



Designer Learning: The Teacher as Designer of Mobile-based Classroom Learning Experiences

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Executive Summary

This paper takes as its starting point Laurillard's (2012) assertion that classroom practitioners need to become designers of effective learning experiences. It describes a small-scale classroom-based action research project carried out with two different levels of international EFL students studying in the UK, over a two-week period. Through the experience of implementing mobile-based communicative classroom tasks with these learners, six parameters for the effective design and sequencing of these tasks became apparent: (1) hardware, (2) mobility, (3) technological complexity, (4) linguistic/communicative competence, (5) type of MALL, and (6) educational /learning context.

This paper describes the study and proposes these six parameters as key to designing effective mobile-based tasks for the communicative language classroom. It is hoped that these parameters may be applicable to other fields in education. Finally, areas of concern within the study are explored, suggestions are made for future classroom-based research, and the importance of teacher training is highlighted.

Brief Literature Review

If researchers are in agreement about one thing, it is that defining exactly what constitutes 'mobile learning' is difficult (Kulkuska-Hulme, 2009; Traxler, 2009). The concept of mobility itself is problematic within any definition of mobile learning. For example, is it the mobility of the *learners* – the possibility that they can learn anywhere, any time by using portable devices - that is important? Or is it the mobility/portability of the *devices* themselves that is important (a more technocentric view)? Clearly both of these aspects are important, and current definitions also stress the importance of *context*, where mobile learning can take place in both formal classroom settings, and also in informal settings, across myriad devices, in a variety of physical and temporal arenas (Sharples, Milrad, Arnedillo-Sánchez, & Vavoula, 2009; Kulkuska-Hulme, Sharples, Milrad, Arnedillo-Sánchez, & Vavoula, 2009).

Pegrum (2014, in press) provides a helpful way of conceptualising these interrelated aspects of mobile learning. The researcher suggests that the use of mobile devices in education frequently falls into one of three categories, corresponding to the emphasis on devices/learners/context mentioned above:

- when the devices are mobile
- when the learners are mobile
- when the learning experience itself is mobile

The first category - when the *devices* are mobile - is typical of what Pegrum describes as 'connected classrooms,' where students use their own devices, or class sets of devices, to access the internet, create content, etc. In this instance, the learners work within the confines of the classroom walls (or at home in a flipped learning model), so they are not physically mobile. In addition, the singular affordances of mobile devices (what the devices can actually *do* - such as geolocation) are not exploited so the learning experience itself is not mobile.

Pegrum's second category – when the *learners* are mobile – describes scenarios where learners may be moving around the classroom or the school premises while learning. Or students may be using commuting time or waiting time to access short chunks of content to reinforce learning in self-study mode. Reviewing vocabulary via mobile flashcard apps might be a typical self-study activity that learners can do while on the move. However, the learning



experience remains fundamentally the same, wherever the learners may physically be at the time of using the devices.

The third category – when the *learning experience* is mobile – refers to learners using devices across a range of real-world contexts to access information needed at that moment, or to create multimedia records of their learning wherever they may be at that moment. Tasks relying on geolocation are clear examples of situational mobile learning. It is this third category of mobile learning which is arguably the most disruptive, and which relies on the specific affordances of networked smart devices.

Although there are multiple devices which can be deployed in mobile learning (such as MP3 and MP4 players, gaming consoles, or e-readers), there is a trend towards convergence in devices such as smartphones and tablets in developed countries, and more basic or feature phones, or devices like XO laptops (as part of the One Laptop Per Child initiative) in developing countries. A look at recent and current international mLearning projects being carried out attest to this trend. [See for example UNESCO's reports on mobile projects: <http://www.unesco.org/new/en/unesco/themes/icts/m4ed/mobile-learning-resources/unescobilelearningseries/>]

Looking at the literature documenting mobile learning initiatives within the field of English language learning, we can identify three different project approaches with significantly different levels of access to funding, different scalability, and different timeframes:

- Large scale mLearning projects, particularly in developing countries, jointly funded by Nongovernmental organisation, Ministries of Education, hardware and/or software providers, mobile telephone companies, and educational institutions such as the British Council or universities (see Pegrum 2014 for a discussion of example projects);
- Smaller institutions or universities, in both developed and developing countries, carrying out the strategic implementation of mobile devices to support language learning. Small individual language learning schools such as the Anglo European School of English in Bournemouth, and larger institutions such as the Cultura Inglesa in Brazil, the Casa Thomas Jefferson also in Brazil, or the British Council in Hong Kong, are examples of good practice in this respect; and
- Individual teachers who are early adopters of technology, and experiment on an ad hoc basis with small groups of students, sometimes with little or no support from their institutions. The work of Paul Driver in Portugal, Anne Fox in Denmark, and Karin Tıraşım and Çigdem Ugur in Turkey provides examples of these (see Hockly, 2012 for a brief discussion of some of these studies).

mLearning for language learning (or MALL – Mobile-assisted Language Learning) is a relatively new field within CALL and e-learning, and as such, there is still little reliable research available. Even the term 'MALL' has come under scrutiny (Jarvis & Achilleos, 2013), with alternatives such as MALU (Mobile-assisted Language *Use*) being proposed as a more accurate reflection of how mobile devices can be used for learning. Longitudinal research studies are challenging to carry out because mobile devices are evolving so quickly (Pachler, 2009). What may be the latest mobile technology at the start of a three-year mobile learning project may start to seem very limited by the end. In addition, like CALL in general, MALL suffers from a lack of a single unifying theoretical framework against which to evaluate its efficacy, and this can lead to a confusing array of anecdotal case studies that do little to contribute to a sound research base (Egbert & Petrie, 2005; Levy, forthcoming). For example, CALL (and by extension MALL) researchers may decide to use an interactionist second language acquisition framework, a



sociocultural perspective, a systemic functional linguistics perspective, an intercultural perspective, a situated learning perspective, a design based research perspective, and so on. Whatever theory is chosen to underpin a research study, the researcher needs to make it salient for the reader, and to be aware of what a particular focus might leave uncovered (Egbert & Petrie, 2005).

With these points in mind, we turn to a brief discussion of this small-scale action research project. Given the limitations of space in this paper, what follows is necessarily a brief summary.

The Study

This classroom-based action research project was carried out with two consecutive small groups of international EFL (English as a Foreign Language) learners studying at a private language school in Cambridge, UK, over a period of two weeks in July, 2013. The first group (week 1) consisted of very low-proficiency learners (A1 level in the Common European Framework of Reference for Languages, or CERF) with a total of 12 learners. The vast majority were Arabic speakers, with one Chinese speaker, and one Russian speaker. Half the class were adolescents (16 years old), with adult learners ranging from 20-45 years of age. The second group was of low-intermediate level (B1 in the CERF) with a mix of nationalities among the eight learners (Kuwaiti, Italian, Brazilian, Turkish, Argentinian, and Chinese), and ages ranged from 16- to 27-years old. Each group received three hours of EFL instruction with me in the mornings, and a further one and a half hours of EFL instruction with a different teacher in the afternoons, who did not use much technology beyond occasional use of the IWB (interactive whiteboard).

The aim of the study was to use the experience of teaching in a real classroom context to explore how learners' own mobile devices might be integrated into a course book-driven approach (set by the school) to supplement and enhance communicative tasks, and what learners' expectations and reactions to this use of their mobile devices as part of their learning might be. The overall aim was to *generate theory from practice*, in an attempt to create a practical framework for designing and implementing mobile-based communicative tasks in the language classroom. That is, based on the experience of designing and carrying out classroom tasks for mobile devices in this particular context, it was expected that theoretical principles or considerations would emerge. As such, the approach attempts to generate a 'mobile-specific' theory (Vavoula & Sharples, 2009; Viberg & GrÖnlund, 2012), which may have wider repercussions for task design beyond the language classroom.

A BYOD (bring your own device) approach was chosen because the likelihood of most - if not all - learners owning smartphones or tablet computers was very high. This assumption proved to be the case. Private language schools in the UK tend to attract students who can afford these devices, with professional adults attending, and adolescent learners coming from relatively wealthy backgrounds. In addition, the school had Wi-Fi connectivity: Having reliable connectivity when implementing mobile-based activities is clearly a key consideration.

In this situation, there were weekly ongoing enrolments typical of a private language school in the summer in the UK, where the members of a class (and sometimes teachers) change on a weekly basis. As a result, it was impossible to know much about the learners in advance, so some planned activities had to be altered once I started working with the groups.



The research approach was developed as each course progressed, and focused on task design and sequencing based on contextual factors as they arose. The key research question that emerged was: *What pedagogical models of **task design and sequencing** facilitate learning with mobile devices in the classroom and enhance its benefits?*

Initial Class Survey

In the first class of the week, both groups completed an online survey designed to check what learning experiences they may already have had using mobile devices, what devices and connectivity they had with them in the UK, and to gauge their attitudes to the idea of working with their devices during the coming week. The results of this initial survey were very similar for both groups, and affected the subsequent task design and sequencing of mobile-based activities during the week:

- Although all the learners had smartphones, not all of them had 3G connectivity, and had to rely on Wi-Fi connections either in the school, or (some) at home. This meant that any activities to be carried out outside of the school (for example, on the move or at home) could not rely on an internet connection.
- All the learners regularly used bilingual dictionary or translator apps on their mobile phones in class. None of the learners had ever used their mobile phones for any other language-related activities. This point suggested that the introduction of mobile-based language learning activities needed to be gradual and staged, so that learners could start off in familiar territory.
- All of the learners in both groups agreed that they would like to use their devices to help them learn English. Although the learners had clearly not had any experience of doing so in the past, this result did show that 100% of learners in both groups were positively disposed towards trying out mobile-based learning activities.

Pedagogical Implementation

Given that the learners of both groups were unfamiliar with using their mobile devices for language learning, beyond the use of their ubiquitous dictionary and translator apps, a staged approach, moving from simpler activities towards more complex activities during the week, seemed appropriate. It was also important that activities – all of which were designed to develop the ability to communicate in English, and focused primarily on language production – were related to the course book syllabus, and were appropriate to the linguistic levels of the learners. Most of the activities were open ended, encouraging the learners to *produce* language in spoken and/or written format, so it was possible to use some of the same or similar activities with both groups as learners were able to produce language at their current linguistic level.

Tasks were developed prior to each class, and aligned to the course book syllabus and content where appropriate. This enabled an approach where learners' feedback and our experiences with one day's tasks informed the approach and development of the next day's tasks. The course book and syllabus provided the content framework, so lesson content was not as off-the-cuff as it might seem. Rather it allowed for introducing more (or less) challenging activities depending on how the learners were progressing.



T1 summarizes the mobile-related tasks carried out with each group. A detailed description of each task is beyond the scope of this paper, but hyperlinks are provided to task descriptions, for interested readers.

	Beginner group (A1 level)	Intermediate group (B1 level)
Monday	*Letter dictation <i>Reviewing questions</i> Online mobile use survey <i>Described above</i>	Online mobile use survey <i>Described above</i> QR codes in class <i>Reviewing questions</i>
Tuesday	*We've got it <i>Sharing personal photos</i>	*We've got it <i>Sharing personal photos</i> Water photos <i>Collecting photos with phones, related to the coursebook topic of 'water'</i> *Water interviews <i>Recording narrative interviews in pairs</i>
Wednesday	QR codes in class <i>Reviewing questions</i>	Bombay TV <i>Viewing learner-created subtitled videos</i>
Thursday	*My mobile <i>Text reconstruction</i> *Mobile English <i>Sharing photos of English found around the school</i>	*Me at 16-18-20-22h <i>Sharing personal photos</i> QR code treasure hunt <i>Review & integrated skills</i>
Friday	QR code treasure hunt <i>Review & integrated skills</i>	*Cambridge Guide <i>Audio recording in Voices app</i>

* Described in Hockly, N. & Dudeney, G. (in press)

The activities listed above were not the only tasks carried out with the class each day. Rather, they were integrated into a range of other language learning activities, many of which were related to, or directly taken from, the course book. The school policy required teachers to use a pre-set course book with learners, so for this research project, any mobile activities had to be fitted around this requirement. In fact, the majority of teachers around the world are usually given a syllabus to work from, whether this is imposed by the course book, the Ministry of Education, or the institution itself. In this respect, it was a useful exercise to have to ensure that the activities using learners' mobile devices were integrated into an externally imposed syllabus, and were congruent with the curriculum as much as possible in terms of language content and topics.

Learner Feedback



An exit survey found that the majority of learners in both groups enjoyed using mobile devices and would like to continue to do so in the future. What is especially interesting about the responses to the survey though, is that one learner clearly felt that there were few benefits to the mobile tasks, with comments such as “useless” and “it doesn't work.” From discussion with previous teachers of the group, it had already been conveyed to me that this learner was reluctant to take part in communicative activities, and preferred very structured written grammar practice in class. This reluctance appeared to relate to personal learning style and expectations about learning; it is also a clear case of the need for learner training in the benefits of not only using mobile devices, but of the communicative approach in language learning. The implications of this learner's resistance to mobile-based activities are discussed below.

A fuller description of the class surveys, and a discussion of the affective factors that these surveys addressed, can be found on my blog at <http://www.emoderationskills.com/?p=1188>.

Discussion of the Research Question

The initial online class survey (see above) conducted with learners was instrumental in laying out several parameters for task design. For example, key elements were *hardware* (whether learners had access to devices, and what type) and *connectivity* (whether learners had access to Wi-Fi and 3G outside of class). It was clear from the survey results that most mobile-based communicative tasks would need to take place within the classroom and the school grounds, and that any mobile-based tasks assigned for homework could not rely on connectivity. According to Pegrum's (2014, in press) three categories of mobility described earlier (whether the devices, learners or learning experience are mobile), the survey showed that any attempt to include tasks in all three of these categories would be limited to the geographical location of the school itself, as it was the only place where all learners had Wi-Fi access. This limitation had a marked effect on mobile task design.

In addition, the affordances of the mobile devices owned by the learners - in other words, what the devices could *do* - were clarified in the initial survey. Because all learners owned smart phones (a majority of iPhones, two Android phones, and one BlackBerry), tasks that leveraged the affordances of smart phones (e.g., audio, video, access to apps, and geolocation capabilities) could be included. Devices' features such as screen size are also important for task design. Having learners read or produce long texts on smart phones is not ideal, and in this context, using capabilities such as taking photos, or recording audio and video fitted better with the affordances of the learners' smartphones.

The fact that none of the learners had any previous experience of using mobile devices in their language learning (apart from translation/dictionary apps) suggested that beginning with a low level of technological complexity would allow them to work within their comfort zones, and not overwhelm them with complicated apps or tasks too early. On the first day of using their mobile devices, both groups did a dictation task that required them to use their smartphone note app (the letter dictation task), and a task that required them to access the internet (the online survey). In addition, the intermediate week-two group carried out the QR (Quick Response) code integrated-skills question review task, as they were clearly proficient at handling their own devices, and were quickly and easily able to download a QR code reader (new to all of them) via the school Wi-Fi. The decision to include this activity at the end of the first day with this group was made on the spot, and replaced a planned course book related activity. It was clear that this group had not just the technological competence to carry out the



task, but the necessary linguistic level to quickly grasp the instructions and successfully complete the activity.

This finding suggests two more parameters to keep in mind in mobile task design for the communicative classroom: *technological complexity* and *linguistic/communicative competence*. It makes sense to ensure that the task does not have a high level of technological and linguistic complexity at the same time. To have learners struggling with both the technology and the task content makes the task harder to complete successfully. In the case of the QR codes task with the intermediate group, the level of technological complexity is not particularly high once one understands what QR codes are and how a QR code reader works. The task itself encouraged learners to share information about their hobbies in written (and then in spoken) form, and was not too demanding linguistically for this level.

Four types of MALL are suggested by Pegrum (in press), each focused primarily on one of these areas:

- **content MALL:** for example, self-study content such as listening to podcasts or reading e-books;
- **tutorial MALL:** behaviorist activities, such as vocabulary flashcard apps, pronunciation/repetition apps, quizzes, and games;
- **creation MALL:** activities including the creation of text, images, audio and/or video; and
- **communication MALL:** for example, the sharing of created digital artifacts via mobile devices, either locally, and/or internationally via networked groups.

The first two types of MALL content and tutorial MALL fit with a behaviorist theory of learning, in which learners consume content, and may reproduce it in very controlled contexts. The second two types of MALL, creation and communication, clearly sit more comfortably with a communicative or task-based approach to teaching and learning. These four types of MALL are not mutually exclusive, and it is possible to have several types appearing within the same activity. What is clear, however, is that creation and communication MALL require the guidance of a teacher. Therefore, they are arguably more suited to classroom-based tasks (or to e-learning contexts) where teachers are able to provide guidance and feedback. Thus we have a fifth parameter to keep in mind in our design of mobile-based communicative classroom tasks: To what extent does the mobile-based task allow for creation and communication, or to what extent does it rely on content or tutorial approaches?

In the communicative classroom, I would argue that although all four approaches may be present, they should be significantly weighted towards creation and communication MALL. However, for learners new to using their mobile devices for language learning, or from educational contexts in which behaviorist approaches are preferred or are the norm, it may make sense to spend some time initially on content and tutorial MALL tasks. Some activities may take place during class, and others outside of class (e.g.. for homework), but both before introducing more communicative MALL tasks. The one learner in my intermediate week-two group who found it difficult to relate to and approach the tasks may have benefited from this sort of staged approach, along with focused learner training. And thus we come to a sixth parameter for effective communicative mobile task design: *educational/learning context*. In monolingual contexts, this decision is much easier to make, and an appropriate type of MALL can be introduced at the initial stages.



Based on the ideas discussed above, we see six key parameters emerging for the design of communicative tasks using mobile devices in the classroom:

- hardware (device affordances including features and connectivity capabilities)
- mobility (devices, learners, or learning experience)
- technological complexity (related to learners' technological competence)
- linguistic/communicative competence
- content, tutorial, creation, or communication MALL
- educational/learning context (related to learners' expectations and preferred learning styles)

By keeping these six parameters in mind, and by ensuring a fit with the syllabus, effective mobile-based communicative classroom tasks can be designed and sequenced.

Issues of Concern

There are a number of caveats connected to this research project, which need to be borne in mind when assessing the results.

As noted earlier, this research study was very small and carried out with only two groups of EFL students, with class sizes of 12 and eight students. In addition, I was only able to work for one week with each group for a total of 15 hours. It is unlikely that the use of mobile devices in and/or out of class continued to occur in their learning, as other teachers in the institution were not part of this project. The rapid turnover of learners and regularly changing teachers typical of the context of a UK language school in summer meant that working with a number of teachers on a longer-term project exploring the ongoing implementation of mobile devices, was simply not possible.

In addition, working with an international group of adult learners (aged 16+) in a multilingual context is in many ways atypical of much EFL teaching around the world, which tends to take place in monolingual contexts. The multilingual context of the study meant that interesting challenges arose – such as a reluctance to take part in communicative tasks and the related need for learner training. Although such obstacles affected only one student, it does highlight the importance of the educational/learning context when it comes to implementing certain types of tasks and approaches. Working with monolingual groups in a number of different contexts would allow for more context-specific decisions to be made about mobile task design, and especially sequencing.

Furthermore, in this particular study, given the low language proficiency of both groups, it was difficult to solicit detailed feedback from the learners about their experiences, in English. When the researcher speaks the L1 (first language) in a monolingual context, learners with low proficiency in English can provide much more complex and nuanced reactions to the use of mobile devices, as they are able to express themselves in their L1s.

But perhaps most importantly, a major drawback of this study was its ad hoc nature. If the use of mobile devices is to be well integrated into learning, and if students are to fully reap the benefits, there needs to be institutional support. A teacher's work in the classroom should form part of a wider mobile strategy as part of an institution's educational plan. More rigorous and longitudinal research can then be carried out in this particular context over time, and the learners' experiences of mobile device use is less disjointed. However, it is hoped that this study – with its limitations kept firmly in mind – has helped foreground some of the key



parameters involved in designing and sequencing classroom-based communicative tasks for mobile and handheld devices.

Future Directions

Given that MALL/MALU research is still in its infancy, one potential area of future research might involve investigating frameworks for the design of mobile-based tasks in education. Keeping in mind the six parameters discussed earlier may help educators decide on the most effective tasks for any given context, and help with the sequencing of these tasks. Additional context-specific parameters may be relevant in other fields in education.

However, for educators to be able to implement meaningful and communicative mobile-based tasks with learners, they need to first ensure that they have the technical and technological competence needed to work with mobile devices of any kind. Practitioners must also stay current with devices' future developments. Teacher training programs need to ensure that the 'technological competence' described in Mishra and Koehler's (2006) TPACK model is given equal weight to content and pedagogical knowledge.

Teachers need to be able to work not just with language content; they need to be (co-) designers of effective learning experiences for their learners, whether using technology or not (Laurillard, 2012). In the words of a whitepaper from the STELLAR (Sustaining Technology Enhanced Learning at a LARge scale) project:

The challenge of education is no longer about delivery of knowledge: it is about designing environments, tools and activities for learners to construct knowledge. In order for educators to effectively orchestrate learning within this landscape they need to perceive themselves, and indeed to be perceived by society, as techno-pedagogical designers. (Mwanza-Simwami, Kukulska-Hulme, Clough, Whitelock, Ferguson, & Sharples, 2011, p. 5, as cited in Pegrum, 2014)

In addition, teachers need to feel comfortable with a wide range of digital literacies, and know how to leverage these in the classroom (Dudeney, Hockly, & Pegrum, 2013). And an increasingly key digital literacy is mobile literacy. As Parry (2011) notes, "The future our students will inherit is one that will be mediated and stitched together by the mobile web" (p.16). If training programs are not equipping educators to deal with the future's demands, then we do a disservice not just to teachers, but also to learners.



References

- Dudeny, G., Hockly, N., & Pegrum, M. (2013). *Digital literacies*. Harlow, UK: Pearson.
- Egbert, J. L., & Petrie, G. M (Eds.). (2005). *CALL research perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hockly, N. (2012). Tech-savvy teaching: BYOD. *Modern English Teacher*, 21(4), 44-45.
- Hockly, N., & Dudeny, G. (2014) (In press). *Going mobile: Teaching and learning with handheld devices*. London, UK: Delta Publishing.
- Jarvis, H., & Achilleos, M. (2013). From computer assisted language learning (CALL) to mobile assisted language use. *TESL-EJ*, 16(4), 1-18. Available from <http://goo.gl/Uug5dr>
- Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, 21(2), 157-165. Available from <http://goo.gl/Pbv5n>
- Kukulska-Hulme, A., Sharples, M., Milrad, M., Arnedillo-Sánchez, I., & Vavoula, G. (2009). Innovation in mobile learning: A European perspective. *International Journal of Mobile and Blended Learning*, 1(1), 13-35.
- Laurillard, D. (2012). *Teaching as a design science: Building pedagogical patterns for learning and technology*. New York, NY: Routledge.
- Levy, M. (forthcoming). Researching in language learning and technology. In F. Farr & L. Murray (Eds.), *Routledge handbook of language learning and technology*, New York, NY: Routledge.
- Mishra, P., & Koehler, M .J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Mwanza-Simwami, D., Kukulska-Hulme, A., Clough, G., Whitelock, D., Ferguson, R., & Sharples, M. (2011). Methods and models of next-generation technology enhanced learning. In *Alpine Rendezvous*, March 28 – 29, La Clusaz, France. Available from <http://goo.gl/G5bLod>
- Pachler, N. (2009). Research methods in mobile and informal learning: Some issues. In G. Vavoula, N. Pachler, & A. Kukulska-Hulme (Eds.). *Researching mobile learning: Frameworks, tools, and research designs* (pp. 1-15). New York, NY: Peter Lang.
- Parry, D. (2011). Mobile perspectives on teaching: Mobile literacy. *EDUCAUSE Review*, 46(2), 14-18. Available from <http://goo.gl/AKizd>
- Pegrum, M. (In press). *Mobile learning: Languages, literacies & cultures*. Basingstoke & London, UK: Palgrave Macmillan.
- Sharples, M., Milrad, M., Arnedillo-Sánchez, I., & Vavoula, G. (2009). Mobile learning: Small devices, big issues. In N. Balacheff, S. Ludvigsen, T. de Jong, A. Lazonder, S. Barnes, & L. Montandon (Eds.), *Technology enhanced learning: Principles and products* (pp. 233-249). Dordrecht, Germany: Springer.



- Traxler, J. (2009). Learning in a mobile age. *International Journal of Mobile and Blended Learning*, 1(1), 1-12.
- Vavoula, G., & Sharples, M (2009). Meeting the challenges in evaluating mobile learning: A 3-level evaluation framework. *International Journal of Mobile and Blended Learning*, 1(2), 54-75.
- Viberg, O., & Grönlund, A. (2012). Mobile assisted language learning: A literature review. In M. Specht, M. Sharples, & J. Multisilta (Eds.), *mLearn 2012: Proceedings of the 11th International Conference on Mobile and Contextual Learning 2012*, Helsinki, Finland, October 16-18 (pp.9-16). Available from <http://goo.gl/mPOFs2>