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## Linguistic diversity in online and mobile learning

Agnes Kukulska-Hulme & Mark Pegrum

### ABSTRACT

This chapter examines the contemporary landscape of linguistic and cultural superdiversity in relation to online, and especially mobile, learning. Current institutional educational practices are largely predicated on students' induction into standard national languages, but this is at odds with sociocultural trends towards superdiversity, sociolinguistic trends towards translanguaging, and socio-technological trends towards the integration of contextual mobile technologies into everyday communication. We consider the opportunities and challenges inherent in the use of online and mobile technologies to support culturally and linguistically diverse educational experiences, and to prepare students for effective communication in a world increasingly oriented towards superdiversity and translanguaging.

### 1. INTRODUCTION

Digital learning in a globalised world must transcend traditional boundaries between cultures and languages, opening up space for culturally and linguistically diverse educational experiences and simultaneously preparing students for effective communication across a wide range of media. While English may sometimes function as a lingua franca, this underplays the rich linguistic repertoires, semiotic resources and digital literacies that many learners could exploit to overcome language barriers and enhance their communication.

There are opportunities to enable, and indeed promote, culturally and linguistically diverse communication through *online learning*, that is, internet-connected e-learning (electronic learning) with digital communication devices. These devices encompass desktop and laptop computers which offer access to the web, notably to the web 2.0 services that foster wide communication and collaboration. There are also opportunities in *mobile learning*, or m-learning, which is in some respects a subset of online learning, but in other respects differs from it considerably. Today's mobile learning typically involves devices like mobile phones (ranging from feature phones to smartphones) and tablets, and increasingly includes wearable devices like smartwatches or fitness trackers. These technologies may also offer web access but operate most often via dedicated, single-purpose applications, or apps, downloaded from the internet. Mobile learning, because of its contextual potential, can integrate digital information and communication into everyday life, and interweave the physical and the virtual, as experiences in local spaces intersect with global networks.

Yet despite the opportunities inherent in online and mobile learning, current institutional educational practices remain largely predicated on the top-down imposition of monolingualism. In the context of education in general, students are usually expected to make exclusive use of the standard language into which they are inducted through a national education system. In the context of language education in particular, students are inducted into a second (or third, or fourth) standard language which they are normally expected to use in circumscribed spaces within the learning context, such as with peers in classrooms or with teachers in examination rooms.

As we argue in this chapter, this is at odds with sociocultural trends towards superdiversity, that is, the further diversification of diversity which is occurring as the variables underpinning diversity, and the interactions between them, are expanding dramatically in contemporary societies. It is at odds with sociolinguistic trends towards translanguaging, that is, the interweaving of multiple linguistic resources, often from more than one language, which speakers use to navigate their everyday lives. And it is at odds with socio-technological trends towards the integration of online and especially mobile technologies into everyday communication.

The moment is thus right to examine today's confluence of trends towards sociocultural and linguistic diversity on the one hand, and trends towards the growing use of online and mobile technologies on the other. In offering an overview of these developments, this chapter poses two key questions: First, when students have a range of linguistic and semiotic resources within their individual and group repertoires, how might these be productively deployed to enhance their online and, especially, mobile learning? Second, how might students' repertoires be further developed through online and mobile learning to enhance their future personal, social, educational, professional and civic lives? While indicating the challenges to be faced, we outline the opportunities provided by mobile contextual media for rich intercultural communication in educational contexts, as well as specifically to support learning about languages and translanguaging, which can simultaneously open up possibilities for the negotiation of identity and the development of agency.

## **2. HISTORICAL PERSPECTIVES**

### **2.1 History of online learning**

Online learning has a considerable history (e.g., Anderson, 2008; Salmon, 2011, 2013) and many forms of online language learning have been developed, from individualised tuition to collaborative and social learning and MOOCs (massive open online courses) (e.g., Godwin-Jones, 2016; Lamy & Zourou, 2013). Mobile language learning emerged within the broader field of mobile learning, with the specialised field of MALL (mobile-assisted language learning) developing as an extension of research and practice in CALL (computer-assisted language learning) (e.g., Kukulska-Hulme & Shield, 2008; Palalas & Ally, 2016).

In this section, Historical Perspectives, we will focus primarily on the early CMC (computer-mediated communication) involving asynchronous discussions, generally accessed on desktop or laptop computers, which emerged in the 1990s; in the following section, Core Issues and Topics, we will focus on the contemporary social media platforms, often accessed on mobile devices, which began to play a role in education in the early to mid-2000s; and in the last section, New Debates, we will focus on the contextual uses of mobile devices which have become prevalent in recent years. At the same time, it is important to recognise the fluidity of the boundaries between these technological practices, with older developments pointing the way to current practices, and current developments having their roots in older practices.

### **2.2 Historical online learning meets language practices**

The assumption that education is to be carried out in one (national) language is reflected in the vast majority of online and mobile learning initiatives, where the question of using multiple languages, or multiple forms of language, almost never arises. Of course, uses of language which are enabled and promoted in education inevitably reflect wider sociopolitical contexts. Given that education systems are tied to nation-states (Duarte & Gogolin, 2013), and that education takes

place in the *de jure* or *de facto* official languages of those states (García, 2009), it is unsurprising that education generally remains tied to old ideological constructions of culture and language.

Yet at the same time, despite the doubts now being expressed in an age of terrorist attacks, multiculturalism is viewed as a keystone of many developed democracies, and is in turn often linked to at least some support for multilingualism. Multilingual policies may seek to protect *heritage languages* and *endangered languages* (e.g., Brinton, Kagan & Bauckus, 2008), and may even go so far as to recognise the emergence of *World Englishes* as equally valid versions of the now polycentric English language (e.g., Kachru, Kachru & Nelson, 2009). An example of a global policy based on multilingualism is UNESCO's *Multilingualism in Cyberspace* initiative, designed to support linguistic and social equality via a focus on "including new languages on the Internet", "creating and disseminating content in local languages in cyberspace" and "providing multilingual access to digital resources" (UNESCO, 2011, n. p.).

Perhaps the most influential educational technology practice developed to reflect such understandings of multiculturalism and multilingualism is *telecollaboration*, which refers to online collaboration between geographically dispersed learners for the purpose of developing language competence and/or intercultural competence, often alongside digital literacies (Helm & Guth, 2016; O'Dowd, 2006). Newer terms for this kind of practice include *COIL* (*collaborative online international learning*) (Helm & Guth, 2016) and *OIE* (*online intercultural exchange*) (Thorne, 2013; Lewis & O'Dowd, 2016). Well-established bilingual and bicultural telecollaboration models include *Cultura* ([cultura.mit.edu](http://cultura.mit.edu); see also Furstenberg & English, 2016) and *eTandem Europa* ([www.cisi.unito.it/tandem/etandem/](http://www.cisi.unito.it/tandem/etandem/); see also Helm & Guth, 2016). There are also now examples of lingua franca telecollaboration where one common language, like English, is used for discussion of topics of shared interest, such as the *Soliya Connect Program* ([www.soliya.net/?q=what\\_we\\_do\\_connect\\_program](http://www.soliya.net/?q=what_we_do_connect_program); see also Helm, Guth & Farrah, 2012). In addition, there are increasing numbers of educational exchanges which aim to help students collaboratively create digital artefacts, such as the *CAMELOT* project (*CreAting Machinima Empowers Live Online Language Teaching and Learning*) ([camelotproject.eu](http://camelotproject.eu); see also UCLAN, n.d.).

However, strong critiques have been made of multiculturalism and multilingualism, including bilingual and multilingual language education, and the telecollaboration projects developed to promote these. Such approaches are perceived to be separating out and essentialising individual languages and cultures, under the guise of multiplicity. It has been suggested that multiculturalism may be a kind of plural monoculturalism (Beck, 2011), and multilingualism a kind of plural monolingualism (Makoni & Pennycook, 2007), which are outdated concepts in an era of superdiverse urban spaces and online spaces. Culturally, there is a need for non-essentialist intercultural approaches which recognise "the fluidity of cultural boundaries" (Wessendorf, 2010, p. 11) and promote cosmopolitanism not just as a worldview but as an everyday, even 'banal', practice (Wessendorf, 2010, p. 18), which can be developed both within and outside educational institutions. Linguistically, there is a need to recognise the mobility and complexity of language use (Blommaert, 2014) in the "post-imperial metropole" (Silverstein, 2015, p. 16) and in digital space (Wright, 2015). Thus, it would seem appropriate to balance the teaching of, and through, standard languages, which give access to resources and opportunities, with the recognition of students' own language practices. Restricting the latter limits students' communicative potential and their access to learning, and delegitimises their everyday practices. Furthermore, students should have the chance to develop the more flexible language skills that they will need in the future (Creese & Blackledge, 2010a).

It has been suggested that telecollaboration projects, with their distributed contexts – where learners are not just in different places, but are affected by different educational cultures, local

teachers, and so on – can “bring into focus the ... demographics of superdiversity” (Thorne, 2013, p. 13). In practice, however, telecollaboration has typically involved exchanges between, and learning about, monolithically conceived languages and cultures and, in the case of lingua franca communication, exchanges in one common monolithic language. It may even be the case that telecollaborative pedagogies support powerful hegemonic ideologies like Native Standard Language (NSL) (Train, 2006, cited in Helm, 2015, p. 199). Moreover, while lingua franca telecollaboration represents a move away from a native speaker ideology, given that it is about communication in a common language rather than acquisition of a language to native speaker standards, it could promote more hegemony of English (Helm, 2015).

Yet arguably traditional bilingual or multilingual educational models can be adapted to linguistic superdiversity by moving beyond pluralised monolingualism and promoting multilingual, multimodal communication. Successful telecollaboration projects like *Cultura* have always had at their heart students’ “dialogic learning of cross-cultural communication” and co-construction of cultural understandings (Furstenberg & English, 2016, p. 174), and it may be that they can be further adapted to linguistic superdiversity by adopting a position where:

linguistic accuracy and discourse competence continue to play roles, but in the service of cultivating the ability to achieve interactionally emergent understanding in a superdiverse and interdependent world. (Thorne, 2013, p. 15)

Indeed, OIE has been defined as “a form of language-mediated social action that brings the complex reality of communicating across cultural and linguistic (as well as social class, gender and religious or spiritual) borders into direct experience” (Thorne, 2016, p. ix). Foregrounding translanguaging and intercultural competence in turn strengthens the case, and indeed the need, for the development of digital, multimodal literacies (Helm & Guth, 2016; Lewis & O’Dowd, 2016). There may be potential for foreign language learning across different subject areas (Thorne, 2013), tying in with bilingual educational approaches such as CLIL (content and language integrated learning). While there is scope for translanguaging and multimodality in all forms of telecollaboration, this may be especially the case with students’ collaborative creation of digital artefacts, such as might occur in group projects in a CLIL context, with students operating across languages and modes as they construct multimedia artefacts.

When mobile learning emerged as an extension of online learning, it raised the question of what could be done on mobile phones that was not possible or convenient on desktops and laptops (Kukulska-Hulme, 2009). Telecollaboration on mobile devices is in its infancy and mobile language learning designs have generally supported the acquisition of individual languages. Nonetheless there have been some important developments directed at mobile users with multilingual communication requirements, as will be seen in subsequent sections.

### **3. CORE ISSUES AND TOPICS**

#### **3.1 Contemporary online and mobile learning**

For the first decade or more of its existence, the web functioned primarily as an information platform, notwithstanding Tim Berners-Lee’s original vision of a read/write web, or the efforts of educators to promote cultural and language learning through interactive initiatives like telecollaboration. It was not until the emergence of its second layer, dubbed *web 2.0*, a term popularised by Tim O’Reilly, that ordinary users of the internet could easily access tools like blogs and wikis which helped turn them from readers into writers, and from listeners into speakers, within a participatory architecture that promoted interaction and collaboration (Pegrum, 2009).

Now referred to commonly as *social media*, the major sharing platforms which arose in the early to mid-2000s – from Wikipedia (2001) and Facebook (2004) to YouTube (2005) and Twitter (2006) – have increasingly become mobile platforms over recent years, thereby ensuring even wider participation and greater integration into everyday life. More recently still, these platforms have been joined by mobile-first or mobile-only services like Foursquare (2009), WhatsApp (2009), Instagram (2010), Snapchat (2011), and WeChat (2011).

Since the rise of web 2.0, educators have been using platforms like blogs and wikis to support more constructivist, collaborative forms of learning (Miyazoe & Anderson, 2010; Pegrum, 2009). Some educators employ commercial services which can be used for either formal or informal learning, like Facebook or Twitter. Others prefer to use dedicated educational services, ranging from the LMSs (learning management systems) like Blackboard and Moodle which became popular in the early 2000s to newer platforms like Edmodo (2008) or Schoology (2009), all of which incorporate interactive fora paralleling those of commercial services – such as discussion boards, blogs, or social sharing functions – and are typically used for more formal learning. MOOC platforms like Coursera, EdX and Udacity, which gained popularity around 2012, have opened up opportunities for online course creation and participation on a massive scale.

With the advent of today's BYOD (bring your own device) educational approaches in which students are able to use their personal digital technologies, there has been a move towards the use of mobile-friendly platforms and mobile apps. Mobile learning, in turn, opens up new possibilities, which operate on at least three levels (Pegrum, 2014). Firstly, there is learning where the devices are mobile, as they must be by definition, but the learners and the learning experience are not, such as when students work individually with class sets of tablets while sitting at their desks in the classroom. Secondly, there is learning where the devices and the learners are mobile, but the learning experience is not, such as when students circulate with mobile devices and interact with each other in a classroom context, or when they exploit moments of available time while on the move, for example on public transport. Thirdly, there is learning where the devices, the learners and the learning experience are all mobile – that is, when the learning experience is directly impacted by the surroundings through which students are moving – such as when they learn via mobile apps that help them interpret displays they encounter on museum visits, or AR (augmented reality) interfaces that help them annotate and respond to the environments in which they find themselves on field trips.

The third level of mobile learning is a major new focus in education, and will be addressed in the section on New Debates below, while the remainder of the current section will concentrate on contemporary mainstream uses of web 2.0 in online learning, linked to the first two levels of mobile learning, but especially to the second level. It might be said that mobile learning at the first level is a kind of e-learning on smaller screens, with some advantages in terms of affordability as well as learner privacy (compared to larger computer screens that others can see). Mobile learning at the second level adds the convenience and flexibility of anytime, anywhere learning, though it may also add constructivist, collaborative elements when students are prompted to interact with other learners, whether that interaction occurs through the devices (as students network digitally) or around the devices (as students collaborate around device screens).

### **3.2 Contemporary online and mobile learning meets language practices**

As noted earlier, the uses of language in education reflect wider sociopolitical contexts. The contemporary era is one of superdiversity, which has grown out of post-Cold War patterns of global migration and mobility, compounded by the rise of global communication technologies like the internet and digital media (Blommaert, 2014; Blommaert & Backus, 2013). Indeed, “[i]t is the

connection, historically accidental, of both forces [migration and digital technologies] that has reshaped the social and cultural environment in which we live” (Blommaert, 2015, p. 86). Consequently, as researchers note, we have seen the growth of superdiverse linguistic phenomena such as urban and online language mixing, where practices which were once referred to under names like ‘multilingualism’ or ‘codeswitching’ are coming to seem the norm.

Various new terms have been proposed which incorporate but go beyond these older concepts. Among the best-known is *translanguaging* which, by one definition, refers to the “*multiple discursive practices* in which bilinguals engage in order to *make sense of their bilingual worlds*” (García, 2009, p. 112; italics in original). Alternatives include *transidiomatic practice* (Jacquemet, 2005); *metrolingualism* (Otsuji & Pennycook, 2010); *polylingual[ism]* (Jørgensen, 2010); and others (Blommaert & Rampton, 2011). These typically emphasise language as an activity rather than a system, that is, as emerging from everyday practices (Pennycook, 2010; Wright, 2015). Speakers are seen as developing linguistic repertoires, with individuals having a:

very variable (and often rather fragmentary) grasp of a plurality of differentially shared styles, registers and genres, which are picked up (and maybe then partially forgotten) within biographical trajectories that develop in actual histories and topographies ... (Blommaert & Rampton, 2011, pp. 4-5)

Language and identity may be seen as mutually constitutive, with an investment in language learning amounting to an investment in identity (Norton, 2013). If identity is “*particular forms of semiotic potential, organised in a repertoire*” (Blommaert, 2005, cited in Jørgensen, 2010, p. 3; italics in original), it follows that in a superdiverse era people can – and indeed, must – develop and draw on a wide range of linguistic and semiotic resources to negotiate their identities through their communication practices (Creese & Blackledge, 2010a; Jørgensen, 2010).

The internet itself is a superdiverse space, especially when it comes to web 2.0 or social media, with their ‘cultures of participation’ (Fischer, 2011) and their scope for “the formation of globalized, online affinity spaces where linguistically and culturally diverse participants interact with one another about their shared passions” (Hafner, Chik & Jones, 2015, p. 1). Linguistic mixing and switching is the default in many online contexts. Examples include translanguaging in diaspora online media, where a home language may be used iconically or symbolically (Androutsopoulos, 2007; Blommaert & Rampton, 2011); glocal hip hop websites which blend African-American English with local languages (Androutsopoulos, 2007); the photosharing site Flickr, where tagging and commentary targets local or global audiences, or both (Barton & Lee, 2012); the social networking site Facebook, where similar trends are in evidence (Jørgensen, 2012; Pegrum, 2014); and Chinese microblogs, where global English meets national Chinese as well as local dialects (Zhang, 2015). What is more, translanguaging increasingly involves not only different languages but different modalities, “with language bound up with visual, audio, and spatial semiotic systems” (García, 2009, p. 77).

To date there has been little systematic investigation of such digital spaces and practices. It is certainly time to reconsider not just language education, but language use in education in general. Many educational institutions draw on a superdiverse student base, whether in urban metropolises or globe-spanning MOOCs. While not everyone would advocate the relinquishing of national linguistic identities, education could at least help students build a richer linguistic and cultural repertoire, to some extent taking the emphasis off abstract linguistic systems and refocusing attention on learners and how they use language and semiotic resources to communicate, negotiate identities, and develop agency. For example, some teachers have used flexible bilingualism “to make links for classroom participants between the social, cultural, community, and linguistic domains of their lives” (Creese & Blackledge, 2010b, p. 112), although such an approach might

well be challenging for many language teachers. CLIL approaches, as mentioned earlier, might hold some promise. Of course, given the continued dominance of traditional forms of language and literacy testing (Blommaert & Backus, 2013), the nature of discrete language assessment might need some reconsideration (Pennycook, 2010).

Multimodality, and more broadly semiosis, also has considerable implications for education in all subject areas: “Visual and multimodal texts for example redefine what counts as knowledge, how it can be presented, engaged with and produced” (Saint-Georges, 2013, p. 2). Multimodal options can help make communication more accessible to a broader range of learners – though they may sometimes make it less accessible to those with disabilities – and can help learners further expand their existing repertoires in ways that will benefit them in the future. Moreover, multimodal digital creation has obvious links to 21<sup>st</sup> century skills like creativity (Henriksen, Mishra & Mehta, 2015; Stansberry, Thompson & Kymes, 2015) as well as communication, collaboration and critical thinking. More specifically, it demands the development of the digital literacies to communicate effectively through new text and artefact types (Dudeney, Hockly & Pegrum, 2013).

As seen in the previous section, telecollaboration is continuing to evolve, and now frequently incorporates communication channels on, or akin to those on, social media platforms. One illustration of the possibilities for multilingual student interaction on asynchronous discussion boards – not unlike those traditionally used in telecollaboration, and very much like those found on many social media services – can be seen in the Chinese-English translanguaging in the *TIEs* project (*Trails of Integrity and Ethics*) led by Hong Kong Baptist University ([ar-learn.com/trail-of-integrity-and-ethics/](http://ar-learn.com/trail-of-integrity-and-ethics/)). Students were asked to reflect on their understandings of academic ethics and integrity on text-based asynchronous discussion boards in the Blackboard LMS before and after participating in mobile AR learning trails. They used whichever language they preferred, English, Cantonese or Mandarin (with the latter two dialects of Chinese being differentiated through the use of traditional or simplified script, respectively), with some language switching evident within single discussion threads and, to a lesser extent, within single discussion posts. Given that most students had some competence in two, if not all three, languages, they were able to choose their own medium of expression while being exposed to communication in and across all of these languages.

Going a step further, an illustration of the possibilities for combining multilingual texts within a multimodal communication context can be seen in the *Multimodal Stories for Language and Cultural Exchange* project ([auschinastories.net.au](http://auschinastories.net.au)), where Australian and Mainland Chinese middle school students exchanged and commented on digital stories about their everyday lives and cultures on a group wiki. Following the initial stages where the Australian students were asked to represent themselves in Mandarin and the Chinese students in English, students in both countries were invited to use a combination of English and Mandarin in order to allow the Australian students in particular, who had learned the target language for a much shorter time, to make greater use of their own language, while exposing the relatively more advanced Chinese students to a rich sample of everyday Australian English and cultural content (Pegrum, Oakley, Lim, Xiong & Yan, 2014). While this idea was introduced towards the end of the project and the uptake was less than hoped, such an approach may point the way forward for future translanguaging, intercultural projects. Moreover, because students used mobile devices to multimodally capture aspects of their everyday surroundings, this project is linked to the more contextual mobile learning approaches highlighted in the following section.

It is however important to bear in mind a number of critiques of superdiversity and translanguaging, as well as of translanguaging specifically in an educational context. There are concerns that superdiversity and the translanguaging that emerges from it may bring challenges in



establishing communicational common ground (Jacquemet, 2005), with the negotiation of meaning becoming difficult (Blommaert & Rampton, 2011). Moreover, “[l]anguaging and ethnifying options may be limited or not, or negotiable or not, depending on particular socio-historic contexts” (García, 2010, p. 524). Indeed, there are many ways in which identity options may be limited in real-world contexts, since we are not in:

an era of unrestricted Bakhtinian carnival, with people freely exploiting the range of identity options and features currently on offer. If sociolinguistic superdiversity research has demonstrated anything so far, it is the problematic interaction between a field of sociocultural diversity and various forms of policing, surveillance and control curtailing options within that field and producing new forms of structural inequality adding to older ones ... (Blommaert, 2015, p. 85)

There is a danger, then, that education could open up a vista of translanguaging and negotiable identities for students, which they may then find to be much more circumscribed in their future social and working lives. There are challenges, too, within education itself, particularly as regards language learning, in reconciling translanguaging practices with “the need to standardise and objectify language to the extent necessary to teach it systematically, particularly to multilingual, multicultural student cohorts” (Murray & Scarino, 2014, p. 10); this in turn entails challenges in assessment, connected to those mentioned earlier.

## 4. NEW DEBATES

### 4.1 Emerging mobile learning

Mobile learning is not just about mobile devices, but about mobility of learners and learning (Kukulka-Hulme, Norris & Donohue, 2015), even if mobile devices remain central mediators of this learning (Pegrum, 2014). At the third level of mobile learning where, as discussed above, the devices, the learners and the learning experience are all mobile, mobile learning becomes contextual and situated (Jisc, 2015). Notwithstanding its relatively lower affordability (since smart devices with internet connectivity are usually required), this is where the greatest interest in mobile learning development is currently focused. There is little doubt that contextual, or context-aware, mobile learning represents the emergent next generation of digital learning (Kinshuk, 2015; Sharples, 2016; Traxler & Kukulka-Hulme, 2016b).

In a world where “we no longer enter the internet – we carry it with us” (de Souza e Silva & Sheller, 2015, p. 4), mobile devices facilitate the building of connections with our everyday living, working and social settings and, more particularly, allow people to intentionally turn those everyday settings into ‘user-generated contexts’ (Cook, 2010) or ‘learner-generated contexts’ (Cook, 2010; Luckin, 2010) through active engagement which supports different aspects of their education. AR-enabled devices in particular can foster immersive, embodied, context-sensitive learning experiences where the invisible is made visible (Dunleavy, 2014). This includes highlighting communicative practices, cultures, and other types of knowledge that pertain to these contexts; helping students to engage directly with these contexts, negotiating identity and developing agency in the process; and assisting them in recording and sharing developing insights into these contexts through digital networks accessed on the fly on mobile devices. In 2016 the game *Pokémon GO*, which first brought AR to wide public attention, was immediately appropriated by members of the education community, suggesting how it could be used to “create meaningful learning opportunities” (Conlan, 2016, n. p.) and “encourag[e] summer learning” (Gorman, 2016, n. p.).

It is here, of course, that mobile learning deviates furthest from stationary e-learning with desktop or laptop devices. From a more traditional online learning perspective, it has been suggested, mobile devices were seen as offering ways “to enhance, extend and enrich the existing curricula, institutions and professions of education”, whereas we are now witnessing the advent of a completely new:

paradigm that situates mobile learning into an account of a mobile and connected society, the part of the account built on the ways in which people and communities generate, transform, share and transmit ideas, opinions, identities, images and information, as they move and connect. (Traxler & Kukulska-Hulme, 2016a, p. 210)

We should not underestimate the significance of this transformation of “what has been called ‘mobile learning’ from the mobile component of learning, actually e-learning, to the educational component of mobility and mobile societies” (Traxler & Kukulska-Hulme, 2016a, p. 210).

#### 4.2 Emerging mobile learning meets language practices

The concept of superdiversity has long been linked with mobility through physical travel and the digital technologies that support contact during or after physical travel. Indeed, it might be said that superdiversity emerges at the point of “intersection between mobile people and mobile texts” (Jacquemet, 2005, p. 261). In an era of mobility-enabled superdiversity, “we need to consider language as a complex of mobile resources, shaped and developed both *because of* mobility – by people moving around – and *for* mobility – to enable people to move around” (Kroon, Jie & Blommaert, 2015, p. 1; italics in original). Mobile devices support engagement with translinguaging in real-world contexts, on mobile social media platforms, and in the places where the two meet. These everyday contexts – the real, the virtual, and the AR interfaces between them – are naturally superdiverse linguistic settings where, perhaps more than ever before, language use is intertwined with other, often widely varying, contextual elements. Moreover, such everyday contexts of language use are superdiverse in another sense, namely that they involve movement between multiple communicative modes.

From an educational point of view, formal language use and formal language learning in the classroom should be balanced with “experiential language use in the social wilds of everyday life” (Thorne, 2013, p. 2). If language learning is to be relevant to students’ lives, then mobile learning has a key role to play because it “strengthen[s] connections between people, and between the places where language is learned and used” (Kukulska-Hulme *et al.*, 2015, p. 8), and it will lead students to engage with the translinguaging practices typical of contextualised, situated communication, including multimodal practices. As Pennycook (2010), writing with reference to the work of Canagarajah, notes:

if we want to retain a notion such as competence, it refers not so much to the mastery of a grammar or sociolinguistic system, as to the strategic capacity to use diverse semiotic items across integrated media and modalities. (p. 129)

In sum, the use of mobile devices by mobile language learners engaging in mobile learning experiences opens up the greatest range of possibilities for authentic learning of translinguaging and semiosis, as appropriate to a sociolinguistically and technologically superdiverse world – which is fundamentally also a *mobile* world.

To date, many educational uses of mobile phones have remained grounded in older bilingual models, though the promise of multilingualism and codeswitching, as well as leveraging real-world environments for learning, has been there from the start. Tourists and travellers were obvious early

target user groups for text and speech translation services intended to aid communication, but student groups soon followed. Paul *et al.* (2008) demonstrated a multilingual mobile phone service for both text and speech translation; this was apparently the world's first commercial speech translation service, enabling users "to communicate in real environments all over the world using their own mobile phones" (p. 168). Lin, Huang, Beaufays, Strobe and Sung (2012) took steps towards multilingual speech recognition in relation to voice input, searches and commands on smartphones, noting that limited support for codeswitching was built into their system. A mobile portal for Chinese students arriving at a university in Northern Ireland, described as 'multilingual', was in fact a dual language facility providing information in English and Chinese (Curran & Huang, 2008), although it could be extended to include other languages. In South Africa, Jantjies and Joy (2012) provided bilingual educational resources that students could use on their mobile devices to support their mathematics studies, and concluded that "[t]he permutation of mobile learning and multilingual content" should be further explored to improve education (p. 211).

The potential for bringing translanguaging and intercultural elements to the fore, while simultaneously developing the contextual aspects of mobile device use, can be seen in the Singaporean *Heritage Trails* project, where the company LDR, with the backing of the Ministry of Education, has developed 39 AR learning trails to foster school students' historical and cultural understanding of their city by scaffolding their interactions with their local environment and the people within it, and requiring them to collaboratively create multimodal responses to their situated learning experiences ([www.ldr.sg/mobile-trails/](http://www.ldr.sg/mobile-trails/); see also Pegrum, 2016b). At times, multilingual teams of students are sent to the various heritage areas of Singapore, where it is advantageous to be able to employ more than one language to obtain information, before composing group responses in a matrix language like English or Mandarin (Pegrum, 2014).

It is important to note that mobile learning processes may link back in multiple ways to students' developing identities. Smartphones are personal devices which function as an extension of the self; this is all the more true of emerging wearables (Johnson, Adams Becker, Estrada & Freeman, 2015). This has an impact on the development and use of individual language repertoires:

Actual knowledge of language, like any aspect of human development, is dependent on biography. ... Repertoires are individual, biographically organized complexes of resources, and they follow the rhythms of actual human lives. (Blommaert & Backus, 2013, p. 15)

Mobile technologies are, precisely, devices that accompany us through the rhythms of our lives, complementing, extending, and preserving records of lived experience and communication.

This is very apparent in the case of new migrants, for whom identity renegotiation may be linked to their use of mobile devices as they traverse territories and re-establish themselves in new locations. The *MASELTOV* project (a partial acronym for *Mobile Assistance for Social Inclusion & Empowerment of Immigrants with Persuasive Learning Technologies & Social Network Services*) in the European Union, for instance, developed and evaluated a context-aware smartphone app to support immigrants from outside Europe with challenges relating to daily life and learning ([www.maseltov.eu](http://www.maseltov.eu); see also Kukulska-Hulme *et al.*, 2015). This project demonstrated that smartphone users were receptive to opportunities for semi-structured, informal learning on their phones that responded to their personal needs and whereabouts, but it also highlighted the importance of their access to an online community: for example, being encouraged to practise the target language while also having the ability to discuss issues with speakers of their primary language, typically other immigrants.

The Singaporean *Heritage Trails* and the European *MASELTOV* project are in the vanguard of the newly contextual learning that becomes possible with smart mobile devices. At the same time, we

must not forget the challenges inherent in this kind of mobile learning, which potentially extends some of the language, identity and assessment concerns flagged up earlier. To these we must add practical issues around access to hardware, software and bandwidth; digital literacy issues (Pegrum, 2016a); and cultural expectations as well as ethical issues (Traxler & Kukulska-Hulme, 2016a).

## 5. SUMMARY

At the beginning of this chapter, we posed two key questions. We asked, first, how students' linguistic and semiotic resources might be productively deployed to enhance their online and, especially, mobile learning; and, second, how students' repertoires might be further developed through online and mobile learning to enhance their future personal, social, educational, professional and civic lives. Mobile contextual tools, while raising issues of their own, may point a way forward, as we see them employed in initiatives like the Singaporean *Heritage Trails* and the European *MASELTOV* project. In such projects, learners make use of their existing language knowledge and multimodal skills to interact with, respond to, and record and share learning from local environments; and with careful digital scaffolding, they may further develop their language knowledge and multimodal skills through these very processes of interacting, responding, recording and sharing learning. As we find ourselves increasingly living in spaces at the interface between the virtual and real, where superdiversity and translanguaging naturally come the fore, it is time for education to leverage such spaces, both to help students harness their existing skills in the service of their learning, and to help them develop the additional linguistic, semiotic and social skills they will need in their future lives.

## 6. FURTHER READING

- de Souza e Silva, A., & Sheller, M. (Eds.). (2015). *Mobility and locative media: Mobile communication in hybrid spaces*. London: Routledge. This edited collection provides an overview of the impact of mobility and mobile communication practices on contemporary society.
- Martín-Monje, E., Elorza, I., & García Ríaza, B. (Eds.). (2016). *Technology-enhanced language learning for specialized domains: Practical applications and mobility*. London: Routledge. This edited collection provides an overview of recent developments in online language and literacy learning, including with mobile devices.
- O'Dowd, R., & Lewis, T. (Eds.). (2016). *Online intercultural exchange: Policy, pedagogy, practice*. New York: Routledge. This edited collection provides an overview of recent developments in telecollaboration, or OIE (online intercultural exchange).
- Palalas, A., & Ally, M. (Eds.). (2016). *The international handbook of mobile-assisted language learning*. Beijing: China Central Radio & TV University Press. This edited collection provides an overview of recent developments in language and literacy learning with mobile devices.
- Traxler, J., & Kukulska-Hulme, A. (Eds.). (2016). *Mobile learning: The next generation*. London: Routledge. This edited collection provides an overview of recent developments in context-aware mobile learning.

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