Journal of Learning for Development – JL4D
ISSN: 2311-1550
Vol. 6, No. 2, pp. 116-129

Mobile Language Learning Innovation Inspired by Migrants

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Abstract: Migrants arriving in a country are not always welcome. Similarly, the arrival of new technologies can be perceived as a blot on the familiar landscape of established educational practices. This paper seeks a productive synergy between migrants' educational requirements with respect to learning the language of their host society; their valuable and unique human experiences and talents; and innovative learning designs that harness the ubiquity of smartphones and other mobile technologies. The present-day mass mobility and migration of individuals and groups of people sows the seeds of new ideas, generating novel approaches to language teaching and learning supported by personal technologies. There is a substantial body of evidence from research and practice for the effectiveness and appeal of mobile language learning in various educational settings, however, a specific focus on migrant learners is a more recent development. The paper provides an analysis of innovative mobile language learning projects and applications designed for migrants. It is argued that innovations resulting from a concern with supporting migrant learners can also benefit other mobile populations, such as students and business people, through the introduction of more adaptable ways of fostering and organizing learning.

Keywords: mobile learning, language learning, migrants.

Introduction

Language learning is a necessary and popular pursuit for billions of people around the world, with surges in demand being reported for certain languages, such as Spanish and Mandarin Chinese (El Pais 2017; Zhao 2017), alongside the continuing global demand for learning English. In addition to learners participating in formal language classes and tuition, there are countless others who make efforts to learn languages informally, increasingly using digital resources, such as online courses, social platforms and mobile apps (Jones 2015; Martín-Monje & Bárcena, 2015; Viberg & Grönlund 2017). Methods and processes of language teaching, learning and assessment are evolving, partly prompted by the omnipresence of personal technologies and social media as channels of communication that afford opportunities to learn, observe and practise languages (e.g., Lai & Zheng, 2018; Lam, 2019; Reinhardt, 2019).

According to the British Council's (2018) report on the future of English in the European Union, where there is considerable movement and influx of people seeking a new life and employment, notable language trends include a demand for employees who have high-level language skills, and a requirement for 'top-up' tuition throughout adults' working lives. The report forecasts a decrease in demand for evening or weekend courses that run over many months and a corresponding need for "flexible, personalised, purpose specific and time efficient learning" (British Council, 2018, p. 12). These realities call for reappraisals of language provision and effective ways of learning languages, in alignment with evolving circumstances and needs.

In recent years mobile learning has been highlighted by various organisations as a continuing major trend in education and training. The annual Horizon advisory reports (NMC/EDUCAUSE 2004-19) signaled early trends towards the use of mobile phones/devices, later followed by mobile apps, tablet computing and 'bring your own device'. Their 2019 preview report (EDUCAUSE Horizon 2019) observes that the increased use of augmented, virtual and mixed reality has enabled mobile learning "to become more active and collaborative" (p. 8), while noting that the creation of such learning experiences is time-consuming. The eLearning Industry (2019) community predicts the prominence of mobile micro-assessment, mobile coaching, and AR (augmented reality) performance support in mobile learning. Technological advancements in mobile devices and applications create a fast-moving and challenging landscape but this also fosters a spirit of continuous innovation and renewal in terms of how learning is organized, who participates in it, and where and how they participate.

People who have been forced to leave their homes and move to another country or region are a growing, educationally underserved population on a global scale. Those who migrate voluntarily can also experience difficulties obtaining necessary education or training for their specific needs.

Millions of migrants, both those who have chosen to move and those who are displaced from their country of origin, find themselves having to learn the languages of their host societies within a short space of time, for work, everyday life, education or training. If their stay is deemed temporary, they may not be eligible to attend government-funded language classes, and if they need specific language skills, basic language classes are unlikely to meet their needs (e.g., LINC, 2019). Informal language learning, increasingly facilitated by access to free online resources and social networks available on smartphones, is known to be taking place alongside participation in more established forms of language learning located in classrooms, community centres or at work (Godwin-Jones, 2018). Over the past decade, numerous research and development projects as well as initiatives by individuals and companies have generated an expanding range of online and mobile applications, tools and services aiming to serve the language learning needs of migrants. Migrants have sometimes led, and have usually been involved in, these developments, contributing with their insights, experiences and expertise. The developments point to a growing need for flexible, individualised, accessible language learning provision, leading to questions around how such provision should be offered and how it relates to existing educational structures and practices.

In reaction to proposals for different kinds of learning provision, there will be those who say: Not only do we have the problem of migrants, apparently, we now also have to deal with unwelcome changes to how we teach and learn languages. There will be others who say that an influx of migrants is a fortuitous opportunity to rethink teaching and learning, aided by the many talents of new arrivals and the generative potential of their extraordinary lives. These antithetical perspectives can cohere in potentially productive ways when the pressing requirements of mobile populations, such as migrants and refugees, confront educational systems with unexpected opportunities alongside the inevitable challenges. Thus, a fresh perspective, proposed and explored in this paper, suggests that the present-day mobility of certain groups or populations can be seen as sowing the seeds of new ideas around learning, generating innovative options through the active involvement of migrants in learning designs that harness the ubiquity of smartphones and other mobile devices. The overall argument put forward in this paper is that the global phenomenon of increased migration is an important impetus

for valuable innovations that can benefit mobile populations more widely through the introduction and trialing of different ways of fostering and organizing learning.

In the next section we note that mobile learning may be considered disruptive and may be unwelcome as a form of innovation. Nonetheless, language learning providers, teachers and learners across the world have recognised its value. Analysis presented in this paper can serve to show the wide range of applications and the variety of mobile learners who are benefitting. Following on from this, we consider ways in which migrants have inspired and helped to advance new developments in education, and more specifically in mobile language learning. Finally, implications are distilled from the reviewed projects and experiences to suggest directions for future research and development, as well as pointers for those who have responsibilities for planning and providing language learning opportunities to migrants and other groups or populations for whom mobility of learning is an important issue.

Migrants, Mobile Populations and Mobile Phones Unsettling the *Status Quo*

Populations benefitting from mobile learning have included children, young people and adults in a wide variety of educational settings, yet a few years ago an analysis of a decade of conference papers on mobile learning revealed that certain groups had been the focus of a great deal of attention while others had been neglected – amongst the latter, there were: older people, talented young adults, people in hard-to-reach families and communities, those living in poverty, learners with disabilities, and those unable to use the prevailing language (Kukulska-Hulme, 2013). The work of UNESCO and its publications for policy makers (UNESCO, 2013) has established the relevance of mobile learning to advancing global progress towards Education for All through expansion of the reach and equity of education across the world. UNESCO recognised that mobile learning offered many unique benefits; for example, providing the means to build new communities of learners, supporting situated learning, and bridging formal and informal learning. The Education for All scheme did not meet its ambitious education targets within the envisaged time frame, but mobile learning has continued to be an important means of extending the reach of educational opportunity to those who have been overlooked and underserved.

Migrants' movements and settlements can be seen as an instantiation of the increased mobility that is observed in the lives of various populations across the world, including students and business people who travel and face challenges around foreign language communication as well as needing to fill gaps in their skills and knowledge. In many contexts, mobile learning has been embraced with great enthusiasm (Dunkerly-Bean & Crompton, 2016; Pulla, 2017). Nevertheless, we have to recognise that the notion of transnational mobility, especially that which results in settling in another territory, intrinsically challenges deep-rooted ideas about borders and belonging. Equally, it challenges dearly-held cultural values and allegiances, and education systems rooted in local cultures and traditions. Mobile learning, especially when associated with mobile populations and their needs, can provoke feelings of opposition or enthusiastic approval, perhaps in equal measure. Innovation often springs from authentic needs to make creative changes or develop new products and offerings in response to arising circumstances or events.

Innovation in contemporary education is often synonymous with 'change' and associated with the idea of new technology being used as a means of bringing about or imposing change. Ellis, Souto-

Manning and Turvey (2019) offer a critique of innovation in the context of teacher education, cautioning against "de-humanizing effects of technical-rational solutions to educational and societal challenges even when… they are articulated as having 'moral purpose'" (p. 3). Innovation is unsettling and may have unintended or harmful consequences for people involved in it or affected by it. One forward-thinking teacher has defined innovation in education by emphasizing creative action and leadership, stressing that it can move people out of their comfort zones:

> The ability to create that which is not yet created, to lead a new path beyond the norm, to stretch past what is comfortable to discover knowledge and inspire others. (Tucker, 2010)

Mobile learning can be seen as a disruptive and transformative force in education, creating new opportunities that go beyond the norms of conventional practice. Yet outside of institutional settings it can also be seen as an increasingly taken-for-granted, everyday activity based on easy access to information via smartphone browsers and an abundance of clever apps, which has little bearing on how education is conducted most of the time. Among many existing definitions of mobile learning (Crompton, 2013; El-Hussein and Cronje, 2010), those that emphasize learning beyond the classroom, in and across mobile contexts, capture the true spirit of mobile learning. Yet that conception is also perhaps the most challenging and disruptive because it requires consideration of what it means to organise and sustain educationally valuable activities across everyday environments that are not designed or arranged for learning. Mobile devices can cause disruption that raises both opportunities and challenges for education (Sharples, 2002). Some people still dismiss mobile learning as merely an easy way to access information (not 'proper' learning), or an intolerable distraction from learning. Smartphones being brought into school and college environments by students are undoubtedly a great challenge for teachers and institutions, yet they are also a potential resource for learning. Ott and colleagues (2018) have addressed the issue of mobile phones being often banned or confiscated in schools in Sweden; they showed that most of the students who were part of the research believed that despite their teachers' attitudes and a range of problems that occurred in and beyond the classroom, "their education had mostly benefitted from the use of mobile phones" and the phones were a valued resource for learning.

Mobile Language Learning Achievements

This section offers a succinct overview of diverse ways in which mobile learning has supported language learning to date, with illustrative examples emphasizing innovations, new environments for learning and specific benefits that have been identified. Language learning supported by smartphones and other mobile devices has been the subject of extensive research as well as a field of innovative practice since its beginning (see Chinnery, 2006), and it continues to be recognized as an important means of innovating language learning (Chong, 2018). Teachers appreciate the motivational aspects of mobile devices and researchers draw attention to features such as mobility and portability; social connectivity/interaction; context sensitivity; and individuality (Sung, Chang & Yang, 2015). Language learners appreciate the increased opportunities for memorization, revision and practice, easy access to translation, and the social contact and peer support they can draw on for motivation and help. They use their mobile devices for reviewing and strengthening what was learned in class, for expanding exposure to the target language, and to add variety and enjoyment to their learning (Demouy et al., 2016; Lai and Zheng, 2018).

Applications and systems for vocabulary and grammar learning have long been popular among language learners, as well as being a focus for innovation. Stockwell's (2007) intelligent tutor system created a profile of each learner and delivered vocabulary activities according to the areas they found most difficult. Learner-generated vocabulary content in the form of shared notes, photos and audio recordings, was the basis for the Cloudbank and LingoBee apps described by Petersen, Procter-Legg and Cacchione (2014). Games have been used to motivate students and sustain their engagement; for example, Castañeda and Cho (2016) noted significant improvements in students' verb conjugation knowledge after they used a game-like app.

Listening is another popular activity in everyday use of smartphones as well as in research projects. Demouy and Kukulska-Hulme (2010) reported that target language listening activities on a mobile phone or MP3 player could be carried out successfully while waiting, walking or traveling. The Audio News Trainer app, which was well received by adults preparing in their own time for an English examination, provided audio recordings of news items to motivate listening comprehension practice on mobile phones, with additional social media-based interaction to enable sharing and commenting on summaries of news (Read & Kukulska-Hulme, 2015). Research by Rahimi and Soleymani (2015) comparing listening on desktop computers and on mobile devices found beneficial effects of mobile listening on both listening comprehension and on learner anxiety.

Mobile learning has also been used to relate language learning to a person's physical context, primarily to provide access to location-specific language material, for example, phrases that may be immediately useful in a specific setting. Photos, maps, drawings, audio and video content can be associated with a physical place for subsequent mobile access by people who visit that place. One early system of this type provided learners of Japanese with appropriate polite expressions for their current context (Ogata & Yano, 2004). Beaudin and colleagues (2007) explored the use of sensors in the home which detected learners' interactions with objects, triggering audio presentations of English and Spanish phrases associated with those objects. Another innovative system was able to detect physical objects around the learner and assign questions related to these objects, to improve vocabulary knowledge; the environment also allowed the learners to share their knowledge (Ogata et al., 2010).

Collaborative language learning supported by mobile devices has been developing more slowly than applications and systems for individual learning but considerable progress has been made in recent years (Kukulska-Hulme & Viberg, 2018). Collaborative learning designs can support more active learning. Kirsch (2016) studied children's collaborative storytelling with the iPad, using an app that enabled recording, editing and playback of oral language; the activity promoted exploratory talk and reflection on language. Liu, Chen and Hwang (2018) designed and trialled a system for collaborative listening activities in a fitness center; language learners watched preparatory videos on their phones and then QR codes at the fitness center were used as a mechanism for accessing a quiz, getting information about specific items of fitness equipment and enabling collaboration on tasks.

Mobile language learning has generated many small-scale research projects but it is also a scalable approach that seeks to addresses the language learning needs of whole communities or sectors. Over a period of ten years the *English in Action* project in Bangladesh, which addressed much needed language teacher development in an approach that included learning resources on mobile phones, achieved significant improvements in English language competence, helping 25 million Bangladeshis improve their English as a route into work and out of poverty (EIA, 2019).

Mobile language learning literature is dominated by studies relating to learning the English language. A review of empirical research on mobile English language learning (Elaish et al., 2019) revealed that close to three-quarters of studies published in 2010-15 were conducted with participants from Asian countries, the majority from Taiwan. This suggests that despite the global nature of mobile learning research and practice, published academic literature is not representative of mobile learning experiences across the world. In particular, informal language learning has received relatively little attention from researchers despite a rising tide of mobile device use for both learning and language practice, outside of formal education in everyday life and work.

Informal Mobile Language Learning

Publications in mobile language learning have tended to focus on classroom-based learning or on learning during day trips organized by a teacher, however, there have been some exceptions (e.g., Kukulska-Hulme & de los Arcos, 2011; Jones, 2015; Viberg & Grönlund, 2017). In 2014 The International Research Foundation for English Language Education published a set of papers on design and practice in mobile language learning that covered both in-class and out-of-class settings (TIRF, 2014), thereby, recognizing that these settings had very different affordances and requirements. Out-of-class language learning can be formal, with tasks set and overseen by a teacher, or it can be informal, entirely learner-initiated and led by the learners themselves.

Informal learning is frequently unplanned, which means that it occurs spontaneously during other activities being carried out on a mobile device, or it can be more deliberate. Chan, Walker and Gleaves (2015) explored Malaysian students' lived experiences of using smartphones in diverse learning contexts and found evidence of both *serendipitous* and *purposive* learning, including for language learning; purposive learning involved using smartphones to search for information to do homework or projects, exploring hobbies or communicating with others in communities of practice. The young people "moved fluidly and easily between serendipitous and purposive learning in their daily practices suggesting a continuum of use rather than marked by strong boundaries between the two approaches" (p. 9). Learning from online sources (e.g., YouTube) was applied in the real world and the young people often received immediate feedback from their friends and families.

In research investigating how use of mobile technology facilitates learning languages among students in higher education in Sweden, Bradley (2015) mentions students used "a combination of text, audio and video files, movies as well as short film clips" in their self-initiated learning. Their mobile learning strategies were diverse and included using online translation tools, dictionaries when reading, and being in contact with target language speakers. The research showed that the learners were brushing up on previously learnt languages as well as attempting to learn new languages. Other researchers have noted that language learners use their mobile devices to join online communities where language skills may be practised with other members (Niesner, 2010), instead of, or in addition to, attending their language classes. In his reflections on learner autonomy in informal language learning, Godwin-Jones (2019) remarks on the smartphone's "power to provide a full immersive experience (while sitting comfortably at home) or a 5-minute vocab learning session (while waiting in line at Starbucks), as well as many experiences in between, representing a range of time, energy, and attention commitments" (p. 16). While learners can make good use of such variety and opportunity, some report feeling tired and having difficulties concentrating when learning on a mobile device (Lai & Zheng, 2018). Jarvis and Achilleos (2013) suggested the new acronym MALU (mobile assisted

language use) to complement MALL (mobile assisted language learning), since learners have many opportunities to pick up a language through daily use of mobile devices for a range of purposes. Taking photographs and making videos and audio recordings can be ways to capture language in use or observations about a setting in which it is used. This captured information can become a tangible, personally meaningful link between different settings; for example, a learner's record of a language issue encountered at work can be taken into a language class where the issue is discussed with others.

Informal learning might be entirely learner-driven but it might also need to be encouraged and supported with different types of assistance. Shao, Crook and Koleva (2007) proposed an informal mobile group blog to support students spending time at a foreign university; the students were encouraged to share informal observations about local language use and customs. Similarly, Pemberton, Winter, and Fallahkhair's (2010) mobile knowledge-sharing system for language learners included learner-generated content and a social network to help international students advance their knowledge and understanding of local language and culture. Language translation is also popular with learners and can support them in unpredictable contexts; it can now be accessed not only on smartphones but also via wearable ear buds that look like earphones (Gibbs, 2017). In the dawning era of intelligent assistants on smartphones and other smart devices, it is reasonable to assume that various forms of mobile and smart assistance will be incorporated into informal language learning practices (Kukulska-Hulme, 2016).

Informal language learning reminds us of the importance of authentic experiences in the context of real-world communication challenges and opportunities to have contact with target language speakers in other parts of the world. In a review of research on mobile language learning in 'authentic environments' where learning activities have real-world relevance, Shadiev, Hwang and Huang (2017) suggest that a unified online learning platform for authentic learning should be created that can be shared across institutions. They also propose that learning in authentic environments should not be limited to one particular subject: "students may practice how to order food and drinks in the target language and at the same time, learn fractions and practice their calculation skills for mathematics class using the technology" (p. 298). The idea has echoes of CLIL — Content and Language Integrated Learning — which refers to teaching various subjects (biology, geography, etc.) through a foreign language and was first coined in Europe in 1994 (Martínez, 2011), or it may imply using mobile technology for a number of loosely related activities outside of class.

Innovating Pedagogy for, with, and by Migrants

Innovations in both formal and informal learning contexts have relevance for populations such as migrants, who are likely to straddle both settings. Migrants are people who have moved to live and work in other countries, voluntarily or out of necessity, either on their own or with others. Being 'newcomers', migrants are welcome in some quarters and unwelcome in others, but a shared concern in the host societies is how the new arrivals will be supported to learn the local language or languages. Additional languages may be necessary to enable them to continue their education, including participation in online courses offered only in certain languages. Language teaching approaches based on established materials and classrooms cannot fully meet the requirements of the newcomers in terms of language learning related to their personal situation, and in terms of the practicalities of accessing language learning classes in the midst of complex life circumstances and limited means.

Kluzer, Ferrari and Centeno (2009) were possibly the first to describe the potential of flexible language learning provision for adult migrants in Europe through personalised content and methods to address specific skills and needs using mobile phones. In the same year, Bar and colleagues (2009) presented a prototype mobile storytelling platform to give voice to immigrants in the US; although not focused on language learning, it offered the users opportunities to use the target language to tell stories about their lives and communities.

Mobile learning has opened the doors to many possibilities for extending the reach of education and self-expression to underserved and sometimes disadvantaged groups of migrants and refugees. It offers an alternative that can complement existing options, or a way to engage with learning where no alternatives are available. In popular media, news stories about migrants and refugees often focus on difficulties and problems, but other sources of information may paint a different picture (Lynch & Pfohman, 2013). In Australia, the employment platform *Refugee Talent* enables companies to hire diverse talent from across Australia and internationally by matching refugees with employers (https://refugeetalent.com/). In Finland, the website of the organisation *Startup Refugees* draws attention to the arrival of new talents and skills that Finland did not have before, so that refugees can be seen as "a brain gain instead of just a social and financial challenge. These refugees could bring new business ideas into Finland" (This is Finland, 2019). The *Startup Refugees* project, which matches the new arrivals' skills and experience to the offerings of partner organisations, has reportedly been enthusiastically received by government ministries and departments, NGOs, private individuals and companies. One of the newcomers in Finland has stated: "If I receive some useful knowledge, I have to share it with others" (This is Finland, 2019). This is a simple sentiment, yet it also represents a positive attitude that underpins effective ways of learning and knowledge building. Such an attitude is well aligned with the affordances of digital media and mobile devices, which can facilitate knowledge sharing.

A special collection of papers in the *Journal of Interactive Media in Education* (Jones, Kukulska-Hulme & Brasher, 2017) sought to assess the challenges that migrants face in education and what outcomes had been achieved through the application of digital technology, particularly mobile devices. In Gaved and Peasgood's SALSA study (2017) reported in that collection, twenty-seven beacons were placed in multiple locations in the town of Milton Keynes in the UK, triggering different learning activity scenarios when learners approached each of the beacons. The participants in the study were learning the English language at local adult continuing education classes and used the SALSA app on their smartphones, thus, complementing their formal learning with informal learning in their daily lives. All the participants successfully used the provided system (beacons and app) and the triggered place-relevant language learning activities, which were deemed motivating and were highly valued; they developed not only the learners' language skills but also their knowledge about the town. Learning in urban settings was also the focus of the European MASELTOV project (Gaved, Peasgood & Kukulska-Hulme, 2018; Jones et al., 2018) which developed and trialled a range of mobile tools, services and recommendations integrated in a single app, to support immigrants to Europe in language learning and social inclusion through their daily activities. The project drew on the concept of incidental learning, "unintentional or unplanned learning that results from other activities" (Kerka, 2000: 1), recognizing the motivational power of authentic situations and personally relevant contexts. The prototype app was well received and evaluations pointed to increased language confidence among

the migrant users. In Bradley, Berbyuk Lindström and Sofkova Hashemi's (2017) study, the researchers aimed to understand newly arrived Arabic-speaking migrants' everyday practices in using their mobile phones, and found that they used them mostly for communication with their family and friends rather than for communication with Swedes and learning Swedish. One group of migrants was asked to use the *Sound-to-Speak* app to support their pronunciation skills while also taking part in the formal programme for learning Swedish; the outcome for this group was better speech flow and intonation compared to the control group, although it was suggested that more motivating material was needed to increase use of the app.

In her study with a diverse group of migrants who were using a variety of tools and resources informally to support their communication and language learning in Canada, Demmans Epp (2017) discovered a wide range of experiences that provide valuable insights into informal language learners' perspectives and study habits. For example, the migrants focused almost exclusively on learning vocabulary, and she found that "parroting audio materials, whether they originated from a video, song, language-learning tape, or the text-to-speech engine of a smartphone were all perceived as beneficial" (p. 6). She reports many interesting examples of individuals' learning strategies and the outcomes they were seeking. This type of study raises important questions about factors influencing learning choices and habits, among them migrants' cultural backgrounds and their level of proficiency in the target language. Demmans Epp suggested that the migrants needed different tools and additional support if they were to take full advantage of mobile learning. They required help with self-regulation and noticing; they needed "tools that help them to overcome language barriers that are the result of people using a variety of forms of English" (p. 10); and they needed tools that enable rehearsal for communication and receipt of helpful feedback.

There are growing numbers of free digital and mobile resources aimed at supporting language learning among newcomers. Castaño-Muñoz, Colucci and Smidt (2018) point out that the use of free digital learning for migrant and refugee education is a new field but some design principles can be gleaned from the literature, such as the need for guided instruction, personalized learning, and blended learning. Their research was among refugees and migrants from many different countries who had come to Europe. Research findings included the realization that specific initiatives for language learning "often co-target civic integration and vice-versa". Free resources for language learning used by the migrants included translation apps, commercial mobile apps such as *Duolingo* and *Babbel*, and educational videos on *YouTube*. The researchers identified innovative approaches in *Welcomm!* (welcomm-project.com/) which aims to encourage migrant children and families to learn by creating materials linked to their own world and by promoting non-formal learning; and *MEET* (http://migranthealth.eu/index.php/en/) which provides digital resources to teach health vocabulary.

Many other resources and mobile apps supporting migrants' language learning can be found on the Web, not all of which have been evaluated or published in journal articles. For example, in the "uugot.it" app (http://www.uugot.it/), developed by a team from different cultural backgrounds, TV channels are streamed to a smartphone or tablet and interactive subtitles are added; whenever the user does not understand a word, he/she can click on it and it is translated into the user's mother tongue. Apps for Refugees (http://appsforrefugees.com/) lists large numbers of apps covering language and translation as well as topics such as culture and health. Apps related to subjects like health can provide an incidental means of learning vocabulary and useful language; for instance, the

ImMigrants app (https://www.migrantaid.eu/) launched by the European Centre for Disaster Medicine aims to support migrants in accessing health facilities and uses cartoons to convey meaning alongside the use of language.

Implications of Innovations in the Migrant Language Learning Space

There is a substantial body of evidence from research and practice for the effectiveness and appeal of mobile language learning in various educational settings. A focus on migrant learners is a more recent development but a fertile ground for innovation. Based on the trends, projects and experiences considered in this paper, some implications can be identified.

As observed earlier, methods and processes of language teaching and learning are evolving partly in response to the widespread use of personal technologies and social media. At the same time, challenges and opportunities arising from the influx of migrants and refugees result in surges of ingenuity to provide solutions to urgent language learning needs, while also catering to requirements for education related to topics such as health and citizenship. As has been outlined, mobile language learning achievements in research and practice encompass more authentic and life-relevant learning; harnessing mobile social interactions and collaboration; incorporating rich media and augmented reality; bolstering learners' motivation and confidence; encouraging learning in a wider range of environments and settings; and supporting language learning at scale. Issues to beware of include dangers of disruption and tensions that are likely to arise from learners' preferences for tools that make learning and life easier (e.g., automatic translation, smart assistance) and educators' natural inclination to stretch learners and provide challenge. Designers of future mobile language learning activities, experiences and applications should not lose sight of these important achievements and identified issues, and should continue to learn a great deal from learners' informal practices, the resources and apps that learners are choosing to use and what they value or dislike about them.

Policy makers, educators, technology developers and others can all learn from the experiences of migrants and the new technology-supported learning opportunities that migrants are embracing, creating and trialing. Language learning requires continued input and guidance from teachers but it will now also require greater collective efforts to define, describe and provide resources for the learning and language practice which can take place out of class. Any changes in how learning is organized, who participates in it, where and how it happens, will depend on such factors as the willingness and ability of education providers to adapt to the newcomers and their needs. Motivation for this might come from the realization that innovations resulting from a concern with supporting migrant learners can also benefit other mobile populations, such as students and business people, who share similar needs for more adaptable and individualized language learning. Directions for future research and development should therefore include a specific focus on identifying differences and common ground. There is also enormous scope for more extensive research and sharing of practice on informal language learning and the ways in which formal and informal learning can be combined. Emerging technologies and approaches, for example, in the form of augmented reality and intelligent assistance, will provide further research challenges. In the meantime, working collaboratively with migrants to facilitate a voice and a role in ongoing developments will be key to ensuring that innovations are fit for purpose and support not only language learning but also wider ambitions of equity, participation and social inclusion.

Conclusion

We live in a world characterised by increasing 'mobility' in many senses of the word: social mobility, international travel, and greater mobility of ideas across some former borders and restricted terrains. Mobile learners include many different kinds of people whose work or lifestyle involves moving around locations or substantial travel, and who have a need to improve their language skills quickly on their way to a destination, once they have arrived, and sometimes for many years after that. Mobile learning developments are generating potentially transformative perspectives on fundamental assumptions about what learning is, who it is for, and how and where it is supposed to take place, and mobile language learning is proving its potential to address personal and authentic learner needs, and to deliver more flexible models of language learning. Learners' and teachers' expectations, skills and habits will doubtless evolve and adapt to match the potential of mobile technologies and new learning designs. Migrant learners are bound to continue inspiring innovations, as well as creating and contributing to innovation through their ideas, experiences and work.

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Cite this paper as: Kukulska-Hulme, A. (2019). Mobile Language Learning Innovation Inspired by Migrants. *Journal of Learning for Development*, *6*(2), 116-129.