A context-aware solution in mobile language learning

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Abstract. Despite obvious benefits, some challenges exist in the way of sustainable utilization of mobile phone technology for language learning tasks. This paper shows how these challenges can be better addressed in the light of recent advancements in mobile phone technology, like context aware mobile learning, informed with a sound pedagogical basis for providing content. Since many models presented so far are either atheoretical or obtain their theory from fields other than language learning, we show how the Four Strands model (Nation, 2007) as an insider model can fit for this purpose, with its related tasks balancing the selected content used in customizing each learner profile, such as scanning data from background knowledge and location every few hours to trace if the user is following the same saved patterns and update the streamlined content when necessary. The resulting interactions are made possible and fit for the purpose through a novel context-aware framework which enables implementation of all Four Strands in language learning.

Keywords: context-awareness, mobile language learning, four strands model.

1. Introduction

The first time mobile phones are used for language learning purposes simply began with the utilization of SMS, i.e. text messaging. This was a good enough start at the time given the basic technology of those days. Its operation is so straightforward that it has still the most visible use in a country like Iran. There has been extensive research conducted on the use of mobile phones in language learning, which typically focused on SMS (e.g. Kennedy & Levy, 2008). Nowadays, we can go far beyond using SMS since it is only based on an early technology which under-

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represents the potential of mobile language learning today and its use was not context aware. Moreover, as specified by Viberg and Grönlund (2012), most Mobile Assisted Language Learning (MALL) studies are experimental and small-scale, and most theories are used only in one or a few papers (p. 9). They further point out that this kind of approach raises the issue of the reliability of findings across changing technologies and over time; in terms of gained linguistic knowledge and skills, most attention is paid to learners' vocabulary acquisition, listening and speaking skills (Viberg & Grönlund, 2012, p. 9). Other components of language acquisition such as grammar, pronunciation and writing are not well-represented. As far as we know, a unified and comprehensive model that addresses language components in a balanced manner has not been employed.

2.   Background and literature review

Intrusiveness, cost, practical technological constraints and pedagogical methodologies are the four factors challenging the success of mobile language learning tasks (Burston, 2014a, 2014b). In most MALL tasks, a series of regular or daily notifications intrude on learners' privacy because the users have little control or choice as long as they subscribe to the service. Apps, on the other hand, can be stored to wait for the user to take the initiative and use them. However, such 'push' or 'pull' pedagogical resources used to be expensive and each has their own disadvantages of intrusiveness and visibility (Kennedy & Levy, 2008). There are also plenty of practical technological constraints; a small screen would make it hard to work with, and graphics can be hard to present. The dependence on network spread and strength of transmission could also be another downside, as well as cost. Most apps are developed by computer specialists without employing insights from the field of language teaching. In spite of such limitations, mobile devices are still regarded as effective tools for distributing language learning materials to the learners. In this case, context-aware applications are non-intrusive and can be far less costly. A review of recent research on mobile apps on language acquisition shows that a wide-ranging investigation has been done. For instance, Hsu, Wang, and Comac (2008) found that the students' reception of mobile-accessible audioblog to submit and archive oral assessments have been more than its production. Oberg and Daniels (2013) found out that students show better performance when they use an iPod Touch at their own pace in classrooms.

The results of such research frequently points out optimism amongst learners towards the use of mobile technology in language learning or improving language ability. Less consideration "is devoted to individuals' language learning strategies and learning styles when employing mobile devices for their language learning"

(Viberg & Grönlund, 2012, p. 15). This is exactly where context awareness contributes the content which is streamlined to users' preferences and needs. The use of mobile technologies in learning grants several benefits such as flexibility, low cost-effectiveness, sizeability and user-friendliness, the features that researchers also consider to use in order to sustain language learning (Huang, Huang, Huang, & Lin, 2012).

3.   Discussion

It is clear that a good theory should be multidisciplinary. One of the comprehensive language learning models that has captured the imagination of language teachers worldwide and been practiced in so many countries with promising results is Nation's (2007) Four Strands model. It encompasses all language skills and provides a unique classification that includes all skills and components of a language for the learner and recommends a realistic and balanced approach towards practicing and mastering all of them. The principle of the Four Strands is a comprehensive and widely accepted theoretical operationalization for language learning from which we have shown how it can fit in well with the requirements of mobile language learning. It posits that a well-balanced language course should have four equal strands: meaning focused input, meaning focused output, language focused learning, and fluency development (Nation, 2007). Meaning focused input includes activities such as "watching TV shows, movies, extensive reading, listening to radio or music or being a listener in a conversation" (De la Rouviere, 2012, para. 8). Meaning focused output is composed of activities such as diary keeping, note-writing, blogging, conversing, speech making as well as giving instructions. Language-focused learning is another strand that includes grammar, vocabulary, spelling, pronunciation and discourse – "deliberate learning can 'raise consciousness to help later learning' " (De la Rouviere, 2012, section 4, para. 2). Finally, the fluency development strand involves improving speed and spontaneity in all four skills. This is where our proposed context-aware mobile language learning framework comes in, to identify which content is most suitable for which learner in a given context. The above contents are based on the vocabulary learning framework in another language, initially proposed by Nation (2001).

In the next section, the architecture of context-aware mobile learning apps is explained. The summary of a sample of relating the learners' context to appropriate content, according to the Four Strands model, is shown in Table 1. The first column shows the Four Strands according to Nation's (2007) innovative and useful model. The second column is a list of possible topics and tasks to be fed into the learners' mobile device, stored in the data bank or content database. The last column also

shows the most appropriate context for providing the content, divided between 'At home', when concentration is normally higher, and 'Commuting' mode, when noise of vehicles distracts the learners' attention.

Table 1.   The relationship between Four Strands, topics and context

Strands	Possible Topics/Tasks	Context
Meaning focused output	diary keeping, note-writing, blogging, conversing, speech making as well as giving instructions	At home
Meaning focused input	"watching TV shows, movies, extensive reading, listening to radio or music or being a listener in a conversation" (De la Rouviere, 2012, para. 8)	Commuting
Language focused learning	grammar, vocabulary, spelling, pronunciation and discourse	Commuting
Fluency development	improving fluency in all four skills of the target language, making the learner quicker and more confident in using the language	At home

4.   Conclusion

As a concluding remark, a framework for context-aware mobile learning apps is proposed. It initially consists of identifying the strands of learning and then defining tasks and topics according to this robust theoretical basis and matching those tasks and topics with different users' contexts. Thus, this study confirms the importance of focusing on user profiles, preferences, and learning styles of users to personalize the learning experience of users as was preliminarily mentioned in Fatahipour and Ghesemi Najm (2013). Following a context-aware framework informed by theory preserves the best gains from mobile language learning for students.

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