

m-iLexicon

Harnessing Resources for Personal and Collaborative Language Inquiry

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1 Introduction

This paper introduces an innovative concept for a language-learning tool, outlines the work being conducted towards developing this tool, and describes the instructional design from which we are deriving requirements. We present a concept design for *m-iLexicon*, a tool for self-initiated, resource-based language learning. Our aim is to structure and facilitate a process of personal and collaborative language inquiry. In essence, *m-iLexicon* consists of two interacting and extensible collections. One collection contains the words and phrases a language learner encounters and chooses to investigate. The other contains resources (e.g. people, tools, strategies, media) that are useful to this inquiry, and in the construction of personal and cultural meanings. Users can share words, resources and inquiries with collaborators and can import these to their personal collections. Collections can be accessed, added to and edited on handheld devices thus facilitating use of *m-iLexicon* in and across varied settings. Ultimately, *m-iLexicon* will guide learners in the selection and collection of personally and contextually appropriate language items, inquiries and resources.

1.1 Background

Personal, portable, networked devices *can* support collaborative inquiry in situ [1], help learners make connections across settings and events [2], facilitate ‘on the fly’ recording of data and reflections [3], and enable access to resources that would not otherwise be available. However, instructional design is critical in ensuring the potential for learning is realised [1]. Recent research explores these opportunities in relation to language inquiry, using mobiles to: capture and share observations of language in use [4]; provide access to distant human help [5]; support learners in ‘noticing’ significant language features [6]; share reflections on

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language and cultural insights gained in situ [7]. However, these processes are not often joined together and it is rare that instructional guidance is designed into the technologies used.

1.2 Aims & Objectives

We aim to integrate and extend the work described in section 1.1:

1. By *guiding* learners *throughout* a multi-step personal and collaborative language inquiry process (see section 2.2)
2. By prompting learners to employ and expand their own Personal Learning Environments [8] in the inquiry process.

We plan to design, implement and evaluate a tool, *m-iLexicon*, that supports these aims. First we outline our development process and then we describe the instructional design from which we derive requirements. Finally, we provide a scenario illustrating a use of *m-iLexicon*.

2 Designing m-iLexicon

In developing *m-iLexicon* we are employing the Ecology of Resources Framework (EoR) [9]. The EoR brings designers and learners together in a participatory process that aims to understand and redesign learners' contexts, the resources available and the constraints that apply. This involves exploring and iteratively refining technology-rich instructional designs.

2.1 First Steps

We used semi-structured interviews with self-directed adult language learners to identify the kinds of resource they employ and to derive several learning scenarios grounded in these authentic accounts [10]. These scenarios reveal the need to support learners in engaging in language inquiry over disjointed periods of time and in varied settings in which access to, and the appropriateness of resources differ. From these findings we derive requirements for *m-iLexicon* to support memory (e.g. remind users about interrupted activity, represent usage history) and the need to identify the specific resources most appropriate to each stage of inquiry (see section 2.2), and the settings in which a resource may be available/unavailable or appropriate/inappropriate.

2.2 Instructional Design: Guided Personal & Collaborative Language Inquiry

In the socio-cultural approach we adopt, learner agency is central [11]. Consequently, our starting point is personally meaningful self-initiated inquiry, typically sparked by learners' communicative needs and encounters with unfamiliar language or culture. We find many examples of this in the scenarios we derived from user studies. We aim to enhance this kind of inquiry in two ways: 1) by designing the *m-iLexicon* user interface so as to provide narrative guidance [12] that takes learners through a specific but not necessarily linear process, 2) by facilitating access to helpful resources at each step. We refer to this as guided personal and collaborative language inquiry. This process, which parallels accounts of experience driven language learning [11], involves recording the word or phrase of interest along with supporting media (e.g. photos, sound clips, observations), forming and refining an interpretation using appropriate resources (e.g. dictionaries, collaborators, concordancers), making personally meaningful associations (e.g. using imagination, acting out), preparing to use (e.g. practicing pronunciation, role-playing), and trying out (e.g. using for communication). These steps build associations between learners' prior and new multi-modal experiences. In this way each word in a learner's growing lexicon serves as an index into personal and shared experiences.

Delivering this instructional design requires two user editable and extensible collections, one for language items and another for resources. We also need to design an interface that guides users through the process without constraining them.

2.3 Next Steps

We are currently developing a prototype to deliver requirements identified above. Initially, two or three learners will use prototypes in case studies over two months. These studies will reveal amongst other things, obstacles to use, useful resources and new requirements. We will rapidly feed findings from these studies into further iterations of prototype development and evaluation. Simultaneously, we are starting to populate generic and language specific collections of resources useful to language inquiry, for use in the prototypes. To clarify we provide some example uses of the m-iLexicon prototype in a scenario.

On a walk to the beach Sam sees a sign, a picture of a dog crossed out with the words “Txakurrik ez”. He assumes this means “no dogs”. He takes a photo on his mobile, starts m-iLexicon and adds “Txakurrik ez” to his word list. He makes association links from this entry to the photo he just took; a picture of his own dog; and a note saying he thinks it means no dogs. Walking home he chooses ‘review recent words aurally’ from the m-iLexicon menu, puts his mobile in his pocket, his earphones on, and listens to recently collected words along with spoken prompts to visualize the meanings, if he knows them. The visualization strategy is a resource he recently added to his resource list when sent a recommendation by a friend. A few days later, on his laptop at home he logs in to his m-iLexicon account and receives a reminder to look at his entry for “Txakurrik ez”. On the page for this entry he looks at resources listed under the ‘preparing to use section’ and chooses to hear ‘Txakurrik’ pronounced on ‘forvo’¹.

4 Discussion

Work towards *m-iLexicon* is at an early stage. However, we have outlined requirements for a promising and innovative tool for self-directed language learning. These requirements are derived both from the instructional design we describe in section 2.2 and our ongoing user studies. At the ITEC conference we will be able to report more detailed requirements for m-iLexicon and how these were derived, and we expect to be able to demonstrate a prototype.

Ultimately, we want to go beyond providing static guidance and aim to dynamically ‘scaffold’ learners’ progress through personal and collaborative language inquiry. This involves supplying and fading help contingent on the learners’ actions and making *m-iLexicon* adapt to individual and contextual factors (e.g. prompting investigation of language related to a learner’s interests, suggesting resources appropriate to the learner’s current location and physical and social setting). This work represents a tentative step towards what we consider to be an important synthesis of research in computer-supported collaborative learning, applied linguistics and adaptive systems design.

Acknowledgements This work is supported by EPSRC grant EP/E051847/1.

¹ <http://www.forvo.com>

References

1. Rogers, Y., Price, S., The Role of Mobile Devices in Facilitating Collaborative Inquiry in Situ. *Research and Practice in Technology Enhanced Learning*, 3(3), 209-229, (2008)
2. Looi, C. K., Seow, P., Zhang, B., So, H.-J., Chen, W., Wong, L. H., Leveraging Mobile Technology for Sustainable Seamless Learning: a Research Agenda. *BJET*, online <http://dx.doi.org/10.1111/j.1467-8535.2008.00912.x> (2009)
3. Li, I., Dey, A., & Forlizzi, J., Graffiter: Leveraging Social Media for Self Reflection. *Crossroads*, 16(2), 12-13, (2009)
4. Pemberton, L., Winter, M. & Fallahkhair, S., A User Created Content Approach to Mobile Knowledge Sharing for Advanced Language Learners. *Proceedings mLearn 2009*, Orlando, (2009)
5. Ogata, H., Li Hui, G., Yin, C., Ueda, T., Oishi, Y., Yano, Y: LOCH: Supporting Mobile Language Learning Outside Classrooms, *IJMLO*, 2(3), 271-282, (2008)
6. Kukulska-Hulme, A., Bull, S.: Theory-based Support for Mobile Language Learning: Noticing and Recording. *International Journal of Interactive Mobile Technologies*, 3(2), 12-18, (2009)
7. Comas-Quinn, A., Mardomingo, R., Valentine, C.: Mobile Blogs in Language Learning: Making the Most of Informal and Situated Learning Opportunities. *ReCALL*, 21(1), 96-112, (2009)
8. Guth, S., Personal Learning Environments for Language Learning. In Thomas M. (ed.), *Handbook of Research on Web 2.0 and Second Language Learning*. UK, IGI, 451-471, (2008)
9. Luckin, R., *Re-designing Learning Contexts: Technology-rich, learner-centred ecologies*. Routledge, London (In press)
10. Underwood, J., *Self-Directed Language Learners, Resources & Scenarios* (in preparation)
11. van Lier, L., Action-based Teaching, Autonomy and Identity. *Innovation in Language Learning and Teaching*, 1(1), 46—65, (2007)
12. Plowman, L., Luckin, R., Laurillard, D., Stratfold, M. and Taylor, J., Designing multimedia for learning: Narrative guidance and narrative construction, *Proceedings of ACM CHI 99 Conference on Human Factors in Computing Systems*, 310-317, (1999)