages? Existing literature has indicated that learners benefit extensively when supported via direct and explicit instructions (Cromley et al., 2013; McTigue & Flowers, 2011). Modeling the most effective strategy to learners, therefore, can potentially lead to adoption of this strategy. Before asking learners to read an illustrated passage, teachers can, for instance, use an eye movement modeling example (EMM) for their learners to emulate. An EMME shows a replay of an expert's reading behavior and therefore allows learners to identify and learn the best strategy via a concrete model (Mason et al., 2015).

Appendix A

Comprehension Questions—Please state Yes/No for each question.

1. Human reaction to fear is for survival purposes. **No** (Text-based question).
2. The subcortical pathway allows the brain to respond quickly to danger. **Yes** (Text-based question).
3. The pathway that enables a person to form an accurate image of the stimulus is first sent to the visual cortex and then to the thalamus. **No** (Pathway question).
4. When a human faced fear, the stimulus is sent to the thalamus and directed to the amygdala and then brain stem to produce a quick reaction. Yes/No **Yes** (Pathway question).
5. Amygdala can be described as the converging point of the pathways. Yes/No **Yes** (Integrating question).

Appendix B

Descriptors of scores in MUET as adapted from the Common European Framework of Reference for Languages: Learning, Teaching, Assessment (Malaysian Examinations Council, 2019).

Band	Descriptor for reading
5	• Can understand long and complex factual and literary texts
	• Appreciate distinctions of style
	• Can understand specialized articles and longer technical instructions even when they do not relate to their field
4	• Can read texts concerned with contemporary problems in which the writer adopt particular stances or view points
	• Can understand contemporary literary prose
3	• Can understand texts consisting mainly of high-frequency everyday or job-related language
	• Can understand descriptions of events, feelings, and wishes in personal letters
2	• Can read very short, simple texts • Can read specific, predictable information in simple everyday material such as advertisements, prospectuses, menus, and timetables and can understand short simple personal letters
1	• Can understand familiar names, words, and very simple sentences, for example on notices and posters or in catalogues

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Chapter 16
Exploring Chinese EFL Teachers' Perceptions of Augmented Reality in English Language Education

Danyang Zhang and Pascual Pérez-Paredes

1 Introduction

Augmented Reality (AR) is an education technology that contributes to contextualising language learning by offering a wide range of authentic experiences to learners across levels and languages. Different from virtual environments, AR superimposes and integrates computer-generated content over the real world environment (Wang et al., 2018), interactively connecting the real and the virtual world in three dimensions in real time (Azuma, 1997).

Despite the advantages that AR technology may bring to language education, few studies have discussed their theoretical underpinnings. Situated learning theory and (socio)constructivist learning theory have been used to understand these underpinnings, through (Dunleavy, 2014). Proposed by Brown et al. (1989), situated learning theory, based on Vygotsky's (1978) sociocultural theory (SCT), underscores the importance of contexts and interactions in learners' (language) learning. As culture and contexts are vital in language learning, especially in second/foreign language learning, adopting AR technology is thought to enable learners to immerse in the target language and its culture, which largely contributes to their language development. Constructivists have highlighted the role of learners' prior knowledge and sociocultural background in language learning. In an AR-enhanced language learning environment, learners not merely immerse themselves in curated learning contexts, but also comprehend and construct the information they obtain from the mixed-reality multimedia inputs. During this process, they complete language tasks, interact with others, and finally apply what they have learnt to other situations.

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Technology-enhanced language learning has stimulated the development of game-based learning, which also guides the design of AR-infused language learning products. The most popular AR game is undoubtedly *Pokémon GO*, which is perceived as particularly beneficial for developing learners' vocabulary knowledge and digital storytelling abilities. However, research on use of such games in language education has failed to account for the motivation of users to select AR apps. In this vein, Rauschnabel et al. (2017) point out that existing AR-related theories and practices lack understandings about users. They therefore propose an adoption framework for mobile AR games, based on the uses and gratification theory (U&GT) which is one of the most widely applied theories in communication research (Rubin, 2002). U&GT theoretically answers the question of the reason why users select particular media rather than others, indicating users' proactive selection and use of media that satisfy their cognitive, social integrative, tension release, affective and personal integrative needs. In Rauschnabel et al.'s (2017) model, they propose that learners' reactions to the AR games and their intended behaviours to integrate the game into their language learning are impacted by their evaluation and perceptions of its various benefits (i.e. hedonic, emotional and social benefits), risks (i.e. data security and physical security) and social influences. This model, from a theoretical perspective, extends our understanding about the factors that may determine learners' acceptance and use of mobile AR games.

Rauschnabel et al.'s (2017) model encourages researchers to engage with the learner's perceptions, especially with their evaluation and satisfaction in adopting mobile AR games. However, their model, as well as the empirical verification, predominantly focuses on learner's self-directed uses of AR beyond the classroom. As language education not only involves learners but other stakeholders such as teachers and schools, more attention should be paid to those other stakeholders in order to make attempts to apply the AR technology to other language learning settings (e.g. formal language learning in the classroom).

2 AR and Language Education in China

AR can be used in different language learning contexts for various learning purposes. AR has the potential to break through the spatiotemporal and financial limitations, making learning occur anytime and anywhere. According to Radu (2014), AR can improve learners' understanding of content, enhance their memory, stimulate their learning motivation and peer collaboration and contribute to better task performance. In recent years, although AR has been implemented in a variety of disciplines, English language learning has been slow to embrace this emerging technology.

In China, the increasing ownership and use of mobile devices offer learners more non-formal language learning opportunities (Zhang & Pérez-Paredes, 2019). These learners increasingly enjoy participating in the mobile learning community. The Ministry of Education (MOE) in China highlights the affordances of AR technologies in education, clarifying that the development of AR may bring huge benefits and may

even change the future education industry in China. In 2020, the Chinese government invested 5.76 billion dollars in developing AR and VR (Virtual Reality) technologies, accounting for 30% of the global market. According to the China Education Development Report published by Deloitte China, current AR technologies are mainly used to provide AR-enhanced early childhood education, K12 tutoring and higher vocational education.

In language learning, AR has been suggested to boost the learners' language learning motivation (Liu & Tsai, 2013), benefit learners' contextualised and authentic language learning (Godwin-Jones, 2016), build a bridge for communication and cultural exchange and more importantly, help learners develop their language learning abilities (Wu, 2019). As Zhang et al. (2020) argue, the ecology of AR in language education involves different stakeholders (e.g. teachers, designers, learners) in designing, developing and implementing AR-based language learning products. As a crucial stakeholder, teachers' perspectives and attitudes indeed matter for an informed understanding of the contribution of AR in English language education. However, previous studies on AR predominantly aimed to explore the effect of applying AR into classrooms (Lee & Park, 2019). To the best of our knowledge, no study has been conducted to address Chinese EFL teachers' perceptions and attitudes towards AR in language learning.

This study sets out to investigate Chinese EFL teachers' perceptions of the potential of AR in EFL teaching and learning, and to discuss teachers' expectations of AR-enhanced language learning. Theoretically, the design of this research draws on Traxler and Kukulska-Hulme's (2016) context-aware mobile learning and Godwin-Jones's (2016) conceptualisation of AR language learning and practice. Specifically, the study was designed to collect teacher's perceptions and expectations of AR in (1) language learning, (2) its effectiveness, (3) content, (4) curriculum and pedagogy and (5) future use. Our research aims to offer some insights into how Chinese EFL teachers understand the role of AR in English language learning, allowing researchers to theorise on how AR may contribute to both computer-assisted language learning (CALL) and language education, and contribute to the conversations on how practitioners can best integrate this AR into language classrooms.

We adopted a survey methodology to tap into Chinese language teachers' cognitions. The overarching question of this study is: *What are Chinese EFL teachers' perceptions and expectations of Augmented Reality (AR) in English language teaching and learning?*

There are two sub-questions:

(1) *What are the differences in teachers' perceptions between non -tertiary levels and the tertiary level?*
(2) *What are the differences in teachers' perceptions between Eastern China and other regions in China?*

3   The Study

3.1   Participants

In total, 153 teachers completed the questionnaire study. There were 19 males and 129 females. Five of them did not state their gender. 102 of the participants were teachers from non-tertiary levels (including kindergartens, primary schools, middle schools and high schools), and 45 of them were from the tertiary level. Six teachers came from other educational institutions. In terms of school type, there were 100 teachers from public institution, 28 were from private institution and 25 were serving in training institutions at the time of completing our survey. Categorised by region, 101 of them came from provinces and municipalities in Eastern China,[1] and 52 were from other regions of China. Eastern China, as the main body of the national economy at present, plays a significant role in maintaining the sustained and rapid growth of the national economy and enhancing the national economic competitiveness. In 2019, among the top 30 cities of GDP in China, 24 of them belong to Eastern China. In this case, we assumed that learners, teachers and schools have more chances to access and embrace new technologies and integrate these technologies into their current language teaching and learning.

As an emerging technology, only two investigated teachers had used AR in their English language teaching. Even when other purposes were considered (e.g. playing games like *Pokémon Go* and using the museum audio guide), only eight teachers had any experience at all of using AR.

3.2   Research Design

Data of this study was collected from an online questionnaire, designed and presented on *Qualtrics* (http://cambridge.eu.qualtrics.com). The questionnaire was piloted by six Chinese Ph.D. students at Cambridge University who specialised in EFL research with previous EFL teaching experiences in mainland China. They suggested to shorten the texts in the introduction section and add a short video to introduce AR to the participating teachers. Besides, one "I don't know" section was suggested to be added in order to reduce the possibilities of a guesstimate. This research design received ethics approval by the Humanities and Social Sciences Research Ethics Committee of the University of Cambridge. The questionnaire was distributed to the participants who read the information sheet and agreed to take part in this study.

The questionnaire included 32 questions, and it took participants between 10 and 15 min to complete. All the questionnaire questions were designed both in Chinese (participants' L1) and English (participants' L2). In this case, participants

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[1] Eastern China refers to the ten provinces and municipalities in mainland China, including Hebei, Beijing, Tianjin, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong and Hainan.

could choose the language they feel comfortable before answering the questions, and misunderstandings in languages could be reduced. Firstly, the questionnaire offers participants a short introduction about this study, including (1) the definition of AR, (2) its recent development and practice in different disciplines, (3) the implementation of AR in EFL and (4) the main aim of the survey. After that, participants were asked whether they would like to watch a one-minute introductory video about AR. Secondly, the questionnaire investigates participants' demographic information, including their gender, school level, school type, region, course(s) taught in school and previous AR experiences. Thirdly, the questionnaire focuses on language learning motivation and experience (five questions), asking participants whether AR could (1) motivate their students to learn English, (2) lower learning anxiety, (3) make a connection between formal and informal learning and (4) stimulate learner's self-directed learning. Fourthly, in terms of the effectiveness of AR (four questions), participants were asked to order their perceived effectiveness of AR in teaching and learning English listening, reading, writing, speaking, vocabulary and grammar. Apart from language learning, whether AR could enhance the development of non-linguistic skills (e.g. memory, problem-solving, creativity, critical thinking, collaboration, communication, information, media and technology, as well as life and career) is included. The fifth part (two questions) predominantly explores participants' perceptions of how AR changes and improves EFL teaching content, asking them whether this technology could make EFL teaching and learning materials more comprehensive, authentic and contextualised. In the sixth part, with four questions, addresses if AR could make the current curriculum more flexible, personalised, authentic and interactive. The questionnaire finally asks participants their willingness to use AR in their future teaching.

3.3 Data Collection and Analysis

We collected the questionnaire data by using a convenience sampling approach. Invitation emails were sent to potential participants within our networking circles with the information sheet and the consent form. The teachers who agreed to participate in this study replied to our email with the signed consent form. Afterwards, we forwarded the survey link and instructions to them by email. In addition, for advancing the generalisability of the research data, we adopted a snowball sampling approach, asking the existing participants to help us recruit more subjects from among their acquaintances. We provided them with the information sheet and our email addresses for the potential participants to decide whether or not to participate.

The main body of the questionnaire uses a six-point Likert scale to describe seven different attitudes towards AR. Specifically, these six points are: 1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Somewhat agree, 5 = Agree and 6 = Strongly agree, for all questions investigating teachers' perceptions. For three ranking questions in the questionnaire asked the participants to *order the following options in decreasing order of possibility*. The first looked at whether they felt AR

would help them teach English (1) listening, (2) reading, (3) writing, (4) speaking, (5) vocabulary and (6) grammar. The second one taped into their perceptions of AR when helping their students learn the skills mentioned above. The third question asked them whether AR would help students learn some non-linguistic skills, including (1) memory, (2) problem-solving, (3) creativity, (4) critical thinking, (5) collaboration, (6) communication, (7) information, media and literacy and (8) life and career, the number (1–6) stands for participants' ranking for different skills. Compared with an odd number of responses that may give participants an "easy out", the six-point responses can yield groupings that are easier to understand and discuss. The six-point Likert scale (from Strongly Disagree to Strongly Agree) was converted to a numerical scale from 1 (Strongly Disagree) to 6 (Strongly Agree), then the numeric data were imported into SPSS. For descriptive analysis, the mean and median of each question were calculated. Besides, in order to determine if there were significant differences between different school levels and regions, independent-samples *t*-tests were run as all assumptions of outliers, normality and homogeneity criteria ($p > .05$ Levene's Test) were met.

4 Results and Discussion

4.1 Theme 1: Learning Experience and Motivation

Table 1 shows the results of the five questions regarding language learning experience and motivation. The mean of the second question that asks teachers whether AR can lower students' language learning anxiety is only 2.46, which is relatively negative. Teachers' perceptions of the other four questions are between "somewhat agree" and "agree", with a mean of 4.88, 4.93, 4.49 and 4.84, respectively.

Having a feeling of anxiety to learn English is a common phenomenon among Chinese EFL learners at different education levels (Cui, 2011; Tang, 2005). Learners, especially low-proficiency learners, often worry about their abilities when appropriately answering teachers' questions in class, freely communicating with others and adequately expressing their ideas. Impacted by the Confucius culture in China,

Table 1 Descriptive statistics of teachers' perceptions of AR—Theme 1

Learning	Mean	Median
Boost students' language learning motivation	4.88	5.00
Lower students' language learning anxiety	2.46	2.00
Enhance and enrich students' learning	4.93	5.00
Become more responsible for their own learning	4.49	5.00
Generate their own language learning experiences	4.84	5.00

learners worry about the criticisms from their teachers and peers (Cui, 2011), feeling sensitive about others' evaluations and caring about saving face (Wu, 2017).

In addition to descriptive analyses, independent-samples *t*-tests were run to determine if there were differences in the teachers' perceptions of AR in language learning experience and motivation between the tertiary and non-tertiary groups. Except for the second question (i.e. Whether AR could lower students' language learning anxiety) where the mean of the tertiary group is slightly higher (mean = 2.60, compared with 2.38 in the non-tertiary group), teachers in the non-tertiary group were more positive regarding the other four statements. In particular, there is a statistically significant difference between the two groups regarding AR in the third question (i.e. Whether AR could enhance and enrich students' language learning) (mean difference = .417, p = .024). However, no statistically significant difference was found in terms of the other four questions between the tertiary and non-tertiary groups, $p > .05$. Besides, there was no significant difference between the two regional groups, $p > .05$.

4.2 Theme 2: Effectiveness

Concerning the question regarding whether AR would help students achieve their language learning aims in a balanced manner, the mean is 4.48, and the median is 5.00, demonstrating that their attitude is between "somewhat agree" and "agree". Independent t-test results showed that there was a significant difference between the tertiary and non-tertiary groups (mean difference = .341, p = .045). However, the difference between the two regional groups was not statistically significant, $p > .05$.

Besides, regarding the effectiveness of using AR in enhancing learners' linguistic skills, teachers believed that AR would be more helpful in teaching and learning listening (median = 2.00), speaking (median = 2.00) and vocabulary (median = 3.00). In comparison, writing (median = 5.00) and grammar (median = 6.00) are the two aspects that AR may not able to help. Drawing on previous studies, listening, speaking and vocabulary have attracted researchers' and educators' attention. Many studies have attempted to explore the effectiveness of AR in helping students enhance their listening and speaking skills as well as vocabulary knowledge. For example, an AR-based context-aware ubiquitous learning environment—*Handheld English Language Learning Organization (HELLO)*—designed by Liu (2009) seeks to enhance learners' listening and speaking skills. Santos et al. (2016) see AR as a kind of multimedia, situated in authentic environments, that promotes better word retention and improves learners' attention.

In terms of non-linguistic skills, AR was perceived as beneficial for cultivating students' memory and creativity skills, especially compared with career skills (Table 2). Previous studies also provide empirical evidence of the effectiveness of AR in facilitating some non-linguistic skills (e.g. memory: Hou & Wang, 2013; creativity: Yilmaz & Goktas, 2017; collaboration: Szalavári et al., 1998). However,

Table 2 Descriptive statistics of teachers' perceptions of AR—Theme 2

		Median
(Teachers) teaching linguistic skills	Listening	2.00
	Reading	4.00
	Writing	5.00
	Speaking	2.00
	Vocabulary	3.00
	Grammar	6.00
(Students) learning linguistic skills	Listening	2.00
	Reading	3.00
	Writing	5.00
	Speaking	2.00
	Vocabulary	3.00
	Grammar	6.00
(Students) learning other non-linguistic skills	Memory	2.00
	Problem-solving	3.00
	Creativity	3.00
	Critical thinking	5.00
	Collaboration	5.00
	Communication	5.00
	Information, media and technology	3.00
	Life and career	8.00

it has been found that very few of them were conducted in the Chinese context, especially focusing on Chinese EFL learners.

As regards tertiary and non-tertiary teachers, independent-samples t-tests showed non-significant differences with regard to teaching and learning different linguistic skills ($p > .05$). As regards teaching and learning other non-linguistic skills, teachers at the non-tertiary level ranked "creativity" higher than their counterparts at the tertiary level (mean difference $= -.638$), while tertiary level teachers tended to believe that using AR could facilitate students' learning information, media and technology-related skills (mean difference $= 1.263$). According to the independent-samples t-test results, there were statistically significant differences, $p = .0048$ and $.005$, respectively. No significant differences were found pertaining to other non-linguistic skills. When the teachers are categorised by region, the independent-samples t-test did not show any statistically significant differences regarding the effectiveness of AR (including teaching and learning linguistic skills as well as learning non-linguistic skills).

4.3 Theme 3: Content

In many EFL contexts like China, English language teaching and learning is often limited to the classroom, where teachers still depend on the traditional English teaching approaches (e.g., reading aloud, recitation and repetition), and little interaction and few authentic communicative opportunities are provided for learners. AR's potential to integrate multimodal, authentic and contextualised stimuli into language teaching and learning materials is likely to disrupt the status quo of classroom-based EFL across levels. In this study, teachers' attitude is generally positive regarding the content supported and afforded by AR. More specifically, they agreed that with the assistance of AR, they are enabled to integrate multimodal stimuli, such as sounds, images, videos, into the current English classroom, in order to make language teaching and learning materials more comprehensive (Mean = 5.18, Median = 5.00). Besides, they also believed that by using AR, teachers and students could access more authentic and contextualised language learning input (Mean = 5.11, Median = 5.00, Table 3).

Some previous studies conducted in other language learning contexts have verified the benefits of AR in providing learners with multimedia and multimodal language learning inputs. For instance, Santos et al. (2016) drew on multimedia learning theory, designing a handheld AR system with situated multimedia (e.g. text, image, sound and animation) stimuli for vocabulary learning; students in Lee and Park's (2019) study created multimodal gamified digital stories on a location-based AR application, which allowed them to practice the language in real contexts and share their experiences with others.

The independent-samples t-test results showed that non-tertiary teachers were slightly more positive to the content assisted by AR technology (mean = 5.20 and 5.14) than tertiary teachers (mean = 5.11 and 4.98), but there was no significant difference between the two groups ($p > .05$). The divergences between teachers in Eastern China and other regions are minimal (mean = 5.19 and 5.12 for Eastern China; mean = 5.12 and 5.14 for other regions), without statistically significant differences ($p > .05$).

Table 3 Descriptive statistics of teachers' perceptions of AR—Theme 3

	Mean	Median
Enable the integration of multimodal stimuli	5.18	5.00
Provide teachers and students with authentic and contextualised language learning input	5.11	5.00

Table 4 Descriptive statistics of teachers' perceptions of AR—Theme 4

	Mean	Median
The use of AR will be an opportunity to implement a more flexible curriculum	4.95	5.00
The use of AR will be an opportunity to implement a more personalised curriculum	4.95	5.00
The use of AR will be an opportunity to implement a more authentic curriculum	4.89	5.00
The use of AR will be an opportunity to implement a curriculum focused on interaction	5.12	5.00

4.4 Theme 4: Curriculum and Pedagogy

As Kerawalla et al. (2006) suggest, AR applications should improve interactivity and flexibility, enabling teachers to adapt the applications to the needs of individual students and empower students to regulate their learning. When considering adopting AR into classroom practice, it is necessary to make the content more flexible and personalised for students. In terms of curriculum and pedagogy, teachers, in general, agreed that using AR could encourage a more flexible, personalised, authentic and interactive curriculum (mean = 4.95, 4.95, 4.89 and 5.12, respectively, Table 4).

Non-tertiary teachers held a slightly more positive attitude than their tertiary counterparts. An independent-samples t-test showed non-significant differences ($p > .05$). Comparing Eastern China and other regions, the differences between the groups were also small, and no significant differences ($p > .05$) were found.

Some scholars have attempted to use AR to engage students with an interactive and authentic curriculum in different disciplines (e.g. STEM: Hobbs & Holley, 2015; healthcare: Carlson & Gagnon, 2016; library instruction: Chen & Tsai, 2012). Nevertheless, we have not found studies conducted in the language education field to understand whether and how AR could make the current curriculum more flexible, personalised, authentic and interactive, mitigating the problems of English classrooms. This is an area that deserves further attention.

4.5 Theme 5: Future Use

38% of the teachers in the survey said that they were willing to use AR and integrate this emerging technology into their current teaching. Nearly 60% of teachers were still unsure about whether or not they would use AR. By school level, 39% of non-tertiary teachers planned to use AR in the near future while 58% said "maybe", and only 2% said they would not use this technology. For tertiary teachers, 35% stated that they would use it, while only 4% held the opposite view. A large number of participants (27.6%) took a wait-and-see approach.

The differences between Eastern China and other regions regarding the future use of AR are not significant. 38% of teachers in Eastern China and 37% of teachers in other regions planned to use AR. 58 and 60% of teachers in the two regional groups were still unsure. Almost none of the participants were against the use of AR in teaching.

An open-ended question asking participants to specify the reasons why they would or would not use AR in the near future was included in the survey. Teachers stated that they believed that using AR could make language teaching and learning more efficient, interesting and relaxing. Comparing with traditional "spoon-feeding" classroom teaching and rote learning approaches, these teachers believed that AR-enhanced language teaching is more authentic, interactive and collaborative, which could lower students' anxiety and motivate them to achieve their language learning goals. As a type of mobile technology, they believed that AR could allow their students to learn a language anywhere and at any time.

However, many teachers felt worried about their abilities to use AR, especially how to integrate it into the current curriculum. They also considered the cost of AR equipment and did not believe that their schools would have the funding to buy the equipment for their students. Besides, the few teachers who stated that they would not use this technology expressed their concern that they were unfamiliar with AR.

5   Conclusions and Suggestions for Future Research

We have examined Chinese EFL teachers' perceptions and expectations of implementing AR in their English language teaching. As a first attempt to probe into teachers' perceptions of AR, this study has made a contribution to our understanding of how AR affordances may impact ELT in China across levels and socioeconomic contexts. Our main findings suggest that while Chinese ELT teachers are not familiar with the uses of AR, they believe that the implementation of AR could (1) enhance their learners' language learning experience and motivation, (2) benefit the teaching and learning of linguistic and non-linguistic skills, (3) enrich language learning content and (4) make the current curriculum more flexible, personalised, authentic and interactive. Similarly, teachers are willing to integrate AR into their English language teaching in the near future. This seems to be a tendency that spreads across levels, institutions and all regions in China. Non-significant differences have been found between tertiary and non-tertiary institutions regarding the four above-mentioned themes. Categorised by region, despite the gaps in the level of economic and technological development, the divergences in teachers' perceptions and expectations of AR implementation between eastern China and other regions of China are also minimal, which are beyond our expectation.

At a micro level of analysis (Douglas Fir Group, 2016), EFL teachers' perceptions and expectations about AR may derive from their previous experiences in adopting AR in other contexts (e.g. in daily life) and/or their perceptions of using other mobile technologies and devices (e.g. using iPad in classroom-based English teaching). At

the macro and meso levels, our findings suggest that the state and local governments and schools predominantly focus on investing and implementing AR in other subjects (e.g., STEM), which may prevent language learners from an interaction with more personalised contexts of use and less dependency on declarative knowledge and grammar training. Thus, we are far from a situation where AR is tested in current English language education. The implementation and use of new technologies have been said to make education more inspiring, motivating and meaningful (Singhal et al., 2012). However, it is necessary to adopt evidence-based approaches to weigh up the benefits and limitations of a technology such as AR in the Chinese EFL context before discussing how to make use of this technology to facilitate English language education.

For future research, we should look at language learners, paying more attention to learners' interaction with AR-based English language learning resources from a dynamic and multifaceted perspective. In light of the theoretical model proposed by Zhang and Pérez-Paredes (2019) on mobile English learning resources in Chinese EFL learners, future studies could feature how learners filter, select, use and evaluate the AR-based resources. From a sociocultural perspective, given the important role of other key stakeholders (e.g. designers) (Zhang et al., 2020), future research could also investigate the impact of communities on the implementation and effects of AR. Methodologically, qualitative approaches will provide us with an in-depth understanding of how different stakeholders understand AR's contribution to SLA in instructed contexts.

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Chapter 17
Case Study 10, Japan: Smartphone Virtual Reality for Tourism Education—A Case Study

Mehrasa Alizadeh and Eric Hawkinson

1 Background

There is an increasing amount of research and development happening around the use of virtual and augmented reality in education, known more commonly as immersive learning (Hawkinson et al., 2017). This case study seeks to merge vocational training and language learning and explore its application in tourism education. The case study presented here was conducted with students in the Department of Global Tourism, Faculty of Global Engagement, Kyoto University of Foreign Studies, Kyoto, Japan. The learning goals of the faculty and department are heavy on fieldwork research, project-based learning, and experiential learning. This study follows these values and has a focus on the use of virtual learning environments and VR in constructivist learning contexts, and less on the acquisition and use of language.

Students in the program are seeking not only vocational type training for use in the tourism and hospitality industry, but also policy and social studies to enter public service connected to tourism. The curriculum of the faculty and department has an English language learning component, and English is used as the main language of instruction in many content courses offered. The context of learning in which this study was conducted was mainly geared at using virtual reality (VR) in real world situations that might represent future projects, research, and employment. In that spirit, it was imagined that VR could be a beneficial tool to allow students to gain experience in designing, curating, and conducting tours in English, perhaps as preparation to design and conduct tours with actual tourists later in the program. There are many features and benefits that VR can bring to this context of instruction. Therefore,

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a deeper look was needed into the benefits of using VR over more traditional uses of technology in this kind of learning like PowerPoint presentations or video content.

There has been some research to suggest benefits in both the practical training of tour guides and the teaching of English (Yung & Khoo-Lattimore, 2019); therefore, this was a part of a trial study to test the feasibility of further implementing VR into the program. There might also be benefits for building training for tour guides of local attractions by using VR to run simulations of student-created tours as there are many practical issues with training tour guides in real time. There were also concerns of cost, safety, privacy, and overall practicality with using VR in this context, especially with larger numbers of participants being able to use existing facilities. Previous studies pointed to possible issues with network bandwidth, classroom size and layout, and software compatibility issues (Hawkinson et al., 2015). Confirmation was also sought on whether using VR would be favorable to students and under what circumstances.

With these contexts in mind, the study was designed not only to expose affordances to vocational training in tourism contexts, but also to glean insight into practical benefits and issues of using VR for tourism studies for the department.

2 Case Study

2.1 Participants

In this study, data was collected from 22 participants, 4 males and 18 females. The participants were mostly 2nd-year undergraduate students in the Department of Global Tourism taking an elective course called *New Media Lab*. The aim of the course was to give students experience creating media for tourism purposes, which included fundamentals in graphic design, photography, videography, with a large amount of time dedicated to creating content for virtual and augmented tourism. The students in the program are largely Japanese students who have an interest in the tourism industry. Students who take this elective course register in the knowledge that the course is almost completely taught in English. The entire cohort in the program has about 125 students, with 24 enrolling in the course, and 22 participating in the VR projects. The English ability of the participants varied, the average TOEIC score of the cohort being in the 400s (low intermediate). The average TOEIC score was thought to be higher for these participants as they were electing to take a class entirely in English and were able to participate in the course without many language problems. All of the students were in their 2nd year and in the same cohort, aged from 19 to 20 years old. There were a few students from other departments taking the course from the British and American Studies Department, who were 4th-year students and had been studying English for 3 years in that program prior to taking New Media Lab.

2.2 Project Description

As aligned with the goals and curriculum of the course *New Media Lab*, there were several stages leading up to introducing, implementing, and assessing the use of VR in this course. This was the first time the use of VR was a required assignment for students in the department, and thus the design of the VR use was cautious, and a good amount of scaffolding and training of needed baseline skills was introduced. Scaffolding in this context means the introduction of supporting technology and software in stages before the final most advanced tools were introduced. This was a concern leading into the current study since there was little indication that students had a basic level of technology training. In a prior survey of all students in the department, less than 15% of them self-reported knowing what augmented reality was, and less than 27% self-reported ever having used VR. The first half of the course time and content concentrated on these supporting skills. There were 7 clear stages to the course.

Stage 1: A learning module was given on photography, graphic design, and basic video editing before concepts of AR and VR were introduced. Each module tried to focus on the implementation of that skill for use in VR tours. For example, during a two-week module on photography, there was emphasis given to digital file formats, image resolution, and size ratios. These are important in the context of VR tours since an understanding of how images interacted with the VR tools was important. Also, due to time restraints, images from the web using a Google image search were used. As a result, a primer on Google search techniques and the basics of legal image use was given.

Stage 2: The students were taught the basics of graphic design and digital color. This was considered to be essential as the VR tours were to be submitted in an online student portfolio in the form of a Google Site, and thus some basic understanding of presenting a VR tour on a webpage was necessary.

Stage 3: Students were told the basics of camera angles and video editing techniques. There was not ample time to create videos; most of the time was spent introducing ideas like perspective, framing, and types of video cuts. This was thought to be important to better place images, audio, and video into 360° scenes in VR that made sense from the perspective of the 360° camera. There have been studies suggesting that using and creating VR environments require a spatial awareness (e.g. Rasheed et al., 2015), and discussions on camera angles were done in the hopes of having students think about how the perspectives and angles represented in the images added to the VR tours did not seem jarring to users.

Stage 4: After the basic supporting fundamentals in stages 1–3 were presented, an introduction about the use of technology in tourism contexts was given. This began by distributing a version of Google Cardboard and taking the students on a guided tour using Google Expeditions (see Fig. 1). Google Expeditions is a VR tour smartphone application that is available on iOS and Android smartphones and tablets. Students were asked to download and install the application on their phones, and they then joined a guided tour hosted by the instructor on a tablet. This setup requires a
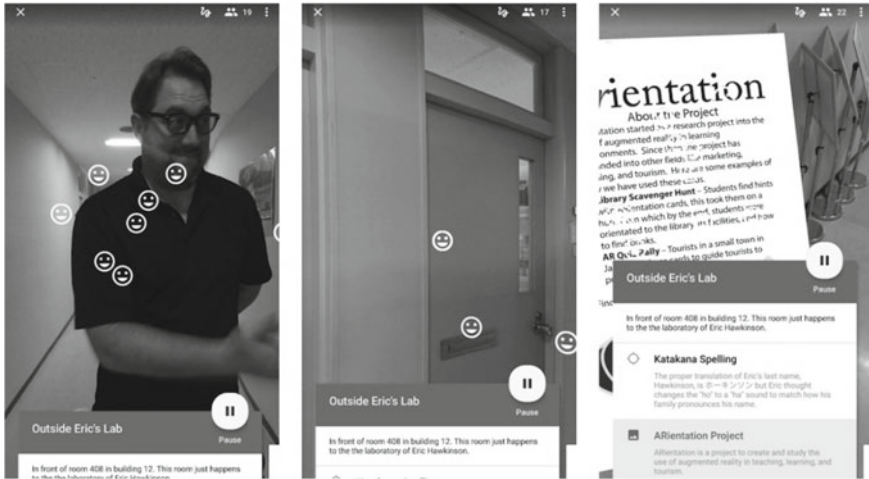
Fig. 1 Guiding a VR tour in Google expeditions

shared local network connection so that the device of the guide can communicate with those participating in the VR tour. For this purpose, an extra WiFi router was configured and connected to the institution's network to gain access to the Internet while also sharing the same access point for which the Expeditions application could allow all to participate in the same tour at the same time. This was important because there is a concern of using bandwidth to download tours, which can be heavy due to large media files. The tour was given as an example of what was later going to be assigned to students to emulate in their own hometown tours. The instructor gave an account of the location and its points of interest while pointing them out on the controlling device, all while monitoring where students were looking inside of the VR environment.

Stage 5: After the sample tour, students were given a primer in creating tours in Google Tour Creator, giving a short demo in class making a sample tour using content from Google Street View. Google Street View is an integrated service within the Google tools of Google Maps, Google Earth, and Google Earth VR. Google Tour Creator is a VR tour creation tool that can allow you to use 360° images from Google Street View and annotate them with text, pictures, and audio. All of these tools work well together as they are all from the same group of services and are free to use. After the demonstration, students were given a link to a tutorial website that had step-by-step instructional videos and links to official tutorials and troubleshooting guides.

Stage 6: Students were then asked to create a tour of their hometown. A set of minimum requirements were stated of at least 3 locations, 10 text annotations, 3 photos, and 1 audio narration. They were asked to try to design guided tours to be completed in 5–10 min. About 3 h of in-class time was given to create tours and get help from the instructor and peers.

Stage 7: After the tours were created, students were put into groups of 5 or 6 and asked to take turns guiding tours. After each tour, they completed either a peer or self-evaluation and moved on to the next student. This process took approximately 90 min. Links to the tours were collected and added to a database of 360° tours that can be viewed by all and future students in the course.

2.3   Data Collection and Analysis

Data was collected from the students using a questionnaire with 21 Likert-type, 1 multiple-answer checkbox, and 7 open-ended items. The questionnaire (see Appendix) was adapted from existing instruments, and changes were made to item wording in order to make the questions more suitable to the context of this study. The first part of the questionnaire included items on virtual presence adapted from Schubert et al. (2001), known as the Igroup Presence Questionnaire (IPQ), a scale to measure the sense of presence in virtual environments. The second and third parts of the questionnaire were adapted from Cheng's (2017) motivation and attitude questionnaires. The second part asked the participants about their attention, confidence, and satisfaction, while the third part included questions that tapped into the perceived usefulness of the virtual tours and their willingness to use them in the future. In addition, the participants also reported any physical discomfort they had experienced during virtual tours, such as nausea or eye strain. In the last part of the questionnaire, they responded to several open-ended questions designed by the authors to provide more details on the enjoyment and challenges of joining classmates' virtual tours and creating and delivering their own. The students filled out the questionnaire after guiding their own tours and joining those of their group members.

2.4   Results

The students' mean responses to items 1–6 alongside standard deviation (SD) values are displayed in Table 1. These items asked them about their sense of spatial presence in the virtual space. Out of 6 statements on virtual presence, numbers 4 and 6 were negatively worded and are marked with asterisks in Table 1. The participants' responses reveal a rather high sense of spatial presence experienced when joining virtual tours in which they were introduced to their classmates' hometowns. However, given their high ratings of positively worded statements (items 1, 2, 3, 5), mean responses to items 4 and 6 were expected to be lower than they are. This can perhaps be attributed to incomprehension or careless reading of questionnaire items. It is thus necessary to conduct further checks about these items by interviewing those participants who rated all items highly to clarify the cause of inconsistent self-reports.

Table 1 Students' self-reports of spatial presence in virtual tours

Part 1: Virtual presence	Mean	SD
1. During the virtual tours, I had a sense of 'being there'	4.41	0.59
2. I felt present in the virtual towns	4.18	0.85
3. I felt that the virtual towns surrounded me	4.32	0.84
*4. I felt like I was just looking at pictures of those towns	3.73	1.08
5. I had a sense of being in the virtual towns, rather than watching them from outside	3.68	1.04
*6. I did not feel present in the virtual towns	3.05	1.25

The following section of the questionnaire asked the participants about their attention to the VR tour content and the guides, confidence in the benefits of VR-enabled tours, and degree of satisfaction with the virtual tour experience. Responses to items 7–16 on attention, confidence, and satisfaction are presented in Table 2, with item 15 as the only negatively worded statement. As the numbers indicate, students highly rated their level of attention to VR content and tour guides as well as their degree of confidence in and satisfaction with VR tours. The majority of the participants expressed their confidence in the effectiveness of virtual tours for learning about places, and they equally voiced their contentment toward the activity, which underlines the potentials of VR tasks and activities in tourism education.

As shown in Table 3, the last set of items focused on students' perceptions of the usefulness of VR tours and their willingness to learn with the aid of VR in the future. Similar to the previous sections, the responses to these items also bear evidence as to the students' high opinion of VR tours in improving their learning of tourism and tour guiding alongside communication in English, undoubtedly an indispensable skill for successful tour guides in the globalizing context of Japan. They also expressed their interest in having more learning opportunities enhanced with VR.

**Table 2** Students' responses related to attention, confidence, and satisfaction

Part 2: Attention, confidence and satisfaction	Mean	SD
7. The virtual tours drew my attention	4.18	0.66
8. I was curious about the information provided by the tour guides	4.32	0.89
9. Virtually visiting towns with the aid of VR technology was novel to me.	4.14	0.83
10. I paid attention to the tour guides continuously	4.18	0.85
11. I believe that virtual tours can help us learn about different towns	4.68	0.48
12. I believe that going on tours with the aid of VR technology can be helpful for understanding the content of the class	4.55	0.60
13. I am confident in the benefits of VR technology for learning	4.41	0.67
14. I enjoyed joining the virtual tours	4.68	0.65
*15. I was dissatisfied with the experiences of going on virtual tours	2.55	1.60
16. I felt happy when I was on a virtual tour	4.73	0.46

Table 3 Students' responses to VR-enhanced learning usefulness and future use

Part 3: Perceived usefulness and future use	Mean	SD
17. I think the virtual tours were helpful for my learning	4.55	0.51
18. Using VR to conduct my tour helped me communicate in English	3.95	0.95
19. The virtual tours can help me learn about different towns more clearly than through PowerPoint presentations	4.45	0.67
20. After going on virtual tours, I want to visit those towns	4.50	0.67
21. I hope to have more opportunities to learn with the aid of VR	4.41	0.73

Despite all the positive opinions on the benefits of VR-enabled learning, it is not without shortcomings. As it can be observed in Fig. 2, most of the participants reported eye strain after the virtual tours. Other symptoms included dizziness, neck/back strain, and nausea experienced by a few students. As a matter of fact, low-cost VR viewers such as Google Cardboard or mini clip-on VR glasses currently available in the market fail to provide high-resolution VR content that can be viewed for relatively long stretches of time without suffering from eye strain. This finding highlights the importance of timing in VR-enabled tasks to leverage learning without causing too much physical discomfort to learners. It was observed that some students were not using the viewers in 'cardboard mode' and opting to simply use 'browser mode,' in which you use your device like a website and use your finger to change the viewing angle instead of moving your head.

The participants' responses to the open-ended questions were also subjected to qualitative content analysis. Several common themes emerged in response to the questions, which have been categorized and tallied in Table 4. As shown in Table 4, the participants enjoyed visiting and learning about their classmates' hometowns and their life stories. They did not experience too many major challenges, although
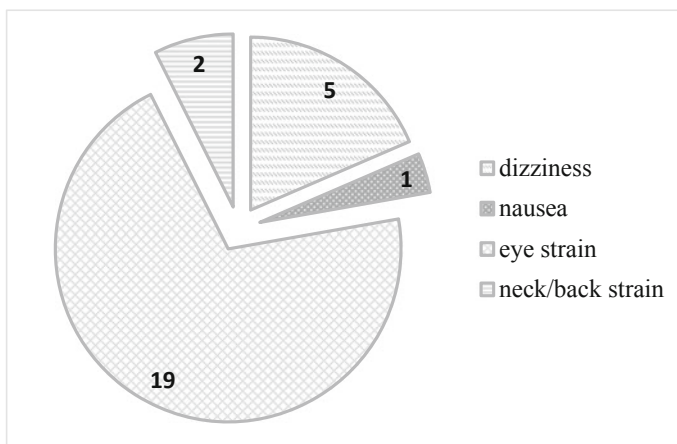
Fig. 2 Students' self-reports of physical discomfort caused by VR

Table 4 Students' responses to open-ended questions

Questions	Responses	Tallies
What was fun or interesting about joining classmates' virtual tours?	Visiting and learning about a new place	16
	Learning about classmates' personal life stories	7
	Feeling present in the virtual environment	2
What was challenging about joining classmates' virtual tours?	Listening to and understanding classmates	6
	Dealing with connection issues	3
	Suffering from eye strain	2
What was fun or interesting about creating your own tour?	Remembering childhood memories	10
	Teaching classmates about one's hometown	5
	Rediscovering one's hometown through VR	3
What was fun or interesting about being a guide?	Being able to introduce one's hometown	13
	Receiving positive responses from classmates	6
	Appreciating the power of VR in virtual tour-guiding	2
What was challenging about creating your own tour?	Selecting spots to introduce in the tour	9
	Preparing the content	6
	Learning how to create VR tours	4
What was challenging about being a guide?	Introducing one's hometown in English	8
	Guiding classmates and responding to questions	4
If you were to make another VR tour to show people a place, where would it be and why?	Hometown/City of residence	5
	Country or city of study-abroad program	5
	Country or city visited or to visit	5

some found it difficult to listen to and comprehend tour guides' explanations, and a few experienced technical issues. Regarding virtual tour creation, around half of the students mentioned the pleasure they took in introducing their hometowns while looking back upon their memories. Many were content in introducing their hometowns to classmates and receiving positive feedback from the audience. However, some students found it challenging to guide participants and answer questions in English and to respond to questions. Overall, the participants were positive about the power of virtual tours in learning about tour-guiding as well as practicing their oral/aural skills.

In line with the findings of this study, previous research also bears evidence as to the effectiveness of virtual reality in learning contexts. Reviewing two decades of research on virtual 3D environments, Dalgarno and Lee (2010) identify five key affordances of such environments, namely 'facilitation of tasks that lead to

enhanced spatial knowledge representation, greater opportunities for experiential learning, increased motivation/engagement, improved contextualization of learning and richer/more effective collaborative learning' (p. 10). In other words, virtual reality allows teachers to bring the real world into the classroom and provide opportunities for immersive learning.

These findings support the idea of the use of VR for vocational training in tourism contexts, even in a second language. They also corroborate the findings of studies that lend proof to the benefits of this technology for improving learning outcomes. For instance, virtual reality and immersive learning have assisted learners in familiarizing themselves with the target culture (Shih, 2015). Moreover, Chen et al. (2019) have reported on the benefits of deploying Google Earth virtual reality in improving young learners' expository writing. Similarly, in a Chinese L2 learning context, Xie et al. (2019) have examined the use of Google Expeditions on learners' oral proficiency and have shown the positive impact of virtual reality on learners' oral proficiency. In short, similar to our findings, all these studies report proven benefits of integrating VR into learning contexts.

Although more immersive forms of virtual reality are still in their infancy within the area of language for specific purposes, an increasing number of researchers are showing a growing interest in its applications, and more studies should appear in the years to come. However, as argued by Alizadeh (2019), successful integration of VR in education is bound to (a) careful task design so as to ensure that technology supports learning and is not merely an end in itself; (b) ease of administration and implementation, given that most institutions lack financial and spatial resources for complicated hardware and software provision; and (c) user-friendliness of the technology or device for both teachers and learners. The current study suggests that VR could be a useful tool to build context for language learning, and perhaps an iteration of this study to focus more on the language use is warranted.

In summary, this particular case study shows a clear and practical use of VR in vocational training in a second language. This is not only because learners get practice designing and guiding tours in English, but they also gain understanding of the concepts and tools used to create VR tours which may be more useful and needed in the tourism and hospitality industry moving into the future.

3 Pedagogical Principles

VR tours as a teaching and learning tool in creating and curating tours is an ideal case use of immersive technology, as it can be a better representation of designing and guiding a tour over more traditional presentation tools like presentation slides, but there are some issues of infrastructure and technology training that must be met to use these tools successfully.

Some important principles of this case use include but are not limited to:

- *Power of VR in giving learners first -hand experiences of the learning domain*: VR-enhanced contents for contextual learning can help learners experience real-life-like situations and encounters in an immersive manner, giving agency to users of the experience. This is significant particularly when time/place restrictions as well as safety issues make it impossible to conduct field learning.
- *Opportunities for learner-centered design including content generation and peer teaching*: User-friendly VR creation platforms like Google Tour Creator allow learners to create their own contents and use them in teaching their peers.
- *Importance of task design and timing to avoid physical strain*: It is incredibly important to design VR tasks meticulously and make sure too much exposure to VR content does not exhaust students by straining their eyes or making them experience VR sickness. VR equipment may need special calibration to a user's physical attributes like their inner pupillary distance to help comfort levels, but it is near impossible using budget equipment that changes hands many times.

Appendix 1

Virtual Tour Experience Self- and Peer-Evaluation Questionnaire
This questionnaire has been created to get feedback on your experience leading/joining virtual tours and learning about your classmates' hometowns.

First name: _____	Last name: _____
Student number: _____	Age: _____

Part 1: Virtual Presence
Rate each statement on a scale of 1 (Strongly disagree) to 5 (Strongly agree).

1. During the virtual tours, I had a sense of 'being there.'
2. I felt present in the virtual towns.
3. I felt that the virtual towns surrounded me.
4. I felt like I was just looking at pictures of those towns.
5. I had a sense of being in the virtual towns, rather than watching them from outside.
6. I did not feel present in the virtual towns.

Part 2: Attention, Confidence, & Satisfaction
Rate each statement on a scale of 1 (Strongly disagree) to 5 (Strongly agree).

7. The virtual tours drew my attention.
8. I was curious about the information provided by the tour guides.
9. Virtually visiting towns with the aid of VR technology was novel to me.

10. I paid attention to the tour guides continuously.
11. I believe that virtual tours can help us learn about different towns.
12. I believe that going on tours with the aid of VR technology can be helpful for understanding the content of the class.
13. I am confident in the benefits of VR technology for learning.
14. I enjoyed joining the virtual tours.
15. I was dissatisfied with the experiences of going on virtual tours.
16. I felt happy when I was on a virtual tour.

Part 3: Perceived Usefulness and Future Use

Rate each statement on a scale of 1 (Strongly disagree) to 5 (Strongly agree).

17. I think the virtual tours were helpful for my learning.
18. Using VR to conduct my tour helped me communicate in English.
19. The virtual tours can help me learn about different towns more clearly than through PowerPoint presentations.
20. After going on virtual tours, I want to visit those towns.
21. I hope to have more opportunities to learn with the aid of VR.

Part 4: VR Sickness

22. Did you experience any of these during the tours? Select as many that apply.

dizziness	☐	nausea	☐	eye strain	☐	neck/back strain	☐

Part 5: Answer the following questions about the process of joining classmates'

tours and preparing and delivering your own tour.
23. What was fun or interesting about joining classmates' virtual tours?
24. What was challenging about joining classmates' virtual tours?
25. What was fun or interesting about creating your own tour?
26. What was fun or interesting about being a guide?
27. What was challenging about creating your own tour?
28. What was challenging about being a guide?
29. If you were to make another VR tour to show people a place, where would it be and why?

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Chapter 18
Case Study 11, Mainland China: The Impact of Pronunciation and Accents in Artificial Intelligence Speech Evaluation Systems

Bin Zou, Sara Liviero, Kefei Wei, Lu Sun, Yitong Qi, Xiaoyu Yang, and Jiawen Fu

1 Background

Artificial Intelligence (AI), defined as "computer systems designed to interact with the world through capabilities and intelligent behaviors that are essentially human" (Luckin, et al., 2016, p. 14), has gradually become part of our daily life as advanced technologies are applied to essential functions, such as health, employment, commerce, and public services (Dobrescu & Dobrescu, 2018). In recent years, the application of AI has also entered the field of education (Swartout et al., 2013), changing how information is searched and shared on a global scale and developing new communicative strategies (Taranenko, et al., 2019). AI speech evaluation systems based on speech recognition, natural language processing, and speech evaluation technology have reportedly contributed to the learning of English as a Foreign Language (EFL) and have helped learners to practice and receive an evaluation of their EFL speaking performance.

An emerging concern in recent research into programming language learning-conducive AI systems is to provide students with a range of course- and assessment-aligned input, readily available on portable devices and assisting distance and proximate (blended) practice (Banditvilai, 2016; Bonk & Graham, 2012). So far, AI voice recognition technology has provided applications enabling EFL learners to practice English-speaking skills on computers and mobile devices, thus complementing traditional face-to-face tuition, yet not achieving the flexibility necessary to adapt the technology to specific language learning purposes, such as university English for Specific Purposes (ESP) and/or Content and Language Integrated Learning (CLIL)

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approaches. AI platforms have nevertheless broadened the possibilities of student blended practice of high-stake exam and/or higher education speaking skills such as conversation and presentations using AI applications that give instant feedback (Kim et al., 2017).

Pronunciation and accent are key concepts that AI research is trying to address as they pose difficulties in the programming of AI applications for EFL (conveniently referred to as AI-EFL in the present study) and their necessary calibration on a restricted range of accents, mostly American and British English received pronunciation (RP) (Gilakjani, 2011; Kim, 2006). According to Derwing and Munro (2005), the AI application for EFL learning should help students to notice where their pronunciation deviates from the model adopted in order to improve the clarity of pronunciation in speaking performance.

Research has identified a gap in the programming of AI-EFLs, consisting of adapting features such as instant feedback of speaking skills to sustain independent study for specific EFL course- and exam-contents and in overcoming constraints such as limited face-to-face teacher feedback and classroom time (Derwing & Munro, 2005). Moreover, the currently available AI-EFLs are mainly based on British and American accents phonetic representations; consequently, they are often limited in identifying and scoring non-native English accents, increasingly featuring in international higher education. Recent studies have identified a deficit of models of non-native English accents in AI-EFLs and their impact on the degree of accuracy that AI-EFL feedback achieves when scoring non-native English accents. For example, even in the cases where accurately structured spoken texts are produced, available AI-EFL software seems unable to closely match accurate performance if not produced with the native English accents that primarily feature in high-stake test sources (TOEFL iBT, IELTS, TOEIC) (Kang, et al., 2018; Murphy, 2014). Therefore, the potential of AI-EFL programming should be further investigated jointly exploring how programming can lead to adapting to non-native accents and how it can be applied in language learning to foster accurate intonation, fluency, vocabulary range, and grammatical accuracy that are required in real-life academic purposes.

AI-EFL applications have recently featured in Chinese-based educational research (Knight, 2017). The currently available AI-EFL products in China tend to focus on the development of generic EFL speaking skills. A newly developed app is *Liulishuo*, whose AI-EFL includes an AI speech evaluation system providing users with scores and feedback on their speaking fluency, vocabulary range, grammatical and pronunciation accuracy. *Liulishuo* also offers a platform for IELTS practice (*IELTS Liulishuo)* featuring virtual exam conditions. However, as mentioned above, AI-EFLs do not achieve reliable scoring accuracy in contexts presenting wide varieties of accents, such as international higher education, prompting the present study into the effects of accents in AI-EFL for academic purposes in Chinese international higher education.

Students' perceptions of the reliability of an app that purports to evaluate speech are important to consider as this will influence the student's use of the app. This case study, therefore, examined to what extent AI-EFL speech evaluation systems in the Chinese market are perceived by students as capable to adapt to Chinese and other

non-native English accents (e.g., French, Korean, and Italian) and to provide both feedback and accurate speaking performance scores. Two AI-EFL applications were considered: *Liulishuo* and *IELTS Liulishuo*.

The research questions guiding the exploration of Chinese and non-native English-speaking university student held views were:

1. *To what extent are the selected AI-EFL apps perceived to accurately identify clear pronunciation in non-native English accents?*
2. *To what extent are the selected AI apps perceived to score non-native, yet clear speaking task performance accurately?*

2 Case Study

2.1 *Participants*

By way of snowball sampling (Atkinson & Flint, 2001; Goodman, 1961), 21 Chinese EFL learners and nine international students currently attending various universities in China were randomly invited to participate in this case study. The first stage of sampling consisted of approaching campus students, who in turn approached and recommended other participants sharing the same requirements, namely being either Chinese or other non-native speakers of English and currently attending a Chinese university. Mandarin-Chinese speaking participants had a variety of local Chinese accents and were from Northeastern, Northwestern, Southeastern, Southwestern, and Central regions of China and had never lived abroad. The nine non-native-English-speaking (international) participants were from South Korea, France and Italy, Mauritius, Cameroon, and Indonesia. Participants were 30% males and 70% females, aged between 19 and 30 years of age. Their English learning experience varied; some having studied for seven years, while others for more than 10 years.

Among the native Chinese student participants, only 29% of them thought highly of their spoken English proficiency while 71% suggested that they were not confident in speaking English and found it difficult to speak fluently with other English speakers. Whereas most of the international students interviewed regarded their spoken English as comprehensible and good enough for daily communication. Overall, international participants (67%) had higher confidence in their spoken proficiency skills than the Chinese participants in the study.

Participants were asked to use two AI-EFL speech evaluation systems—*Liulishuo* and *IELTS Liulishuo*—selected by the research team for being reportedly already popular among students, and easy to install on a mobile phone. Students were asked to use the two AI-EFLs to study, practice, test their English-Speaking skills performance, and receive evaluations on selected speaking tests. In the second stage of the research, participants were interviewed about their experiences and perceptions of using the selected AI-EFL apps.

2.2 Apps and Tasks

Two AI-EFL apps developed by *Liulishuo* were used for evaluating participants (1) reading aloud and (2) speaking tasks. As these apps do not have an English language interface, guidance was provided by the researchers to non-Chinese speaking participants by means of remote assistance in *WeChat*, a platform developed by *Tencent Company* that provides social networking, among a variety of other services. The standard *Liulishuo* app was the platform used for the reading tasks that proceeded from guided sentence reading to modeling whole-text reading. Scores were given both after sentence reading and after whole-text reading. The *IELTS Liulishuo* app provided feedback on participant pronunciation, grammatical accuracy, vocabulary accuracy and range, and whole-text coherence.

2.3 Data Collection

For data collection and analysis consistency, the first phase of the study lasted one week, during which all participants were asked to complete the same tasks and use the same materials, whose difficulty levels gradually increased. *Liulishuo* reading materials were sourced from well-known English language movies, books, news, poems, lyrics, speeches, and daily topics, while *IELTS Liulishuo* materials were taken from IELTS speaking tests that required participants to speak freely for two minutes. The topics were along the lines of "describing your favorite singer", or "describing your grandparents' job".

In the *Liulishuo* app, participants were asked to practice their speaking skills remotely by using their mobile devices and record both reading aloud and speaking performance scores. The tests in *Liulishuo* are usually divided into two parts. Firstly, users listen to the recording of the text and repeat each sentence verbatim after pressing the record button. Next, the participants need to record their unguided reading of the script of the same text. Last, the system scores each repeated sentence. In the second exercise, users must read the materials without guidance and record their performance, which is then scored by the system. New materials in the app are automatically provided to participants daily to enable remote access to exercises at participants' convenience.

In *IELTS Liulishuo*, when a learner selects a topic to practice a presentation, he/she will be given two minutes to talk about the given topic following a list of prompts. After recording, participants are scored according to the IELTS speaking test requirement, including fluency, grammatical accuracy, pronunciation accuracy, and vocabulary range. New test materials are provided daily by the system and accessed at participants' convenience.

The second study phase consisted of semi-structured interviews focused on exploring participant experiences and perceptions of using the two AI-EFL speaking

evaluation apps. Interview questions consisted of four parts, namely: (a) demographic questions including nationality and years of English learning experience; (b) questions about participants' views of their English proficiency and perceptions of whether their pronunciation and accents influenced their proficiency; (c) perspectives of students' degree of satisfaction with *Liulishuo*; and lastly (d) perspectives of students' degree of satisfaction with *IELTS Liulishuo*.

2.4 Data Collection and Analysis

Interviewers aimed to gather in-depth descriptions of participants' perceptions of the accuracy with which AI-EFL recognized clear though non-native pronunciation and accents. Moreover, participants were questioned on their beliefs about whether AI-EFL is capable of accurately evaluating tasks conducted by non-native students using clear and understandable pronunciation and accents. Therefore, interview questions focused on whether the two AI-EFL apps used in the study were perceived as recognizing participant pronunciation that despite non-native was reportedly clear and accurate; and whether students were satisfied with the scores that the apps provided to their ability of satisfying criteria of accurate intonation, fluency, vocabulary range, and grammatical accuracy required in real-life academic purposes, more than being able to mimic native accents. Moreover, interview questions explored student expectations and satisfaction with the pronunciation practice apps afforded to achieve accurate intonation, fluency, vocabulary range, and grammatical accuracy required in real-life academic purposes, as well as feedback and assessment calibrated on academic English language contents and aims. Finally, the interviewers collected participants' suggestions on how AI-EFL apps might be improved to become fully relevant to the needs of non-native EFL learners.

Interviews were held either face-to-face or on *WeChat* and questions were available also in written format. All interviews were recorded and subsequently transcribed and later translated by researchers to closely match their original meaning in English. Chinese participants were coded as CS and non-Chinese students as NCS. Participant answers were analyzed inductively by means of comparing all participant answers according to the order of interview questions to identify all segments of information. This was followed by a stage of labeling the segments of information that started to emerge as categories. Lastly, redundant categories were reduced until the emerging most important themes allowed to create an explanation framed by the research questions; these were subsequently refined until the main categories were identified as allowing to create a rich, in-depth description and explanation of participant views on the AI-ELF used (Thomas, 2006).

3 Results

3.1 Question 1: To What Extent are the Selected AI-EFL Apps Perceived to Accurately Identify Clear Pronunciation in Non-Native English Accents?

Since we intended to explore beliefs about the robustness of AI-EFL to non-native pronunciation and accents, the first part of the interview asked student participants to report their views on the clarity and effectiveness of their non-native English pronunciation and accents in speaking performance and communication.

Table 1 illustrates that 14% of the Chinese students believed that they did not have any accent, while 76% believed that they had a distinct Chinese accent, though this did not affect the clarity of their pronunciation and communication. For example, Chinese students (CS9, CS18, and CS20) felt that their pronunciation could be clearly understood in their daily communication with people of various nationalities. More-over, CS11 (Hainan, South China) reported that though his pronunciation "may not be perfect", it was still sufficiently clear to be easily understood, even when he felt nervous or tired. Furthermore, CS1 (Hebei, North China), stated the following:

> *I have a Chinese accent when I speak English but it is understandable by other people and my accent actually does not affect people's understanding. And for the IELTS test, there is no influence on the score if you have some accent. Indeed, accent does affect the pronunciation of some letters and words because people may speak like they are used to in their native languages.*

Conversely, 10% of participant students believed that their Chinese accents obscured the clarity of their spoken communication. For example, CS2, (Hunan, South China), and CS16 (Gansu, West China), indicated that their pronunciation caused misunderstandings, for example, because they tended to pronounce /t/ sounds where /d/ were intended. Additionally, CS2 reported that "Indeed, I think my spoken English is influenced by my accent, especially the pronunciation of some letters like 't' and 'd'". CS16 similarly stated: "my accent might cause pronunciation problems. Sometimes people cannot understand me because of it, which is pretty awkward".

It emerged that while most Chinese participants felt confident about their accents and pronunciation, some did not; a finding consistent with Wu and Zhang's (2019) on Chinese students but also with Yamaguchi and Pétursson's (2018) on the phenomenon

Table 1 Chinese students' perception of their accent

Students' perceptions	Percentage (%)
Students think that they don't have an accent	14
Students think that they carry a little "Chinese accent" but it does not affect their communication	76
Students think that they have a strong Chinese accent	10

of sound transition was observed in Japanese English pronunciation featuring renditions of the /r/ sound as /l/ and the sound /z/ as /s/.

In comparison, all non-Chinese students (NCS) reported perceptions that their English pronunciation and accents were modeled on their mother tongues but that did not affect the efficacy of their communication. For example, both NCS29 (French) and NCS26 (Italian) participants similarly stated: "I do not think my accent affects how others understand me". NCS22 (South Korea) also claimed that: "I have an accent [when I speak English], but I don't think it affects my communication". Therefore, non-Chinese EFL learners seemed comparatively more confident that their accents would not affect the clarity of their pronunciation and their spoken communication.

Overall, findings show that most university student participants perceived that their pronunciation and accents did not affect the clarity and intelligibility of their face-to-face communicative tasks, although most said there was room for some improvement. It was consequently important to establish their perception of the robustness of AI-EFL speech evaluation in recognizing, evaluating, and giving feedback to non-native pronunciation and accents that are held as accurate and effective to convey complex, academic meanings in face-to-face communicative and academic tasks.

Participants were therefore questioned about their satisfaction with the efficiency of two AI-EFL programs: *Liulishuo* and *IELTS Liulishuo* apps in identifying non-native English pronunciation and accents. Their answers revealed that the majority of Chinese participants were satisfied with the pronunciation practice the AI-EFL app offered, reporting that their pronunciation improved thanks to those exercises guiding students to model their pronunciation on template recordings and subsequently scoring participants on their attempts to closely reproduce the modeled pronunciation. CS9 from Shandong, East of China, explained that these AI-EFL apps could recognize her pronunciation and precisely detect the phonemes that she pronounced inaccurately by marking the mispronounced words in red. Moreover, CS11 from Hainan observed that the pronunciation modeling exercise could develop students' consciousness of the need to stress certain words in the sentence, consequently improving also the accuracy of their intonation and related meaning-making. CS2 (Hunan, South China) was satisfied with how the AI-EFL supported her speaking practice:

> I think it is pretty useful and I would do the exercises for a second time if I did not do it well for the first time. I pretty like the evaluation system, which can help me know my shortcomings. Yeah, I am very satisfied with them and the scores I received from the AI were much higher than what I had expected.

Most of the non-Chinese student participants also reported satisfaction both with how AI-EFL identified accurate pronunciation as well as with how inaccuracies were identified leading to awareness of which aspects of pronunciation needed improving. The students' comments, then, revealed that these apps could afford relatively accurate support of users' speaking performance improvement.

When asked which function participants were most impressed with, non-Chinese participants tended to agree on the app's ability to detect, identify, and review pronunciation and intonation. In particular, both the Indonesian participant (NCS21) and the French participant (NCS29) maintained that the scoring and feedback functions left them both impressed and rewarded of their efforts, leading them to conclude that these features are essential when it comes to choosing which AI-EFL app to use. This is also consistent with Kacetl and Klimova's (2019) analysis of English learning apps and their observation that the enhancement of learners' metacognitive capacity is decisive in both academic and leisure language learning purposes.

In summary, the first research question prompted responses that generally revealed that both Chinese and non-Chinese students were generally confident in the clarity of their pronunciation and accents in real, face-to-face tasks, but they also identified areas for improvement. Moreover, data collected revealed that participant students were satisfied with the robustness of *Liulishuo* and *IELTS Liulishuo* to their non-native accents and the relevance of the pronunciation practice they offered. Both AI-EFL apps therefore were generally perceived to have adapted successfully to non-native English pronunciation and accents in this discrete research sample.

3.2 Question 2: To What Extent are the Selected AI Apps Perceived to Score Non-Native, yet Clear Speaking Task Performance Accurately?

The previous section illustrated how participants were generally satisfied with how the AI-EFL apps interfaced with non-native English pronunciation and accents. The research was also concerned with establishing whether participants perceived AI-EFL apps to offer features relevant to their language learning and assessment purposes in fostering accurate intonation, fluency, vocabulary range, and grammatical accuracy required in real-life academic purposes.

Students reported being satisfied with *IELTS Liulishuo*'s score reliability of pronunciation, pace, accuracy, and fluency. Participants also stated that unlike their intonation, which proved more decisive in the score award, their respective non-native English pronunciations had little impact on their scores. In particular, both CS8 (Shanghai, East China) and CS19 (Fujian, South China) observed how the mock IELTS function in *IELTS Liulishuo* was both relevant for their speaking task purposes and detailed in its evaluation system features.

Concerning the apps' robustness to score non-native English pronunciation and accents, more than 70% of Chinese and non-Chinese students claimed that their accent did not affect their performance scores and that they obtained accurate scores from both AI-EFL programs. For instance, CS8 found that the AI-EFLs could easily recognize the words she pronounced and that her accent—intonation and pace—had negligible impact on the AI-EFL score reliability. Moreover, CS23 (Tianjin, North China), noted that she deliberately tried to speak with an exaggerated accent but that

by maintaining grammatical accuracy and coherence her scores resulted even higher than when she spoke with her normal accent.

Conversely, 20% of participant students stated that their pronunciation and accents affected their scores because only close imitations of either American or British AI-EFL-templated accents would result in good scores. For example, CS13 (Liaoning, North China) said that "it's important to sound close to native speakers because it has to recognise what words you say in order to understand you". Similarly, non-Chinese student, NCS10 (Indonesia), reported that "non-standard" English accents or pronunciation seemed to lead to negative scores despite being reportedly clear and intelligible; a view shared by other participants reporting that only if "they imitated the sample voice [they would] get a decent mark". These views suggest that the AI-EFL marking system failed to adjust to clearly pronounced non-native English-speaking task performances, attributing higher scores on the basis of speaker imitating templated native English pronunciation, rather than grammaticality, range, and intonation.

Participants were then asked to relate which AI-EFL function they rated as most relevant to improving their speaking task scores. Chinese students CS11 said: "I'm interested in its impressive function to develop student consciousness of stressing certain important words in a sentence. I think the app can score my accent fairly and adequately identify my [pronunciation]". Moreover, CS15 observed how "the most impressive function of this app is that it can enhance my awareness of language and enrich my vocabulary". Similarly, most non-Chinese participants appreciated the functions to detect, identify, and review intonation and pronunciation. Additionally, NCS26 (Korean) said: "The function that impresses me most is that after I finish reading an article, it will tell me which sentence I pronounce best, which sentence I pronounce worst, and why it is poor. I am satisfied with my performance. I think my spoken English is about this level". Indonesian NCS10 and both French NCS28 and NC29 participants referred to finding the marking and feedback function both interesting and rewarding. But particularly relevant was Mauritian participant NCS5's observation "that if, for instance, I stammered or misspelled a word and said it again, it did not affect the score. That was cool!".

The *IELTS Liulishuo* app was reported by all participants to reward coherence, grammatical accuracy, pronunciation, and vocabulary range. However, weaknesses were also identified; for example, NCS29 (French) reported being scored inaccurately when using *IELTS Liulishuo* due to being inhibited by the app test conditions setup, perhaps suggesting that AI-EFL app programming was not featuring the natural empathy teachers would have in natural pre-task conversation. Another complaint was raised by Chinese participant CS25 (Gansu, West China) with AI-EFL material, as she noted that the texts were excessively simple and therefore might be helpful only to beginners or non-academic students. She also reported believing that the AI-EFL apps would not provide long-term support for learners as it lacked functions that provided reinforcement, or follow-up activities correcting students inaccurate speaking performance. CS1 added thinking that "the scores [AI-EFLs] gave to me are higher than my real speaking proficiency. Maybe the designers want to attract users and improve user experience by giving high marks". CS13 also expressed similar

opinions stating "I think it really gives a higher mark than it should even [without] best imitating the intonation in the recording". Therefore, AI-EFL apps emerged as needing to offer materials more closely matching complex academic course- and assessment-related contents and proficiency testing.

It is worth observing that the participants who declared attempting to mimic British or American native accents templated by the AI-EFL sample recordings obtained slightly higher marks. This might suggest that AI-EFL needs to pursue how to reach such robustness in their programming to allow the inclusion of more accent variety in their linguistic corpora databases. An interesting finding was the explanation that the Italian participant gave to his low scores for pronunciation in both AI-EFLs. Although believing that his accent did not affect "daily communication", he believed that Italians are strong-accented, as are French, Spanish, and speakers of Latinate languages generally. Habits consolidated in the pronunciation of the first language would inevitably affect the accuracy of English pronunciation, reinforcing the case for AI-EFL systems to broaden their databases to include more internationalized accents. Other *IELTS Liulishuo* limitations reported were that "it's not playful", and that it felt "like doing homework" (NCS29), which was attributed to its lacking engaging, real-life interaction.

In summary, most participants held similar views on the relative accuracy of AI-EFLs scores and that since its most attractive feature was the detailed feedback, this needed to be further improved to match course and assessment criteria. Additionally, both Chinese and non-native English-speaking participant students seemed to hold overall positive attitudes toward both apps. Nonetheless, some limitations were observed as AI-EFL programming reportedly needed to feature more accurate recognition of international varieties of English pronunciation.

This case study aims to open the way for further study into how AI-EFL can become more robust to receive and score international English pronunciation on tasks that are designed for specific syllabus requirements. At the same time, AI-EFL research needs to be concerned with exploring criteria to establish the characteristics of clarity in pronunciation and accents leading to scores assessing accurate intonation, fluency, vocabulary range, and grammatical accuracy required in real-life academic purposes.

4   Pedagogical Implications

The aim of this research was to investigate to what extent the current AI speech evaluation systems are perceived by Chinese and non-native English-speaking university students as useful in identifying, reinforcing, and scoring accurate speaking task performance in non-native English pronunciation and accents. The interview questions focused on interviewees' experience with two selected AI speech evaluation apps, namely *Liulishuo* and *IELTS Liulishuo.*

(a) *Increased student awareness:* Within the discrete context of the present qualitative study, participant reflections revealed that the research process increased student awareness of the variety and depth of criteria needed to achieve the desired proficiency in academic speaking skills. Although most participants were satisfied with their English pronunciation at the start of the research, eventually students appreciated that AI-EFL afforded great potential in supporting the desired improvement of their EAP speaking skills.

(b) Out-of-class learning: AI-EFL apps have the potential to help English for academic purposes (EAP) teachers and students to overcome the limitations imposed by timetable and teacher availability to provide richer speaking input, guidance, and feedback. However, this potential depends on the robustness of AI-EFL to cope with the demands that the inclusivity of non-native accents internationalization poses, albeit maintaining the essential accuracy of intonation, fluency, vocabulary range, and grammatical correctness required in real-life academic purposes.

In order to maintain the accuracy criteria mentioned above, research should prioritize investigation on the characteristics that international—yet accurate—pronunciation of English for academic purposes should feature. Most of the student participants related perceptions that AI-EFL already displayed accurate scores of their intonations; however, this is clearly not developed enough to ensure the complex academic criteria pursued in EAP courses. Therefore, research needs to develop greater focus on ensuring AI-EFL robustness in recognizing and feedbacking accurate suprasegmental aspects (intonation and pace) of spoken texts as well as the segmental ones that determine accurate pronunciation of distinct words leading to successful intercultural communication and complex meaning exchanges using English as an academic language. These developments would moreover enable heavily accented students, such as the Italian participant in the present study, to rely on AI-EFL apps to receive accurate feedback on their lacking speaking skills, further training leading to accurate speaking performance at the desired EAP level.

5 Conclusion

Concluding reflections address the limitations of this study that encompassed firstly the small sample and the limited amount of time available, limiting participating students' experience and therefore the ability to form fuller and clearer perceptions of the two AI-EFL apps.

Despite this, AI-EFLs findings could become an important asset in blended language or subject content courses delivered through the medium of English for academic purposes, as it would provide the differentiation of input and the reinforcement needed for effectively teaching speaking skills. Finally, the time scale impacted also the breadth and depth of the analysis conducted on data gathered by semi-structured interviews.

The research findings nonetheless demonstrate the need to further supply the spoken linguistics corpus available to AI speech evaluation systems. For example, the corpus should include more language data comprising international English accents but selected according to agreed criteria of their accuracy and conformity to the purposes of EAP learning and teaching. Furthermore, AI-EAP app development should be more closely sourcing from materials that target preparation for high-stake certifications in EAP.

Once materials and clear criteria of accurate intonation, fluency, vocabulary range, and grammatical accuracy required in real-life academic purposes are established, future studies should aim to identify larger samples of non-native accents as found in international academic contexts, perhaps identifying first those more likely to populate specific.

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