Beyond the Classroom:
Mobile Learning the Wider World

Ken Beatty, Professor of TESOL
Anaheim University

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Executive Summary

Mobile learning has extended opportunities for making teaching and learning available beyond the traditional classroom. Associated technologies, software programs, and internet access have enfranchised many students who previously had little access to quality teaching. However, a paradigm shift has occurred in which learners are turning to new mobile learning opportunities to supplant traditional teaching as virtual extensions of earlier self-help books, phrase books, and audio-based language learning programs. Audio translation apps, augmented reality, and just-in-time learning approaches are providing alternatives to those with neither access nor time to learn a language. This paper examines the theoretical underpinnings of a range of technologies and applications, contrasting them with the traditional classroom and imagining the future of mobile language teaching and learning and the impact it will have on policymakers, teachers, employers, and learners.

Focus of this Paper

In more than one hundred countries around the world, the number of cell phones exceeds the countries' populations. Russia, for example, has 1.8 times more active cell phone accounts than people (Pramis, 2013). These cell phones, as well as other mobile devices, such as laptops, tablet computers, and game players, offer unprecedented language-learning opportunities.

Many teachers and administrators cling to the assumption that mobile learning is a supplement to classroom learning and, quite naturally, try to integrate mobile learning, social media, and new learning platforms into the classroom experience rather than recognizing these technologies, in some cases, as viable alternatives.

In a paradigm shift, mobile learning has become – and will continue to become – a process unrelated to classroom learning. The reason for this shift is in part because of new attitudes among language learners, particularly digital natives - those who have grown up with mobile learning technologies and interact with them almost instinctually (Puybaraud & Hahn, 2012).

Such digital natives favor the use of just-in-time language tools such as software-based augmented-reality applications that spontaneously translate signs into other languages (see http://questvisual.com/us/). Learners' reliance on traditional language instruction and methods is changing and the issue has become whether mobile technology will progress to the point where learners question the actual need to learn a language.

This paper reviews current mobile language learning and language support programs, and it positions their ideas in terms of their associated methodologies. The paper also speculates on future directions in mobile language learning using nascent wearable interface technologies such as *Google Glass*.

Brief Literature Review

Research on mobile learning is extensive, although examples from more than a few years ago quickly become dated because of the ever-increasing affordances of mobile technology. An

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affordance is what a thing can be used for beyond its intended use. For example, a chair is intended for sitting, but can be used to stand on when changing a light bulb.

Mobile phone affordances that can be used to enhance language learning typically include video and still cameras, sound recording technology, global positioning system (GPS), and internet access. Teachers and materials designers, as well as learners, have become adept at discovering language teaching and learning uses for mobile hardware and software technologies.

Cho and Reinders (2010) explain that interest in mobile learning among teachers and material designers is based,

> … partly in response to learner expectations: already in 2003 a study (Thornton & Houser, 2003) found that young Japanese learners preferred to use their cellphone for almost everything, from emailing to reading books and this trend has continued, also outside Japan. A recent study in Taiwan showed that language learners enjoyed learning with their mobile phones, largely because they could learn when and where they wanted but also, interestingly, because they felt that the 'bite-sized chunks' of learning content (due to limitations such as screen size) were actually helpful to them in managing their learning (Chen, Hsieh, & Kinshuk, 2008) (n.p.).

Although there have been countless attempts to integrate mobile technologies into the classroom context, the *mobile* aspect of *mobile learning* suggests the need to explore opportunities for learning that might take place outside of the classroom. Cho and Reinders (2010) go on to explain that mobile phones provide opportunities for situated learning and facilitate communication and collaboration.

The theory of situated learning (see Lave & Wenger, 1991) suggests that learning which takes place in a particular language context is more effective than studying similar content in the classroom. The ability of a mobile device to store or wirelessly access a variety of media (e.g., text, images, sound, and video) makes it both a resource and a pedagogical tool outside of the classroom for situated learning. For example, language learners standing on a city street hoping to locate a good restaurant could download a map and engage in scaffolded language learning as they negotiate directions with a native speaker of the target language. Alternatively, the learners could download a short lesson on asking for directions as well as restaurant-related vocabulary.

In reviewing the literature of mobile learning, a typology emerges of common studies in the area in which the prevalence of certain types of studies wane over time. For example, early studies tended to ask the question of whether mobile technologies might be appropriate for language learning. Despite the fact that mobile learning seems entrenched in pedagogical practice, these kinds of speculative articles persist (see Bahrani, 2011), perhaps because the researchers are themselves new to the field or are addressing an audience for whom mobile learning is still both a novelty and a mystery.

Other introductory articles to mobile learning provide a broad overview of what is being done (see Kukulska-Hulme & Shield, 2007, 2008;Kukulska-Hulme & Bull, 2008; Godwin-Jones 2008, 2010, 2011; Frohberg, Göth, & Schwabe, 2009). These kinds of articles try to define the

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geography of mobile learning across a variety of technologies and approaches. Sometimes they offer original research but, more often, they summarize examples of existing applications of mobile technology use in traditional learning contexts and describe opportunities to use mobile technology in new contexts.

Related to these broad types of articles are those that go further to explore paradigm shifts, examining what mobile technologies are doing to fundamentally change the ways in which teaching and learning take place. For example, Bo-Kristensen, Ankerstjerne, Neutzsky-Wulff, and Schelde (2009) discuss a project called *Mobile City* and introduce the idea of,

> … geotagging, wherein one puts tags in *Google Earth* or *Google Maps*. With geotagging, one can mark or put visual representation on areas and landmarks in a given geographic area. These are the areas of the informal learning environment with which language learning would like to connect. Tags can contain everything from text over photos and film, to tasks. Language students can make their own tags and routes, or they can retrieve information, knowledge and tasks through the tags that the teacher or others have made" (p. 86).

This type of project builds on ideas of situated learning by engaging learners as materials developers. And, while the focus is on content development, it is easy to see how a teacher or materials designer could follow up by adding a pedagogical layer of activities. For example, a teacher might create a unit on directions and types of businesses based on students' geotagging of the names of places in the community. Such a unit could contain activities that run through Bloom's revised taxonomy: remembering, understanding, applying, analyzing, evaluating, and creating (Anderson, Krathwohl, Airasian, Cruikshank, Mayer, Pintrich, Raths, & Wittrock, 2000). Or students might create tasks, as defined by Ellis (2003). Such tasks have the following four features: they focus on pragmatic meaning; they offer a learning gap between what a learner knows and needs/wants to know; they give the opportunity for the learner to choose the necessary linguistic resources necessary to complete the task; and they provide the opportunity to obtain a clearly defined outcome.

Other areas of research tend to focus on specific issues within mobile learning. These frequently include a focus on specific languages and skills, particularly the needs of groups of learners, initiatives at institutions, and country/region concerns. Examples are outlined below.

Investigations of mobile learning have been undertaken worldwide, assessing its potential in teaching a range of languages, such as Chinese (Al-Mekhlafi, Hu, & Zheng, 2009; Edge, Searle, Chiu, Zhao, & Landay, 2011), English as a foreign language (Kondo, Ishikawa, Smith, Sakamoto, & Shimomura, 2012), French (Demouy & Kukulska-Hulme, 2010), and Korean (Cho, Kim, & Lee, 2004). Some of these studies tend to foreground mobile technology's ability to easily portray non-English writing systems and connect vocabulary to text, images, and video. For studies on the teaching of vocabulary, see Lu, 2008; Song & Fox, 2008; Stockwell, 2010; and Montero Perez, Cornillie, Senecaut, De Wannemacker, & Desmet, 2011).

Many studies offer a specific region or country focus. Chun and Tsui (2010) are perhaps too ambitious in considering mobile learning across Asia as a whole, but other studies focus on individual countries such as Bangladesh (Shohel & Power, 2010) and Qatar (Warraich &

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Dahlstrom, 2012). In looking at mobile phones as an example of a tool with the potential of being a mobile learning technology, in Qatar, there are 1,393 phones per 1,000 people (i.e., more mobile phones than people) compared to 228 mobile phones per 1,000 people in Bangladesh.

The disparity in distribution is as obvious as the disparity in wealth, but the significance of the availability of mobile phones and other mobile technologies is important in even the poorest of countries. In Bangladesh, in 2012, the average number of years of education for adults was 4.8 (UNDP, 2013). In a country such as Bangladesh, where the educational infrastructure is in need of development, the fact that one in four people has access to mobile learning technologies has the potential to grant broad access to educational opportunities, albeit limited ones.

Besides granting access to those on the less advantaged side of the digital divide, research on mobile learning technologies has looked for opportunities for instruction among all levels of learners, from higher education (Alexander, 2004), to fifth graders (Sandberg, Maris, & De Geus, 2011) and younger (Orensten, 2013). Research into the use of mobile technologies by young students is sometimes focused on mobile learning tools that address unusual problems. Cuthbert (2013) outlines the use of Wi-Fi networks that allow internet access on rural school buses in Alberta, Canada, on which students must travel for up to three hours a day going to and from school. The Wi-Fi allows students to use their time to communicate with teachers and complete homework. The disabling of social media websites such as *Facebook* removes some distractions. An unexpected outcome of the program has been a decrease in behavioral problems.

Other groups of students, such as mature learners (Kukulska-Hulme, Pettit, Bradley, Carvalho, Herrington, Kennedy, & Walker, 2009), migrant learners (Stornaiuolo, Hull, & Nelson, 2009), and low-literacy adults (Munteanu, Lumsden, Leung, McDonald, & Maitland, 2010) all benefit from being able to use mobile learning technologies. With handheld devices the can to fit their studies around their work schedules, avoid the time and expense of a commute to a physical school, and lower the sense of public embarrassment sometimes felt by adults catching up on their learning. Some researchers have similarly looked at addressing the needs of individuals who feel lost in large classes (Wang, Novak, & Shen, 2008; Kinsella, 2009).

In researching mobile learning technology, researchers sometimes create applications and, less often, technology, to address learner needs. A popular genre of these helpful applications is language games (see Todd, 2008; Fotouhi-Ghazvini, Earnshaw, Robison, & Excell 2009; Anaraki, 2009; Holden & Sykes, 2011). Games are an attractive medium for language learning that suits the affordances offered by mobile phones and other mobile devices. It is also the case that existing templates for games are easily modified to accommodate language-learning objectives and content; blasting aliens can be adapted to blasting misplaced modifiers.

Some research focuses on mobile learning technology hardware, such as tablet computers (Angel, 2011) or combinations of different media devices, such as mobile phones and interactive television (Fallahkhair, Pemberton, & Griffiths, 2007). But, as mobile technology stabilizes and begins to feature similar affordances across a series of platforms (e.g., an Apple iPad has many of the same affordances of a mobile phone), research has increasingly turned to the use of various applications such as blogging (sharing information and opinions in text and pictures) and

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podcasting (sharing audio or video information and opinions) (Edirisingha, Rizzi, Nie, & Rothwell, 2007; Humblet, 2010).

Among the more popular sharing applications on mobile phones is Short Message Service (SMS), more commonly known as texting (for discussion, see Meurant, 2006; Kennedy & Levy, 2008; Crystal, 2008; Cavus & Ibrahim, 2009). Commercial applications such as the blogging service Facebook or the 140-character version of SMS, Twitter, are popular tools for engaging students in language learning.

The receptive skills of listening and reading are a more natural fit to the small screens and headphones of many mobile learning devices, particularly mobile phones, but there are also opportunities for students to practice their speaking and writing. Barton and Lee (2012) discuss commentary in *Flickr* (a photo-sharing website) and note that many reading and writing practices are being transformed by people's participation in online activities that, in turn, impact the dynamics of theieveryday lives.

Key Issues

There are many issues in the area of mobile language learning technology, several of which overlap the concerns of learners, teachers, policymakers, and employers.

Key Issues for Learners

Imagine this situation: a teacher laboriously writes a detailed homework assignment on the board, she asks her students to copy it down. The students sit there idly until she is finished then, one by one, as they leave the class, they take out their mobile phones and snap a photo of the text on the board.

Should the teacher be angry or shrug in resignation? It is a difficult question to answer. If the purpose is to get students to practice their copying and writing skills, then taking the photos is a subversion of the objective. But if the purpose is simply for the teacher to share information, then the students have found an economical solution.

Learners tend to see technology as an enabling force in the classroom, allowing them to gather information, study, work, and communicate with both their teachers and their peers effectively. Learners embrace what Peters (2007) suggests about mobile learning: a step toward making the educational process "just in time, just enough and just for me" (p. 15, as cited in Park, 2011, p. 80).

Beyond taking photos of text on a board, students increasingly use mobile technologies to make audio or video recordings of lectures without necessarily considering the teachers' permission to do so. Students are also increasingly likely to ask that teachers share their PowerPoint presentations and offer virtual office hours; times when they can videoconference through tools such as Skype. Students may check out their teachers' Facebook pages, follow them on Twitter, and see how their teachers are rated on an anonymous service (see www.ratemyteachers.com).

Learners also face a range of academic issues, such as plagiarism, but can turn to online

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plagiarism checkers (see www.grammarly.com) to ensure that their papers are not in violation. In fact, many institutions (e.g., Higher Colleges of Technology in the United Arab Emirates) have shifted responsibility to students to do so before submitting work.

Key Issues for Teachers

Teachers need mobile learning technologies and applications as tools for teaching language effectively and efficiently. Their concerns begin with such tools' abilities to help teach the structural aspects of language: phonology (the sound system of the language); semantics (the meaning of words and sentences); grammar (the rules connecting words and phrases); and pragmatics (the patterns and choices in social language use).

Teachers are also concerned about the methodologies inherent in mobile language learning technologies. The currently popular approach to L2 learning is the Communicative Approach (Nunan, 1991), which emphasizes interaction as a way to learn a target language as well as the ultimate goal. The Communicative Approach encourages learners to interact with others to communicate and negotiate language tasks. Thornbury (2010) suggests the Communicative Approach requires purposefulness, reciprocity, negotiation, synchronicity, unpredictability, and heterogeneity.

In terms of purposefulness, in which speakers are motivated by a communicative goal, mobile language learning applications can facilitate real-world tasks as well as reciprocity or interaction, that requires both parties to listen and speak. In the course of speaking, negotiation (in which speakers check and repair their utterances to ensure comprehension) is natural. Synchronicity is simply the requirement that interactions happen in real time. Many mobile applications, however, are asynchronous, such as blogs, podcasts, and texting tools, and many standalone programs are not time-sensitive; learners are not prompted to answer within a certain time, so the urgency of traditional classroom and real-world interactions is not a motivation.

Less common in mobile learning applications is unpredictability - the process, outcome, and language are all unpredictable. Similarly, computer-based technologies have difficulty in providing opportunities for heterogeneity, giving the participants the freedom to use any language or language-learning strategy they wish.

However, although mobile language-learning applications could be created to make use of the Communicative Approach, most are more likely to use older discredited methodologies such as the Grammar Translation method and the Audio-lingual method. Many applications are focused on mastery-learning approaches, wherein students complete one question successfully before being promoted to the next level. Students often enjoy the immediate feedback of these approaches and behaviorist rewards in the form of points, but whether they are effective in helping learners systematically acquire language is questionable.

An alternative is for teachers to create credible theory-based mobile language-learning programs. But, as Ala-Mutka (2010) points out, doing so can be an unreasonable demand on teacher time and abilities:

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> Teachers are key players in making change happen in the classroom, as innovators and developers of new teaching practices. They can also enable learners to develop their key competences. At the same time, they are in a difficult position, as they should now create new teaching practices with new tools that are different from those they are used to in their work and knew in their own studies (p. 50).

Key Issues for Policymakers

Policymakers are concerned with three key issues. Do new mobile technologies and their associated software programs achieve educational goals and objectives? Do they do so in an efficient and effective manner? Are they affordable? It is beyond the scope of this paper to fully address this important issue. Instead, the following will simply share some concerns in hopes of promoting further discussion.

Whether or not mobile technologies and their associated software programs achieve educational goals and objectives can be difficult to measure. Traditionally, resources such as teacher expertise and textbooks have been heavily vetted by professional boards and policymakers, but in computer-assisted language learning in general (Beatty, 2010) and many mobile learning applications in particular, there is little oversight as decisions on what to use are often made at the teacher level.

In considering whether new mobile learning technologies are efficient and effective, Gagnon (2010) is dismissive: "It might be safe to say that each time a new medium appears, no matter how different it is from the last, the normal reaction of first adopters is to use it as a new package for existing content" (n.p.). He gives the example of lectures appearing in different formats without useful enhancements. However, enhancements are both possible and desirable, for example, creating an audio lecture in MP4 format in which a transcript is synced with the speaker's voice so students can read scrolling text as they listen. What Gagnon may be ignoring, though, is accessibility; a face-to-face lecture may not be enhanced in a YouTube video, but it is accessible to students who may have missed a class, as well as to those who did attend but wish to review it.

The question of whether mobile technologies are affordable is complex. Alexander (2004) reflects,

> The physical vs. the digital, the sedentary vs. the nomadic—the wireless, mobile, student-owned learning impulse cuts across our institutional sectors, silos, and expertise-propagation structures. How do we respond to such across-the-grain learning? Is this a budding venue for curricular transformation, wedding student interest to institutional practice? (n.p.).

In other words, mobile devices are becoming increasingly common as they are already available to students, institutions and businesses so the opportunities to learn with them are already in place.

Students increasingly come to class with their own mobile devices, including laptops, tablets, and mobile phones. But expecting students to own the tools of learning can lead to inequality in

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the form of a digital divide between those who can afford the best hardware and applications and those who cannot. Moreover, learners' choice of hardware can affect their access to platform-dependent software. For example, different applications are continually being developed for Android, Windows and Apple operating systems and parallel versions may not be available across the various operating systems.

Ala-Mutka (2010) addresses several policy questions with the suggestion to foreground learner-centeredness and lifelong learning. She states that, "there should be a shift from certifying education to validating learning outcomes, which would help to identify, pursue and demonstrate competences and skills for different purposes" (n.p.). This view is a shift in thinking from a policymaker saying "You must be able to do this!" and instead asking, "What can you do?"

Key Issues for Employers

The language needs of employers are as diverse as employers themselves. Generally, employers with strong language requirements hire employees who already meet those requirements. However, employers often must consider the need to maintain or upgrade employee skills. Mobile language learning technologies may fill this need.

It is unlikely any employer would undertake the training of employees from a complete beginner level and expect them to master a language to the level that they would be expected to conduct high-stakes negotiations with a second party. But employers may use mobile language learning technologies to update employees' abilities when, for example, new language demands arise. For example, a company besieged with complaints about a new product might want to give rapid language lessons to front-line employees to better allow them to deal with such complaints.

Pedagogical Implementation

In terms of pedagogical implementation of mobile learning technology, Chandler (1984) offers a typology for software, most of which is applicable to mobile learning today. Even though Chandler's typology has been in existence for almost three decades, it is not well known among applied linguists and language teachers. In the typology, software is modeled on hospitals, funfairs, drama, laboratories, resource centers and workshops. The order of the models is significant; it represents a locus of control from the program (or teacher) to the student working independently.

- The hospital model sees the user as a patient. Typical of these sorts of programs are self-selected or prescribed grammar drills and other tutorials meant to address language shortcomings.
- The funfair model sees the user as an emulator, playing games in which the objective may not always be apparent to the user, particularly younger learners. Typical of these sorts of programs are timed matching games, choosing letters to complete words or identifying words that go with particular images (see www.kidsacademy.mobi/playground/123tracing/).
- The drama model sees the user as a role-player, often exploring a landscape in which the

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target language is encountered in signs and conversations. Drama model software often takes the form of a quest, during which points are accumulated for successful interactions. Second Life and other programs allow you to create an avatar who resembles you (or who or what you would like to look like) (see www.secondlife.com/whatis/avatar/)

- A laboratory model sees the user as a tester, experimenting with variables to see their outcomes. Such a program might ask the language learner to select different adjectives, such as colors (in the target language) that change the appearance of something on screen. A more sophisticated program would show the consequences of wrong language choices. For example, Bunton (2010) wrote a book of common language errors in which the wrong word or phrase is illustrated with humorous pictures: a woman who should be riding in a car is alarmed to find herself riding on top of it. Penguin publishing has developed a story-based application in which one creates a story by filling in blanks tied to parts of speech (see www.madlibs.com)
- The resource center model in which the user is a researcher, did not account for the advent of the internet, but it is an obvious resource center.
- The workshop model sees the user as an inventor. Although Chandler associated this model with programming languages, a closer match for mobile technology would be texting, blogging, and podcasting.

How a teacher should implement the above options in a classroom is a large question. But teachers who feel they do not have the time or expertise to make the best use of the available mobile learning resources can instead step back and perform the role of facilitator, allowing students to introduce new technologies and applications.

Teacher Development

Teacher reluctance to embrace new technologies is understandable, particularly as Alexander (2004) says, “Instructors increasingly feel that they are competing with the computer-mediated world” (n.p.). The internet’s multimedia format (e.g., text, commentary, audio, video, animations), multiple resources (i.e., countless answers for any question), and interactivity (e.g., through social media) can make a lecture seem as flat as a page in a book.

Such teachers, who put themselves on what has been called the ‘bleeding edge’ of adopting new technologies, frequently do so at their own expense. They then tend to evangelize new technologies applications and approaches among their peers but are not necessarily compensated for the value they add to a school or an organization. In time, they can become disillusioned as investing time in learning new hardware and software is a path of diminishing returns, as each technology iteration is quickly supplanted by something faster and more powerful, or simply something more powerful.

Given the growing interest in mobile technology, language teacher education programs should consider adding familiarization with such tools to their curricula for teacher trainees. Instead of expecting teachers to master new technologies, schools and organizations should aim to raise awareness of their potential. Students of almost every age, particularly digital natives, are likely to be more knowledgeable about the identification and operation of useful mobile learning technologies and applications. In a student-empowered approach, teachers identify the broad

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goals, narrower objectives and assessment needs of a language-learning situation but then invite students to consider ways in which they can use the mobile learning technology of their choice to contribute to the class and demonstrate their learning.

Potential Applications to the Workforce

A starting point for considering potential applications of mobile technology to the workforce is Klopfer, Squire, and Jenkins' (2002) explanation of the advantages of mobile learning technology: portability, social interactivity, context sensitivity, connectivity, and individuality. Each of these advantages may be considered with reference to the delivery of language learning in the workplace.

Portability refers to the ability to take the mobile technology to different locations and move around within them. From the point of view of an employer wishing to upgrade employee language skills, this advantage means that employees can take lessons without the costs associated with having a separate classroom or the time required to meet there. Lessons can also be managed in far shorter segments to fit into the employee's work schedule, such as a personalized ten- or twenty-minute lesson instead of one of an hour or more.

Social interactivity refers to the exchange of data and opportunities for collaboration. This sharing can be done either through text or through a video connection service, such as Skype. An employer might establish an internal website for employee discussions on new company products, policies, and services. The website could include mini-language lessons offering help with vocabulary, grammar, and pronunciation. A Skype videoconference connection might be used to offer short language lessons; Japan is a leader in this field and there are many commercial providers- Myer Japan (http://www.eikaiwa.biz/telephone/ for example, offers face-to-face lessons of a 20-minute duration.

Context sensitivity refers to the ability of mobile phones equipped with GPS to deliver data about a user's current location and time. These data can include both real-time and simulated data. For example, an employee arriving at a particular part of a factory might be alerted by phone to a language lesson on safety protocols. The lessons might include augmented reality information in which the user could hold a mobile telephone camera before a scene and have explanations overlaid in text, pictures, sound, and/or video.

Connectivity has to do with mobile technology's ability to connect to data collection devices, such as programs to assess learners' work and provide feedback. A mobile device's ability to connect to other learners' mobile technology provides opportunities for shared learning experiences. For example, employees could have a lesson and then connect with other learners to practice listening and speaking skills.

Individuality suggests that it is relatively easy to tailor lessons to specific students, sometimes through students choosing those areas they feel they need to improve upon. For example, an employer at a call center might monitor an employee's performance and identify areas where the employee might improve through targeted and individual instruction, or employees could select remedial options themselves.

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Issues of Concern

Many would agree with Park (2011), who says, "The most serious issue faced by mobile learning is the lack of a solid theoretical framework which can guide effective instructional design and evaluate the quality of programs that rely significantly on mobile technologies" (p. 83). Without a theoretical framework, measures of effectiveness are often left to vague anecdotal studies where validity and reliability are scarce and learning outcomes are ambiguous and not clearly assessed.

In terms of a definitive study that would assert the utility of mobile language learning, one would expect to see a learner either go from no knowledge of a language to a low beginner level or from any other level to a higher level, using only mobile language learning, with language input tightly-controlled. But this is perhaps the wrong research question, framing learning in traditional terms. Considering mobile language learning, Ala-Mutka (2010) acknowledges,

> … (the) scope of learning through these means may be limited. Although examples show that many types of learning result from informal activities in social environments, not necessarily all important skills and competences can be covered through them (p. 40).

What Ala-Mutka (2010) and others feel, is that mobile language learning should support and supplement traditional classroom instruction rather than seek to replace it.

Another general concern is the folly of trying to focus on aspects of mobile language learning that are constantly changing. With the pace of change in both hardware and software, studies are inevitably dated and it is never certain whether conclusions of one study apply to the next iteration of a particular piece of hardware or software or a new teaching or learning methodology.

In Khan Academy's flipped classroom approach, students are expected to do their principal learning not in the classroom, but as homework. They then get additional individualized explanations in the classroom. Many school districts have begun to adopt the program in lieu of traditional textbooks (see www.khanacademy.org/coach-res/case-studies). Although this may work well with some subjects, learning a language in this way may be less effective. Even in terms of mathematics, Talbert (2012) says, that Khan Academy "… is not a coherent curriculum of study that engages students at all the cognitive levels at which they need to be engaged" (n.p.).

There is also the issue of a fluid curriculum that might not systematically cover what students need or, conversely, cater to individual student needs. Merchant (2012), speaking of the Khan Academy, tells the story of two algebra teachers criticizing one of the Academy's training videos, which was quickly replaced. Criticism is welcomed in an adaptive platform as improvements can usually be quickly and inexpensively enacted. Although this flexibility is in stark contrast to the year or more it takes for a traditional publisher to issue a revised version, an ever-changing resource undermines the traditional vetting of textbooks undertaken by school officials. This is compounded by the tendency to what Horn (2013) explains is crowdsourcing by Khan Academy and other online educational providers, inviting individuals–both teachers and learners–to supplement the online lessons with additional lessons and video explanations. The fact that

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these can be included with no regard to the authors' agenda or pedagogical or content expertise, leaves open the possibility that materials may be inappropriate and of poor quality.

Future Directions

Interactive mobile technology is widely predicted to become ubiquitous, particularly in what is being called *the internet of things.* Chui, Löffler, and Roberts (2010) explain the internet of things as follows:

> … sensors and actuators embedded in physical objects—from roadways to pacemakers—are linked through wired and wireless networks, often using the same Internet Protocol (IP) that connects the internet. These networks churn out huge volumes of data that flow to computers for analysis. When objects can both sense the environment and communicate, they become tools for understanding complexity and responding to it swiftly (n.p.).

In terms of language learning, the internet of things presents opportunities to embed language learning into frequently-visited places and everyday objects. In many cases, instead of providing language-learning training, mobile technology may simply provide language solutions. For example, Brady (2012) writes about how the internet of things could be used in a specific language-learning context,

> What if a student wanted to learn a foreign language through touching the physical objects that are in their vocabulary list? RFID tags can be created and attached by the instructor for each of the physical items in the vocab list. When the student places this object on the RFID reader, it will say the word for the item in their native language and in the foreign language. Touching the item will give the student another sense to be engaged and may help (depending on their learning style) them learn the content faster.

In a more general sense, the internet of things is likely to eventually be present not as a language-learning opportunities, but through the provision of translation services, such as in the following scenario: You are visiting a city where you do not speak the language. You go to the train station to purchase a ticket. Your mobile phone proactively uses GPS to identify your position and anticipate your needs (buying a ticket). It then asks you where you want to go (perhaps showing the active rail routes) and provides information on the next trains and prices. Once you make a choice, you might be able to book your ticket on your mobile phone and obtain a map of directions to the platform. If not, your mobile phone might either provide you with the target language necessary to buy the ticket in person or you could turn your mobile phone over to the ticket clerk who can listen to your request and provide your tickets. Additional clarifications can be handled through the mobile phone. If the ticket clerk asks whether you want a first class seat or an economy seat, the mobile phone would again use GPS data to define the location and, along with a translation of what the clerk said, provide you with photos of the two seating options. The net effect of the internet of things may be to reduce the necessity of learning a second language.

Mobile technology itself is likely to follow current trends and become smaller and more powerful. Among the most interesting recent innovation is Google Glass, a wearable technology

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that interacts with voice commands, takes pictures and videos, and provides a discreet micro screen in front of one eye displaying information from the internet including explanations and translations (see www.google.com/glass/start/what-it-does/).

The internet of things, combined with access tools like Google Glass, are rapidly changing ideas of mobile technology learning. Policymakers, teachers, and employers who hope to provide language learners with the best tools and resources for language learning will not only need to keep abreast of such developments, but also to ensure that their use meets larger goals and objectives.

Charlemagne (742–814) famously said, "To have another language is to possess a second soul," and anyone who is fluent in two or more languages will agree that it stretches one's mind and allows one to better understand another culture. But, from a purely communicative perspective, it is likely that the day will come when sophisticated tools and resources, coupled with voice recognition and near-perfect translation and interpretation programs, will negate the need to learn a second language at all.

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References

Al-Mekhlafi, K., Hu, X., & Zheng, Z. (2009). An approach to context-aware mobile Chinese language learning for foreign students. *2009 Eighth International Conference on Mobile Business*, 340–346.

Ala-Mutka, K. (2010). Learning in informal online networks and communities. *2010 Joint Research Centre JRC European Commission*, 1–79. Retrieved from http://ftp.jrc.es/EURdoc/JRC56310.pdf

Alexander, B. (2004). Going nomadic: Mobile learning in higher education. *Educause Review*, *39*(5), 28–35. Retrieved from http://www.educause.edu/ero/article/going-nomadic-mobile-learning-higher-education

Anaraki, F. B. (2009). A flash-based mobile learning system for learning English as second language. *2009 International Conference on Computer Engineering and Technology*, 400–404.

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman

Angel, J. (2011). Tablet computers in the ESL classroom: Unlimited possibilities. *JALT - The Language Teacher*, *35*(5). Retrieved from http://jalt-publications.org/tlt/issues/2011-09_35.5

Bahrani, T. (2011). Mobile phones: Just a phone or a language learning device ? *Cross-Cultural Communication*, *7*(2), 244–248.

Barton, D. & Lee, C. K.M. (2012) Redefining Vernacular Literacies in the Age of Web 2.0 *Applied Linguistics,* 33(3), 282–298.

Beatty, K. (2010). *Teaching and Researching: Computer-assisted Language Learning.* (2nd international edition). London, England: Pearson Education.

Bo-Kristensen, M., Ankerstjerne, N. O., Neutzsky-Wulff, C., & Schelde, H. (2009). Mobile City and language guides–New links between formal and informal learning environments. *Electronic Journal of eLearning*, *7*(2), 8. Retrieved from http://eric.ed.gov/ERICWebPortal/recordDetail?accno=EJ867105

Brady, A. (2012) The internet of things and education. *ETC Blog*. Retrieved from: http://blogs.princeton.edu/etc/2012/02/24/the-internet-of-things/

Bunton, D. (2010). *Common English rrrors in Hong Kong*. Hong Kong, China: Pearson Longman.

Cavus, N., & Ibrahim, D. (2009). m-Learning: An experiment in using SMS to support learning new English language words. *British Journal of Educational Technology*, *40*(1), 78–91.

Chandler, D. (1984). *Young Learners and the Microcomputer*. Milton Keynes, United Kingdom: Open University Press.

Cho, M. Y., & Reinders, H. (2010). Extensive listening practice and input enhancement using mobile phones: Encouraging out-of-class learning with mobile phones. *TESL-EJ*, *14*(2), 1–7. Retrieved from http://www.tesl-ej.org/wordpress/issues/volume14/ej54/ej54m2/

Cho, S. J., Kim, J., & Lee, S. (2004). Mobile computer-assisted language learning courseware for Korean language learners. *Web Information Systems Wise 2004 Workshops Proceedings*, 3307, 173–178.

Chui, M., Löffler, M., & Roberts, R. (2010, March) The internet of things. *McKinsey Quarterly.* Retrieved from: http://www.mckinsey.com/insights/high_tech_telecoms_internet/the_internet_of_things

Chun, D., & Tsui, E. (2010). A reflection of the state of mobile learning in Asia and a conceptual framework. *Learning*, 369–372. Retrieved from http://repository.lib.polyu.edu.hk/jspui/handle/10397/1811

Crystal, D. (2008). Texting. *ELT Journal*, *62*(1), 77–83.

Cuthbert, R. (2013 January 28) Wi-Fi on rural buses improving student behaviour. *Calgary Herald*. Retrieved from http://www2.canada.com/calgaryherald/news/city/story.html?id=edff0907-21b6-4da9-855c-66dd77d9828c

Demouy, V., & Kukulska-Hulme, A. (2010). On the spot: Using mobile devices for listening and speaking practice on a French language programme. *Open Learning: The Journal of Open and Distance Learning*, *25*(3), 217–232.

Edge, D., Searle, E., Chiu, K., Zhao, J., & Landay, J. A. (2011). MicroMandarin: Mobile language learning in context. *CHI 2011* (pp. 3169–3178). New York, NY: ACM. Retrieved from http://portal.acm.org/citation.cfm?id=1979413

Edirisingha, P., Rizzi, C., Nie, M., & Rothwell, L. (2007). Podcasting to provide teaching and learning support for an undergraduate module on English Language and Communication. *Turkish Online Journal of Distance Education*, *8*(3), 87–107. Retrieved from http://tojde.anadolu.edu.tr/tojde27/articles/article_6.htm

Ellis, R. (2003) Task-based language learning and teaching. Oxford, United Kingdom: Oxford University Press

Fallahkhair, S., Pemberton, L., & Griffiths, R. (2007). Development of a cross-platform ubiquitous language learning service via mobile phone and interactive television. *Journal of Computer Assisted Learning*, *23*(4), 312–325.

Fotouhi-Ghazvini, F., Earnshaw, R., Robison, D., & Excell, P. (2009). The MOBO city: A mobile game package for technical language learning. *International Journal of Interactive Mobile Technologies, 3*(2), 19–24.

Frohberg, D., Göth, C., & Schwabe, G. (2009). Mobile learning projects: A critical analysis of the state of the art. *Journal of Computer Assisted Learning*, *25*(4), 307–331.

Gagnon, D. J. (2010). Mobile learning environments. *Educause Review Online*. Retrieved from http://www.educause.edu/ero/article/mobile-learning-environments

Godwin-Jones, R. (2008). Mobile-computing trends: Lighter, faster, smarter. *Language, Learning & Technology*, *12*(3), 3–9. Retrieved from http://llt.msu.edu/vol12num3/default.html

Godwin-Jones, R. (2010). Emerging technologies: Literacies and technologies revisited. *Language Learning & Technology*, *14*(3), 2–9. Retrieved from http://llt.msu.edu/issues/october2010/index.html

Godwin-Jones, R. (2011). Mobile apps for language learning. *Language Learning & Technology*, *15*(2), 2–11. Retrieved from http://llt.msu.edu/issues/june2011/index.html

Holden, C. L., & Sykes, J. M. (2011). Leveraging mobile games for place-based language learning. *International Journal of GameBased Learning*, *1*(2), 1–18. Retrieved from http://arisgames.org/projects-and-papers/

Horn, M. (2013, March 21). Special K: don't sleep on Khan Academy, Knewton. *Forbes Magazine*. Retrieved from: http://www.forbes.com/sites/michaelhorn/2013/03/21/special-k-dont-sleep-on-khan-academy-knewton/

Humblet, C. E. (2010). Integrating off-the-shelf language learning podcasts into the curriculum: a typology for digital wisdom. In Z. Abas (Ed.), *Proceedings of Global Learn Asia Pacific 2010* (pp. 320–325). Chesapeake, VA: AACE.

Kennedy, C., & Levy, M. (2008). L'italiano al telefonino: Using SMS to support beginners' language learning. *ReCALL*, *20*(03), 315–330.

Kinsella, S. (2009). Many to one: Using the mobile phone to interact with large classes. *British Journal of Educational Technology*, *40*(5), 956–958.

Klopfer, E., K. Squire & H. Jenkins (2002). *Environmental detectives PDAs as a window into a virtual simulated world*. Paper presented at International Workshop on Wireless and Mobile Technologies in Education. Retrieved from: www.academia.edu/374758/Environmental_Detectives_PDAs_As_a_Window_Into_a_Virtual_Simulated_World_A_Work_In_Progress_

Kondo, M., Ishikawa, Y., Smith, C., Sakamoto, K., & Shimomura, H. (2012). Mobile assisted language learning in university EFL courses in Japan: Developing attitudes and skills for self-regulated learning. *ReCALL: Journal of EUROCALL*, *24*(2), 169–187.

Kukulska-Hulme, A., Pettit, J., Bradley, L., Carvalho, A. A., Herrington, A., Kennedy, D. M., & Walker, A. (2009). Mature students using mobile devices in life and learning. *International Journal of Mobile and Blended Learning*, *3*(1), 18–52.

Kukulska-Hulme, A, & Shield, L. (2007). An overview of mobile assisted language learning: Can mobile devices support collaborative practice in speaking and listening ? *ReCALL*, *20*(3), 1–20.

Kukulska-Hulme, A., & Bull, S. (2008). Theoretical perspectives on mobile language learning diaries and noticing for learners, teachers and researchers. In: *Proceedings of the mLearn 2008 Conference*, 7-10 Oct 2008, Ironbridge Gorge, Shropshire, UK.

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, *20*(3), 271–289.

Lave, J., & Wenger, E. (1991) *Situated learning: legitimate peripheral participation*. Cambridge, United Kingdom: University of Cambridge Press

Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of Computer Assisted Learning*, *24*(6), 515–525.

Merchant, B. (2012). Khan Academy finally gets what it deserves: Criticism. *Motherboard*. Retrieved from: http://motherboard.vice.com/blog/khan-academy-under-fire

Meurant, R. C. (2006). Cell Phones in the L2 classroom: Thumbs up to SMS. *Hybrid Information Technology 2006 ICHIT06 International Conference on* (Vol. 1, pp. 127-134). November 9-11, 2006, Cheju Island, Korea. Los Alamitos, CA: IEEE Computer Society.

Montero Perez, M., Cornillie, F., Senecaut, M.-P., De Wannemacker, S., & Desmet, P. (2011). Mobile vocabulary learning: Activities allowing for interaction through input enhancement. In S. De Wannemacker, G. Clarebout & P. De Causmaecker (Eds.), *ITEC2010 CCIS 126* (pp. 15–27). Berlin, Germany: Springer-Verlag.

Munteanu, C., Lumsden, J., Leung, R., McDonald, D., & Maitland, J. (2010). ALEX : Mobile language assistant for low-literacy adults. *Literacy*, 427–430. Retrieved from http://portal.acm.org/citation.cfm?id=1851600.1851697

Nunan, D. (1991). Communicative tasks and the language curriculum. *TESOL Quarterly, 25*(2), 279-295.

Orensten, E. (2013). Language-learning tools for kids: Digital aids give toddlers an edge in Mandarin and other languages. *Cool Hunting*. Retrieved from: http://www.coolhunting.com/tech/language-learning-tools-kids.php

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Park, Y. (2011). A pedagogical framework for mobile learning: Categorizing educational applications of mobile technologies into four types. *The International Review in Open and Distant Learning*. February 2011. Retrieved from www.irrodl.org/index.php/irrodl/article/view/791/1699

Peters, K. (2007). m-Learning: Positioning educators for a mobile, connected future. *International Journal Of Research in Open and Distance Learning, 8*(2), 1-17.

Pramis, J. (2013). Mobile phones to exceed world population in 2014. Digital Trends. Retrieved from http://www.digitaltrends.com/mobile/mobile-phone-world-population-2014/#ixzz2cpK2a2af

Puybaraud, M., & Hahn, H. (2012 February 12). Digital natives: A tech-savvy generation enters the workplace. *Workdesign Magazine*. Retrieved from: http://workdesign.co/2012/02/digital-natives-a-tech-savvy-generation-enters-the-workplace/

Sandberg, J., Maris, M., & De Geus, K. (2011). Mobile English learning: An evidence-based study with fifth graders. *Computers & Education*, *57*(1), 1334–1347.

Shohel, M. M. C., & Power, T. (2010). Introducing mobile technology for enhancing teaching and learning in Bangladesh: teacher perspectives. *Open Learning The Journal of Open and Distance Learning*, *25*(3), 201–215. Retrieved from http://oro.open.ac.uk/23533/4/Shohel_and_Power_2010.doc

Song, Y., & Fox, R. (2008). Using PDA for undergraduate student incidental vocabulary testing. *ReCALL*, *20*(03), 290–314.

Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of the platform. *Language Learning & Technology*, *14*(2), 95–110. Retrieved from http://llt.msu.edu/vol14num2/stockwell.pdf

Stornaiuolo, A., Hull, G., & Nelson, M. (2009). Mobile texts and migrant audiences: Rethinking literacy and assessment in a new media age. *Language Arts*, *82*(5), 382–392.

Talbert, R. (2012). The trouble with Khan Academy. *The Chronicle of Higher Education.* Retrieved from: http://chronicle.com/blognetwork/castingoutnines/2012/07/03/the-trouble-with-khan-academy/

Thornbury, S. (2010, 15 August). *C is for communicative*. Retrieved from http://scottthornbury.wordpress.com/2010/08/15/c-is-for-communicative/

Todd, R. W. (2008). Mobile mazes: Investigating a mobile phone game for language learning. *CALLEJ*, *10*(1).

Wang, M., Novak, D., & Shen, R. (2008). Assessing the effectiveness of mobile learning in large hybrid/blended classrooms. *Hybrid Learning and Education*, 304–315. Retrieved from http://www.springerlink.com/index/g846037638074247.pdf

Warraich, K., & Dahlstrom, E. (2012). *Student mobile computing practices, 2012: Lessons learned from Qatar (research report)*. Louisville, CO. Retrieved from http://www.educause.edu/library/resources/student-mobile-computing-practices-2012-lessons-learned-qatar