
ARTICLE

Fitting in Versus Learning: A Challenge for Migrants Learning Languages Using Smartphones

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There is great interest in the potential of smartphones to enable language learning during daily activities. However, this overlooks the paradox faced by migrant learners that while they have the educational goal of seeking to improve their language skills, they also have the cultural goal of fitting into the host society. Inappropriate use of smartphones as learning aids makes learners stand out as outsiders.

Here, we investigate the use of smartphones by migrants for Mobile Assisted Language Learning (MALL) in their daily lives. We report on their participation in the trial of a system that coupled a custom smartphone app with location-based hardware triggers. This presented learning activities based on scenarios from everyday life that were prompted when approaching relevant locations around a UK town. Analysis of pre- and post- interviews indicates that social and cultural influences affect the location, timing and type of learning undertaken using the system.

Participants preferred to learn in ways that were unobtrusive, and deferred engagement with content if social context inhibited use of the phone. For example, playing audio in public was seen as inappropriate. Although the app was designed with location-specific content, many participants chose to study elsewhere and at other times, in addition to accessing content from the phone at the time and place that the activity was triggered.

We conclude that social context and wanting to belong are important influences for migrant learners, and emphasise the potential of MALL systems in encouraging engagement with physical and digital spaces and reflections about citizenship.

Keywords: Mobile assisted language learning; smartphones; location-triggered learning; informal learning; citizenship

Introduction

Smartphones have the potential to enable learning during daily activities. They are widely used by a broad range of people and have been domesticated into daily routines: “woven into all the times and places of individuals’ lives” (Viberg and Grönlund, 2013, p. 73). The affordances of smartphones (highly portable, powerful and domesticated) make them ideal platforms to move learning beyond the classroom and into everyday life. Attending formal classes can be difficult, particularly for some groups of learners such as recent migrants, with work, families, and other responsibilities precluding easy access to local education classes (Kluzer et al. 2011). Smartphones offer a platform that enables learning when out and about, can be accessed anywhere and may, therefore, provide a practical alternative or complementary learning aid (Gaved et al. 2015).

In this paper, we focus on people who are learning the language of the country in which they are living, and

explore how smartphones might enable Mobile Assisted Language Learning (MALL) as part of their daily lives. Social inclusion has been recognised as a significant challenge for migrants, with the acquisition of the language of the host country as a particularly salient need, enabling the building of rapport with local residents (Kukulska-Hulme et al. 2015a). We explore not only the mobility of the devices, but the mobility of their users, and investigate how location-triggered language learning, through the combination of a smartphone app and small radio transmitters acting as triggers placed around an urban area (Bluetooth beacons) might particularly enable opportunities to encourage learning during daily activities in context, with a project funded as a result of a smart cities initiative (<http://www.mksmart.org>).

This study, reporting on the SALSA project (Sensors and Apps for Learning in Smart Areas) built upon prior work carried out in the EU funded MASELTOV research project, exploring how smartphones might support social inclusion and language learning amongst recent migrants to the European Union (<http://www.maseltov.eu>). The earlier research identified that language learning in context and at relevant locations via smartphones was well-received by

a similar audience, and highlighted specific benefits, but also challenges. Smartphones were identified as widely used, particularly Android phones, however, users were concerned about data download costs and an app that required online connectivity (sometimes costly, and not always available) was a barrier to participation (Ros et al. 2014). A challenge was encountered around accurately determining the location of participating users to offer accurate 'location-triggered' learning activities.

SALSA was developed to further explore this area of research and had the following objectives:

- To further understand language learners' current learning practices and use of smartphones.
- To test a sensor based system for triggering location-based language learning.
- To explore how language learners might respond to location based triggers designed to prompt engagement with a learning activity, placed around a medium sized urban area (Milton Keynes, UK, a modern town of approximately 200K people).

Here, we report on the project's pilot field study testing the final system in an urban environment. This was the culmination of our work, based on the preliminary research that informed the project of the target audience's needs, and after development and testing of the underlying technical system. The field study was run over 3 weeks in Milton Keynes with 14 volunteer language learners.

In the next section, we identify the context and background, and approaches to design. We then turn to introducing the SALSA field study, and provide an analysis of the data and overview of the findings. We discuss these findings and summarise with some conclusions and considerations of future directions for this work.

Context and Background

Mobile Assisted Language Learning (MALL)

Language learning is "frequently a lifelong pursuit, straddling formal and informal learning" (Demouy et al. 2016, p. 11) in contexts and locations relevant to the learning goals (Ogata and Yano 2005). Mobile devices have been enthusiastically adopted by language learners due to their capability to support flexible and autonomous learning episodes. These affordances have been shown to be motivating (Jones et al. 2006; Ushioda 2013), important in a long-term pursuit where internalised motivation is required beyond classroom feedback. For language teachers, mobile devices, particularly smartphones, provide an opportunity to encourage and inform learning beyond the classroom (Kukulska-Hulme et al. 2015b). Viberg and Grönlund (2013) note in their review of MALL research that vocabulary acquisition has been a dominating focus for researchers when exploring gained knowledge and linguistic skills, with listening and speaking skills and more general language acquisition also considered. Demouy et al. (2016) suggest that there is a more recent shift towards exploring authentic and social learning.

Theories of mobile learning can provide conceptual frameworks that will aid the design of a system or an

intervention intended to test research questions around location-triggered learning. Sharples et al. (2007) note that theories of mobile learning must take into account "the considerable learning that occurs outside offices, classrooms and lecture halls", and consider how "people artfully engage with their surroundings to create impromptu sites of learning" (p. 222).

Kukulska-Hulme's (2012) language learning conceptual framework (see **Figure 1**) argues that software apps for mobile language learning should consider three important dimensions (time, place, and activity) during the design process. Designers of apps should reflect on when and how their app will be used and consider the pedagogical context in which activities will take place. A series of questions are proposed, related to each of the three dimensions, and Kukulska-Hulme recommends that answering questions around these criteria will enable a more systematic structuring of a planned app and guide the constituent language learning activities.

Kukulska-Hulme (2012) also cautions that "[a]dequate knowledge about the learners is assumed... and is a pre-requisite for mobile learning planning and design for informal settings" (p. 8). For a design to be effective, other knowledge (such as users' preferences and capabilities) needs to be gathered from other sources, such as the learners themselves or their proxies (e.g. language tutors).

For SALSA, this approach to designing apps was appropriate in a broader sense, enabling reflection on the proposed app and its content, but also in consideration of the positioning of beacons to trigger learning activities around the urban area chosen for the field trial.

Location-triggered learning

Mobile devices enable learning to be undertaken outside of the classroom and used in authentic contexts and locations. Language learning educators identify that location-based and context-sensitive resources and activities can be a powerful resource (e.g. Edge et al. 2011): learning at a

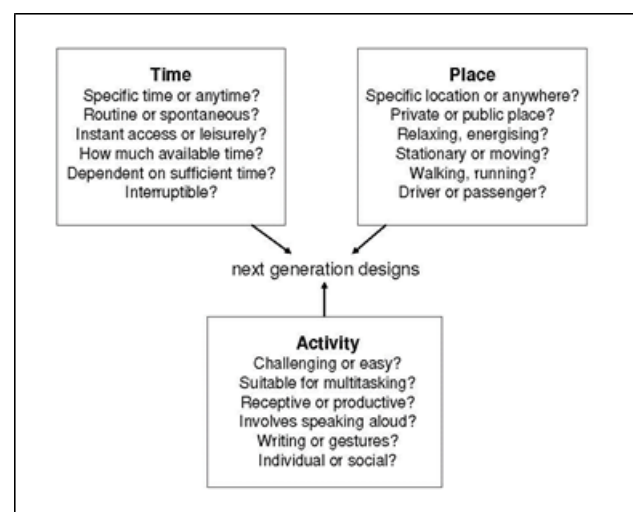


Figure 1: Conceptual framework for next generation designs for mobile-supported language learning in informal settings (Kukulska-Hulme, 2012, p. 9).

relevant location or in a context associated with the learning goal is more likely to make the activity effective.

Several projects have explored contextualised language learning on mobile devices (e.g. Ogata and Yano, 2004; Cui and Bull, 2005; Ogata et al., 2010; Kukulka-Hulme et al., 2015a; Read et al., 2016) and there has been increased interest in not only using mobile devices *in context*, but furthermore in exploring *context-aware* systems. Dey and Abowd (1999) define context awareness as “the use of context to provide task-relevant information and/or services to a user, wherever they may be” (p. 11) and Kukulka-Hulme (2012) suggests that three key contextual dimensions of time, place and activity should be considered when designing a mobile language learning system.

Mobile device based systems can be made context-aware in many ways. User-instigated systems respond to a choice made in a user interface, such as entering the current location (Holden and Sykes 2011): these place a responsibility on the user to actively monitor their system and environment to identify whether resources exist for a specific location. Markers such as QR codes can be placed on objects in the environment (posters, windows, signs) and photographed and processed on a smartphone to trigger resources or weblinks (Power 2012), or RFID tags can be swiped (Ogata and Yano 2004). Automated methods that prompt a mobile user can draw on the technical capabilities of the system: for example, a Global Information System receiver (e.g. GPS or GLONASS), built into most smartphones can identify location from satellite signals (most effective if the phone is used outside) and trigger a prompt to action.

More recently, Bluetooth beacons have been used in conjunction with phones. Placed in the intended environment, they broadcast radio signals that can be picked up by smartphones, interpreted and then trigger actions on the phones such as launching an app, or launching a web browser and a link to a relevant web page. Primarily designed for commercial applications, there has been emerging interest in exploring their wider potential, for example enriching museum visits or supporting visually impaired people to navigate transport systems (Gaved et al., 2015). These have the advantage of working indoors as well as outdoors, and enable a more discreet interaction than mechanisms such as QR codes that require the phone user to explicitly engage with a visible object and perhaps stand out as a user of the system. However, like QR codes or RFID tags, beacons require prior physical installation in target locations.

Large scale installations of location-aware systems have been discussed within the context of smart city discourses: the exploration of urban environments “where information technology is combined with infrastructure, architecture, everyday objects, and even our bodies to address social, economic, and environmental problems” (Townsend 2013, p. 15). The emerging consideration that a city-wide IT infrastructure might empower citizens when combined with the widespread adoption of personally owned smartphones and similar mobile devices enables location-triggered learning to become a reality.

SALSA: Exploring Location-Triggered Language Learning

Overall aim and research approach

In previous work (Gaved et al. 2012) we identified that smart cities, emphasising the value of embedding telecommunications infrastructures into the urban fabric to resolve citizens’ needs, were ideal environments in which to explore mobile, technology supported learning platforms that could support inhabitants’ informal learning during their daily activities. We were also keen to consider how the MASELTOV research might be investigated within this context. The SALSA project’s research questions drew from both these discourses to further understand local language learners’ current learning practices and use of smartphones in Milton Keynes; and to investigate how a technology based approach to location-triggering learning activities around an urban area might enhance informal language learning. Our field trial would develop and test a custom-built ‘SALSA app’, used in conjunction with commercial Bluetooth beacons placed around Milton Keynes to form a system that would trigger language learning activities as participants travelled around the town.

Taking our lead from MASELTOV’s findings that large numbers of migrants (language learners) had access to smartphones, we aimed to trial a system that would be based on users’ own smartphones: a Bring Your Own Device (BYOD) approach, drawing on learners’ increasing access to smartphones and expectations that these can be used both in and beyond the classrooms to support their learning (Sharples et al. 2014, p. 17). This was intended to ensure the mobile devices that were already familiar to participants, reducing training time and ensuring interactions would be more ‘authentic’ (close to how long term engagement might look). This was important as the size of the project meant we would only be able to field test the final system for a limited duration.

Kukulka-Hulme (2012) highlights the importance of understanding the local context in developing a system. We drew upon participatory design principles to inform our approach, and looked to the knowledge of participants and local ESOL (English as a Second or Other Language) tutors to help inform our decisions around the choice of content, its structure, and the placing of triggers around the town for the field trial. Participatory design refers to a design approach that advocates the active involvement of intended users (or a similar audience) through the design and development processes (Zaphiris and Zacharia 2001). In this approach, potential users are seen as experts in understanding their own living and working practices intended to be supported by the technologies or systems under development (Blomberg and Henderson, 1990). Surveys, interviews and conversations would identify language learning challenges faced by participants and locations where these had previously been encountered, and preferences and expertise around phone usage. Insights from these participants, and conversations with other local stakeholders (local ESOL teachers and representatives from the local town council) informed our decision-making process, which is described in more detail below (‘Initial user engagement’, ‘Developing the app content’, and ‘Technical development’ sections).

The field trial participants

The participants were ESOL students from local adult continuing education classes. These participants were approached because they were already motivated to learn and they had a known level of language proficiency. Participants (self-selecting volunteers) were recruited by the researchers visiting ESOL classes, introducing the project and distributing paper surveys. To reduce any perceived pressure on students to volunteer, pre-paid envelopes were provided for survey completion, so there was time to make a decision outside classes. Our initial access to students was through contact with tutors at the local Adult Education Centre. The tutors identified that many of their students had embraced the use of smartphones in their language learning practices, and they were interested to explore how this usage and enthusiasm might be incorporated into teaching processes. For their part, many students had integrated smartphones into their daily routines and were informally exploring a range of language learning apps, and noted their interest in trialing a smartphone based learning system tailored to local circumstances and taking account of their preferences.

We aimed the SALSA app’s content at intermediate level English language learning students: CEFR (Common European Reference Framework for Languages) Levels B1 to C1. Over a hundred languages are spoken in Milton Keynes, so it was likely that learners would speak a range of mother tongues. As a small project, we were unable to fund multiple translators, and hence were keen to ensure participating language learners were independently able to articulate their responses in English. The app, research instruments and consent information were all written in English, so a reasonable language proficiency was required to enable satisfactory data collection and ensure ethical compliance: confidence and ability to understand the commitment and articulate any concerns. The recruitment process, survey, interview questions, covering letters and consent forms were scrutinised and approved by the University’s ethics committee, taking into account

the level of English of the participants. **Figure 2** provides demographic information of the 14 participants who engaged with all stages of the research.

Participants had a wide range of mother tongue languages (Arabic (2), Bangla (1), French (1), French and Tamil (1), Italian (1), Japanese (1), Polish (1), Portuguese (1), Spanish (5)) and indicated a range of countries of birth (Bangladesh, Bolivia, Brazil, Egypt, France, Iraq, Italy, Japan, Poland, Spain (4), Sri Lanka).

While some of our participants had lived in the UK for over 5 years, our cohort was drawn from students identified by ESOL tutors as learning English at CEFR levels B1–C1.

Methodology: system design and development

Two parallel activities were undertaken in the development stage of the research (December 2014 – July 2015): engaging with local potential users, whilst undertaking initial technical development and testing of the technical system. Input from participants during the initial interviews informed the development of aspects of the SALSA system (content, scenarios, suitable locations for triggering activities in the field trial town), and combined with the technical team’s findings in the pilot testing phase, led to the final field trial system and study. See **Figure 3** for timeline showing main stages of the project.

Initial user engagement to inform the app content and beacon locations

The first stage of the project was to understand language learners’ current learning practices and use of smartphones. Within the MASELTOV project, a mixture of surveys and interviews had been carried out which had identified ownership and usage patterns of smartphones in the target audience. Drawing from these methodologies and instruments, SALSA aimed to engage with local learners to gain an understanding of the specific context and challenges. We also sought input from local language tutors with their knowledge of the students and their needs.

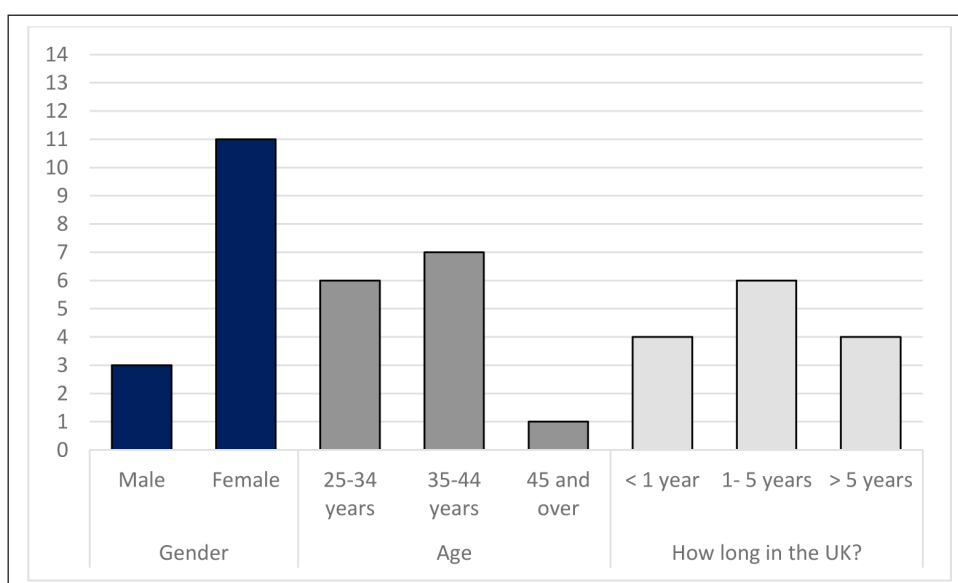


Figure 2: Participant demographics.

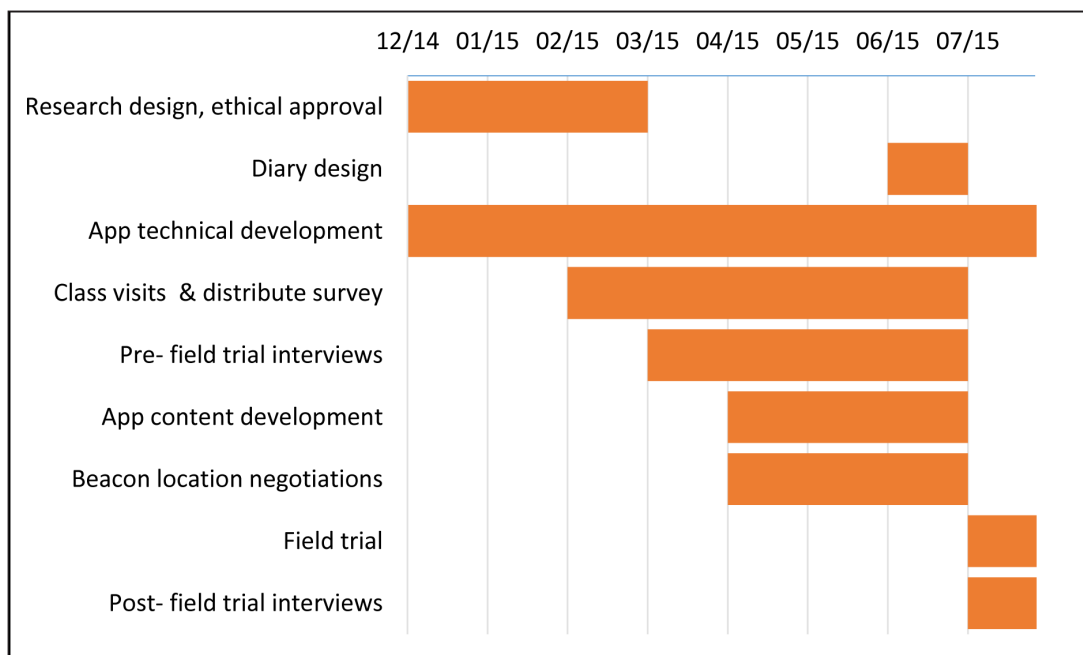


Figure 3: Gantt chart showing main stages in project.

We devised an initial short survey for adult English language learning students which asked participants to self-assess their language skills, to tell us whether they used a smartphone to support their language learning, and to tell us the type of places they used their phone. The intention of this survey was to give us basic data about familiarity and usage of smartphones, an outline sketch of how this group used their phones to support their learning (and where), and to encourage further participation.

Students agreeing to further participate were invited to a semi-structured interview, which explored in greater detail their motivation for learning English, their general and language learning usage of smartphones, and where they used their phone for language learning around Milton Keynes. As well as providing greater insight into the learning behaviours and motivations of the students, it helped to inform the structure and content of the system app and the siting of beacons for the field trial. Interview participants were presented with a paper map of the town and asked to help annotate locations where they encountered language learning challenges: these were synthesised to draw up a short list of potential sites for triggering learning activities. At the end of the semi-structured interview, each participant was invited to participate in a two-week field trial testing the SALSA system and a follow-up debrief interview.

Developing the app content: pedagogic design, scenarios and activities

SALSA learning activity themes were initially derived from MASELTOV research which had indicated topics important to language learners: transport, healthcare, negotiating local bureaucracy, and shopping. Based on SALSA survey data and initial interviews, further topics were included, and cultural heritage (a visit to an art gallery) included on the recommendation of a language tutor. The tutor pointed out that many English language learners were also

preparing for the UK Citizenship test, so aligning some of the content of learning activities with the requirements of the citizenship test (such as cultural knowledge) would make it more relevant to our target audience. Learning activity content drew from UK national ESOL curriculum guidelines.

Following a specification from the research team, the content was written and produced by Pearson Publishing Ltd. (Cambridge, UK), who had previously developed the MASELTOV language learning content. The content was critically reviewed by language tutors and OU academics. Twelve scenarios were generated, each of which contained six types of learning activities: an audio dialogue; a written text piece (transcript of the dialogue); vocabulary; grammar; language tips (e.g. idioms and phrases); and recommendations for further self-directed activities relating to the scenario. Content was a mixture of text, and audio files (the dialogue and spoken vocabulary). The choices for the types of content were made after discussions with tutors and initial interviews with learners: for example, a section on idioms and phrases was added because participants wanted to learn 'what a local would say in this situation'. Each learning activity contained approximately 15–20 minutes of content in total, broken down into subsections. We imagined that in some circumstances our testers might only wish a brief engagement with the content (e.g. while waiting for a bus) but also sought to include extended material to enable greater engagement at suitable location (e.g. in a café, or reviewing later at home).

Technical development of the app and beacon implementation

Technical development was carried out in parallel with initial user engagement, drawing on prior expertise gathered through MASELTOV and informed by the first stages of the SALSA participant research: data from the survey and initial interviews.

We identified the following requirements for triggering learning activities on smartphones around the urban environment: (1) works both indoors and outdoors; (2) does not require WiFi connectivity or a data connection (cost and imperfect coverage had previously been identified as issues); (3) would allow discrete interaction so as not to mark out the users as learners or outsiders. With these considerations in mind we decided upon Bluetooth beacons as our triggering mechanism. This is an established commercial technology and we could develop using widely available open source resources.

We developed an Android app: Android had been identified in MASELTOV by a similar audience as the preferred smartphone operating system. Given MASELTOV participants' concerns about data download charges, we developed an app that would be a single download onto a user's phone and require no further connectivity (Wi-Fi or phone network) to operate. The app consisted of software that listened for nearby Bluetooth beacons, and on picking up a transmission from a SALSA beacon, would trigger a notification on the user's phone (like an SMS text) and provide a link to relevant content held on the phone, provided as web pages (see **Figure 4**). A simple log of usage data was implemented which would allow later interrogation of when beacons were identified, for how long, and when the corresponding content was triggered by a phone user. This would enable us to gather basic data about which beacons were visited, and whether users accessed content immediately or later.

Initial technical tests on the OU campus used a pilot version of the app and beacons linked to the university's sculpture trail. This tested the components under realistic outdoor conditions, enabling calibration of the system and feedback from 'critical friends'.

Field trial preparation

Practical considerations had to be considered when setting up the two-week field trial across Milton Keynes, a new town of approx. 200,000 inhabitants. 27 beacons were installed across the town, triggering 12 learning activity scenarios in total. Some scenarios were triggered in more than one location, e.g. a 'visiting the library' scenario was duplicated in two different libraries that had been identified as popular destinations by our participants. Potential locations had been identified through the mapping activity carried out during participants' interviews. While we could not provide blanket coverage of the whole town, we could create a 'semi-authentic' field trial and place beacons to trigger learning activities in locations where participants would be *likely* to visit as part of their everyday activities. This required a map of locations to be handed out to participants, shifting the original intent from an incidental learning approach emphasising serendipitous encounters with our system, to more of a 'treasure hunt' approach where participants would need to seek out the beacons, and then later reflect on the extent to which this might represent a likely real-life encounter. Locations were also chosen with the consideration of whether they would be conducive to supporting language learning; for example, whether a place offered nearby seating, and was suitable for engaging with a smartphone over a period of several minutes.

Placing the beacons required negotiation with a range of organisations, and was highly time consuming. Some scenarios were not feasible to test for ethical reasons: e.g. 'healthcare' had been identified as an important challenge for language learning but we did not feel it would be ethical to have participants visit a hospital or doctor's waiting room. A compromise was reached by developing the scenario "At the pharmacist's" and use this as the initial

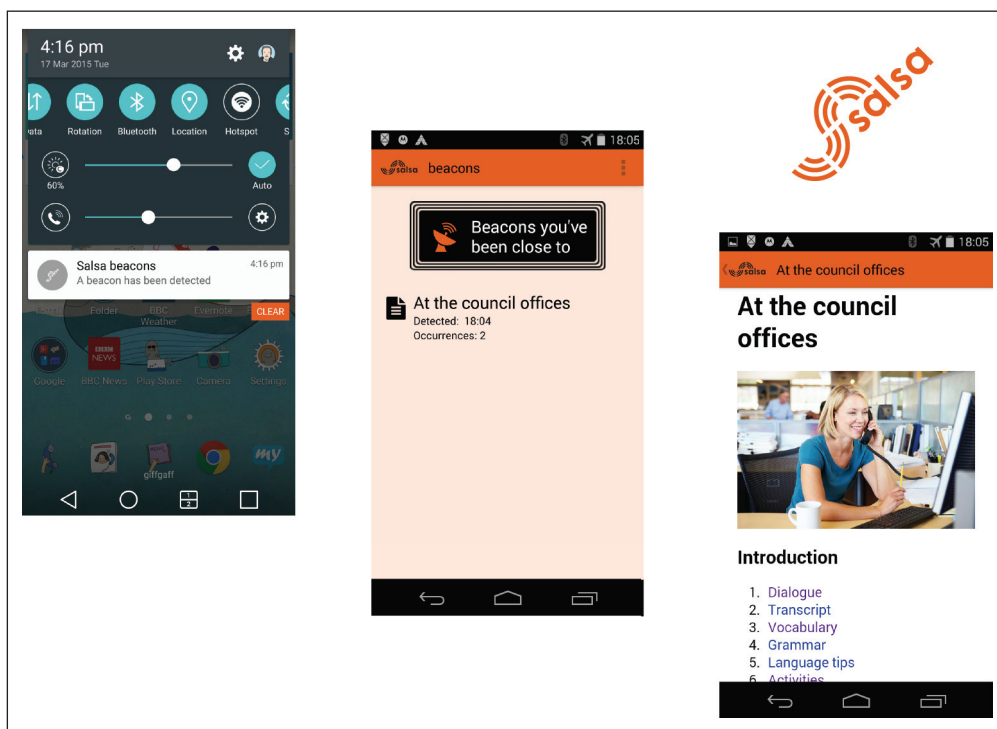


Figure 4: SALSA app interface showing initial notification, short description of nearby beacon, and linked content.

training scenario in the participants' classroom. In other cases, we had locations and scenarios identified as of value (e.g. shopping) but failed to gain permissions from landowners. Local proxies were identified: in the shopping example, we realised that bus stops surrounded the town's central shopping centre and placed beacons there that triggered our shopping scenario.

Field Trial: briefing the participants and carrying out the study

In addition to a map of beacon locations, a paper field diary was created for participants to record their activities. An initial training session was scheduled at a familiar place for participants (e.g. the adult education centre where they took their evening class, or an agreed central public location such as the town centre library). At the 45 minutes training session, held mostly in small groups, participants were briefed on the purpose of the field trial and our expectations: a request to visit as many of the beacons as they were able in a two-week period, and to report their impressions through responses to a set of questions in the field diary. We asked participants to fill in a diary entry each time they interacted with a specific learning activity (so, if they accessed the same scenario at a beacon then later that day at home, to fill in two entries).

We helped participants to either download the app to their phone, or loaned a suitable phone with the app preloaded, and then trained participants by guiding them through accessing their first beacon, a demonstrator which triggered their first learning scenario ("At the pharmacist's"). We showed participants how to navigate through the triggered associated learning content to understand the user interface, and guided them through completing a field diary. Each participant was given a SIM card with credit to enable them to access web linked content (which would require a data link) and to be able to contact the researchers in case of difficulties. Our original intention was that the majority or participants would use their own smartphones to ensure they were familiar with the devices. However, in practice, most of our trial participants either used Apple smartphones or older Android phones that were incompatible with our app, therefore 12 out of 14 participants were issued with a project smartphone. All participants were familiar with smartphones so little phone training was required.

The two-week field trial took place in summer 2015. Fourteen participants completed the trial itself and attended post-trial debrief interviews. All beacons were visited by one or more participants, and all learning activity scenarios tested.

Analysis of Data

Data was drawn from the fourteen participants who participated throughout the SALSA project, and consists of: the initial survey and interview; field diaries, and post-field trial debrief interviews.

The survey and initial interviews were used to identify participants' reasons for learning English (**Table 1**) and pre-existing study behaviours (**Table 2**). Diary entries revealed interactions with beacons and the app content (also in **Table 2**). These gave us profiles of the behaviour

and motivations of all of the participants. Partial transcripts of the audio-recorded pre- and post- field trial interviews were used to identify key points of engagement with the SALSA system and typical examples of study behaviours relating to time, place and activity. Original audio was referred back to where necessary for clarification.

Initial and post-field trial interview data were coded and analysed thematically using the three dimensions from Kukulska-Hulme's (2012) language learning conceptual framework (see **Figure 1**): time; place; and activity. Combining this with a grounded approach (Glaser and Strauss, 1967) an additional theme was identified from the data: social/cultural. In some interviews the researchers had to seek clarification to understand specific points being made, leading to repetition or revisiting conversational points. Hence the unit of analysis is not specific words, but instances where a behaviour or motivation could be identified. The quotes used in this paper are illustrative of key themes identified.

Findings

All participants engaged with the SALSA system, triggering learning activities by visiting beacon locations around Milton Keynes. Our participants lead busy lives, fitting their language learning round family, work, and other commitments so we saw variety in the duration and number of times the system was used. There were differing approaches to incorporating the testing into existing practices: from continuing regular routines, to making additional journeys to seek out specific beacons, to explicit 'treasure hunting' strategies. One participant proudly announced they had 'collected' most of the beacons in one morning's cycle ride around the town with this specific purpose in mind. Despite the confined structure of the app and the trial, this behaviour hints at 'cultural appropriation', (Pachler et al. 2010) with the learner's own learning and daily practices shaping their use of the system.

Participants varied in their prior use and self-identified expertise of using smartphones, but all reported successful usage of the SALSA app and its functionalities, triggering content on the SALSA app in several locations. Because the majority borrowed project smartphones rather than using their own for the field trial, we have to be cautious in what we can draw from the findings about 'natural use' of phones – novelty might have affected the usage.

We found that Kukulska-Hulme's (2012) language learning conceptual framework was a helpful lens through which to view the situation. The three theoretical factors (time, place, activity) elucidated aspects of participant behaviour: we report on this and other key findings below.

Participants' reasons for learning English

Drawn from the initial survey and following semi-structured pre-field trial interview, **Table 1** summarises participants' articulated reasons for wanting to improve their language skills. These were in response to open questions and could be clustered in a number of key themes. Helping with communication for employment purposes, and interacting with family and friends were prominent reasons, but also a desire to interact with the wider society.

Participant	To be able to function in society, for general life	To belong, to fit in socially	To get a better job (or to get a job)	To function in current work	To help family	Other reasons*
01				x		
03	x				x	
04	x					
05	x					x
06	x	x				x
08	x		x		x	
09	x	x				
11	x	x			x	x
16	x		x			
18	x		x			
19						x
21	x	x			x	
22				x	x	x
25	x		x			

Table 1: Participants’ stated reasons for learning English.

*Other reasons:

Pt.05 “just in case”.

Pt.06 inconvenient when travelling: different passport than rest of family (because not UK citizen).

Pt.11 for studying.

Pt.19 to become a UK citizen.

Pt.22 to become bilingual.

Pt.	Initial interview: study habits		Diary: behaviour during field trial			
	Time: planned learning	Time: learning in the moment	Total number of instances of beacon triggers	Instances of only checking app when triggered (not studying in detail)	Instances of studying content when triggered	Instances of studying content later
01	x	x	6	0	6	5
03		x	2	0	2	2
04	x	x	4	0	4	4
05	x	x	7	0	7	6
06		x	4	0	4	0
08	x	x	7	0	2	6
09			8	0	0	8
11	x	x	7	2	1	7
16		x	6	0	6	0
18		x	6	5	1	6
19		x	5	0	2	3
21	x	x	7	0	2	5
22	x	x	7	2	2	4
25	x	x	9	2	5	7

Table 2: Time: study habits and triggered learning.

Time

Kukulka-Hulme suggests that time is a key design parameter for mobile learning systems. The SALSA system was planned to support engagement with learning materials during daily activities around an urban envi-

ronment, so scenarios were consciously designed to be short in total duration and broken down into smaller subsections. Beacons were placed at locations that the research team considered to allow enough time for both initial scanning and extended exploration of SALSA

learning activities. Content was triggered by visiting a location, but could be reviewed later. Our expectation was that much of the engagement with the SALSA learning activities would be carried out at the time of triggering, with some later revision.

From the final interview data, it was noted that time affects learning practices in several ways. **Table 2** summarises pre-existing study habits (as reported in initial interviews) and times when the app content was accessed (from diaries). For example, participant 11 engaged in both the practices of planned learning (learning in advance of an anticipated situation where the learning can be applied) and ‘learning in the moment’ before the field trial. This participant encountered seven beacons. When triggering two of those, the participant only checked the app, but did not study the content. At one other trigger time, some content was studied immediately. The content for all seven beacons was studied later.

While our learning design was intended to promote learning when out and about during everyday routines, some participants deliberately sought out several beacons in a few hours on one day (participants 01, 04, 05, 08, 09, 16), mostly due to lack of free time. Other participants did encounter beacons during their routine, over several days (participants 11, 18, 19, 21).

Secondly, some participants were too busy to concentrate on learning at the moment when beacon was triggered, whether in their usual routine or as part of a special excursion (participants 04, 09, 21). In those cases, they might quickly check the app at the location, but spend more time studying the content later. There is some evidence that triggering incites curiosity, e.g. participant 04 opened up the app at the trigger location, and looked at some sections briefly despite expressing a strong preference for studying at home. Nearly all learners reviewed the content later the same day or at a later date (participant 16 was the exception, only studying the content at the time of triggering).

Participants reported using the app when out and about if the trigger occurred at a moment when they had time, or could stop for a while (e. g. participant 08 at a library; participant 11 at the leisure centre and in the library; participant 19 at train station because they were awaiting a friend). Most had time to study some of the content at a trigger location (participants 01, 03, 05, 06, 08, 11, 16, 18, 19).

Finally, in their English classes, the participants distinguished between planned learning and learning in the moment. Our study has revealed instances of ‘just in time’ learning, preparation for an immediate situation. After the field trial, many participants expressed a preference for preparation before the event, so they could learn some relevant phrases to use with native speakers. Thus, triggering at the location with contextually relevant learning materials is helpful, but not during a conversation. For example, participant 06 went to the bus ticket office, where the app was triggered, unlocking an activity about asking staff for ticket information. Rather than read the app in front of the staff, the participant stepped outside the office, read the app, learned the key

phrases, then went back into the office to use them in conversation.

Place

Kukulska-Hulme’s second key design parameter for mobile language learning is place. A central focus of the SALSA research was the exploration of the role of place: location-triggered learning. Scenarios were specifically related to places, and we explored a range from outdoor public places to indoor private locations, and even mobile (on the bus). Although the app was designed with location-specific content, many participants chose to study elsewhere. As discussed in Section 5.2, time was a major factor in this, so it might more accurately be described as studying ‘else-when’. Because participants did not have time at the moment of triggering, they returned to the content later, almost inevitably at a different location.

“I couldn’t study enough when I was in the art gallery. So I wanted to restudy at my home.”

Participant 25, diary entry, ‘Art gallery’ scenario

Other factors influenced the choice of learning location. Participants expressed preferences for places to learn: somewhere they could relax, quiet, without interruption (e.g. on the bus, in a café, at the library). Attempts to introduce triggered learning disrupted this, whilst some learners realised they could fit in learning in new ways, others preferred to maintain their established strategies. Outdoor spaces were also influenced by weather conditions: participant 06 did not stay at one trigger location due to the rain. Participant 25 was cautious of displaying a smartphone in unknown public places, due to a fear of theft, so avoided engaging with the learning activity at the railway station.

Some participants had established learning practices and routines at specific locations, e.g. reading at home or on the bus, which they continued with the app (participants 09, 18, 19).

“I prefer to learn at home because I need to be concentrating, focus on it, so prefer to do at home more relax. Also, I like to make notes with the words I’m learning.”

Participant 09 debrief

Places where it is socially and culturally acceptable to use phones were preferred learning locations. Inhibition occurred in the presence of other people (whether strangers or friends/family) whom the participant did not wish to offend by using the phone (or specific features). So, the social and cultural aspects of physical places were influential. A cafe might be a suitable place to learn from your phone if you can sit quietly alone, but if you are with a group of friends, it may not work.

“The thing is that if I am at home, I can listen my phone aloud, because otherwise in other cases I need to use my headphones and I don’t have my headphones every time with me.”

Participant 04 debrief

Participant 22 travelled regularly on the bus that had beacons fitted, and encountered the 'On the bus' scenario more than once. These diary entries illustrate the interplay between social and physical factors:

"Had a quick view. I was with a friend on the bus."
Participant 22, diary entry, first instance of
'On the bus' scenario, only checked the app

"Was on the bus so I had plenty of time."
Participant 22, diary entry, second instance of
'On the bus' scenario, studied content

Activity

The third design parameter noted by Kukulska-Hulme is activity. SALSA's approach was to incorporate six different activity types in each learning scenario, to explore which were best received by participants (audio dialogue, written dialogue transcript, vocabulary, grammar, language tips, suggested activities). Our expectation was that brief vocabulary lists would support brief interactions with the content and perhaps encourage deeper engagement, while others might lend themselves to longer engagement, and hence give the research team some indication of locations where these were preferred. In practice, learners used a range of types of activity both at the location and elsewhere, although vocabulary and the audio dialogue tended to be used more in the location and the grammar and more complicated tasks tended to be used at home.

Cultural relevance of learning activities was valued by the participants, especially phrases used by native speakers. Idioms were valued.

"Sometimes when we talk to them in a different way, you know, but that is a very nice example, the way to speak English quietly and politely. Very helpful."

Participant 08 debrief,
talking about the example in the 'out shopping
scenario' with a dialogue about
exchanging goods in a shop

Vocabulary, as expected, was used by many participants when quickly engaging with the content and seen as highly relevant in location.

"I think it's good to learn the vocabulary when you are in the specific place, because like that you can look for it, for example. I think you are more comfortable if you have to go to order something. For example for the cafe, I was like, oh, now if I have to order something I will feel more confident to go there and to ask for something else."

Participant 22 debrief

Participant 04, with a higher level of proficiency, found the vocabulary generally too simple, but still worth exploring for contextually-specific terms: for example, the word "bargain" in the shopping scenario. Grammar was identi-

fied as of value, but not something that would be used at the location. Instead, it was either used when reflecting about a situation, or in preparation for a future situation: learning about location rather than at a location.

Unexpected uses and appropriations of the activities emerged: for example, one participant reported using the transcript associated with the spoken dialogue like a theatrical script with a housemate, to practice speaking from a written script and then listening to the correct pronunciation in the app's dialogue. The audio material was noted as of particular value as it helped with pronunciation, and the local content focus (e.g. place names) was appreciated:

(referring to the different pronunciation of local places Loughton, Broughton and Woughton)
"Absolutely helpful" "Pronunciation in English can be quite embarrass."

Participant 06 debrief

Some participants expressed very specific needs in terms of activities, with the scenarios prompting reflection on how they could be extended in future. For example, the 'Visiting the art gallery' scenario gave examples of a dialogue with two speakers exchanging opinions, but one participant wanted to know how to ask about forthcoming exhibitions and prices; while another participant wished the 'Out shopping' scenario to be extended to specific supermarket situations.

Social/cultural factors

"In any culture in the world, if you don't speak the language, it's like you are blind and deaf."

Participant 06 initial interview

While scenarios had been designed considering both conceptual frameworks and expert advice, some of the scenarios in practice were socially uncomfortable for the learners. One participant explained that initiating a conversation with a stranger was socially awkward (unless for a genuine reason, such as asking directions), so the additional activity that suggested starting a casual conversation with someone in a cafe was inappropriate for her to try.

"It's difficult, for example, the scenario 'At the cafe'. I think the activity is, you have to listen, so OK that's fine, or you have to tell a story to someone. I think it's not so easy to find someone and say 'Oh hello, can I start a conversation with you.' I did not do any activities because it was not easy to manage it."

Participant 22 debrief

Participants preferred to learn in ways that were unobtrusive, and deferred learning until later if social context inhibited use of the phone. For example, playing audio in public was seen as inappropriate.

"I don't want to annoy people with the sound, because I think I'm respectful and for example if I'm in the bus I will not turn on my music. Because

I think people want to do their own stuff on the bus and not just hear my music or hear my English lesson.”

Participant 22 debrief

The participants want to learn, and use mobile phones for learning, but also want to fit in and don't want to stand out. Inappropriate use of mobile phones (shifting attention to these from interpersonal interactions) makes learners stand out as outsiders. This might pose a challenge to MALL in some situations, because people don't want to use it as if they feel socially uncomfortable. Learning design needs to recognise this sensitivity driven by the need to belong.

“I think the most useful is something very simple, but for me very difficult to learn. Just ask[ing] politely [for] information, like in the bus [or] in the shopping. How to ask for return items. Something very normal but I didn't know how to say the words properly, or how to use the expressions.”

Participant 09 debrief

Discussion: A tension between fitting in and learning

The SALSAs project has explored the extent to which a location-triggered mobile language learning system might support language learners in an urban area using smartphones. What became evident was that a key aspect was the broader cultural and social reasons for why people were learning.

Producing learning activities relevant to the learners' wider goals and interests was highly valued: by grounding the scenarios and content in local situations, the app had real cultural and civic value, providing not only language skills but also practical knowledge about the town in which they were living as newly migrated citizens. Our participants were motivated by curiosity to find out what learning activities were associated to places that were relevant to their lives, were engaged by the incentive of being encouraged to explore locations they might not otherwise visit; and valued learning activities that solved broader goals, such as helping them progress towards the UK citizenship test by providing insights into cultural and civic practices. This emphasises the value of a participatory approach to the research, working closely with language learners and their tutors to better understand the context in which they are learning. The requests from participants to extend the content of the different learning activity scenarios once the final versions were made available also highlights the limitation that the app was a single user, standalone experience, and the development of a social aspect (enabling users to exchange ideas and experiences) could be considered for the future.

Social factors play a great factor in how and why people to choose to learn, and we encountered a paradoxical challenge faced by migrant language learners: choosing whether to learn, or to 'fit in'. While our participants identified that the location-triggered SALSAs system could help

achieve their educational goal of improving their mastery of the language of their new home, they also have the cultural goal of fitting in to the host society. Engaging with a smartphone to assist with language skills in particular locations or contexts might enhance communication capabilities, but also be seen as impolite, or mark out the learner as an outsider. While locations were chosen for siting location-triggered learning around the town with several contextual factors taken into consideration (e.g. amenable for a learner to sit for several minutes and engage with a smartphone, sheltered, safe) socio-cultural factors meant that in some cases our learners chose to defer learning from the app until later.

We have identified that social context and wanting to belong are important influences when using mobile phones for language learning. Revisiting Kukulska-Hulme's conceptual framework for designing mobile-supported language learning in informal settings, we have found that socio-cultural factors should be given careful consideration, along with reflective questioning around aspects of time, place, and activity. Kukulska-Hulme recognised the influence of socio-cultural factors, and it might be that this represents an additional category of questions to be asked when planning and designing mobile assisted language learning systems.

We recognise there are limitations in this field trial: it was held over a short duration, so we could only capture learners' impressions of their engagement with location-triggered language learning system rather than the long-term impact on their language skills or changes to practices. Carrying out research which depends on placing technology within an environment has implications for time, cost and maintenance which limit the reach of what is possible; however, we see the SALSAs approach as enabling investigations around location-triggered language learning across urban areas and having the potential to enable larger scale explorations in the future.

Conclusions

The SALSAs project intended to explore the degree to which location-triggered learning systems would enhance current practices, or motivate learners, but we found a tension around learning versus fitting in. Social and cultural factors that influence potential usage of a system must be considered when designing mobile assisted language learning, along with reflections upon time, place, and activities.

The ambitions of the learners hint at SALSAs touching upon contemporary debates around enacting, or performing citizenship and offering a tool to support the development of one's citizen-skills and asserting citizenship (e.g. Isin 2009). 'Performative citizenship' argues that becoming a citizen is not necessarily only legally constructed (e.g. your place of birth, the right to residency, or passing your national citizenship test) but can be enacted, or 'performative', doing what local people do (e.g. following social conventions, using local idioms in conversation, using your phone appropriately in public places).

We initially developed the SALSAs learning activities with language learning curricula in mind – aligned content to CEFR levels, and drew from UK ESOL national curriculum.

However, taking a participatory approach, we further developed the activities with advice from ESOL tutors. They advised us to include scenarios that related to the UK citizenship test, as they were aware many of their students were studying with this aim in mind: this would make the material relevant to the students' broader goals. This advice was highly valuable and did indeed respond not just to our desire to make the content relevant to the explicit goal of the learners (improving their English language skills) but also to the implicit and not articulated goal of some participants (to gain UK citizenship). This aligns with the concept of performative citizenship: these students were not only seeking to gain official formal recognition as UK citizens, but also to embody and enact citizenship through its performance, asking "what would a local person say in this situation?"

Mobile language learning systems, and particularly location-triggered systems, would seem to have the potential to support learning and reflection around citizenship, as much as enhancing language skills. SALSA might be considered in terms of enabling learners to perform better as citizens as a result of valid, contextually relevant content and by encouraging interaction with physical and digital spaces. For many recent migrants there is a desire to 'fit in', thus issues around citizenship, and performing as a citizen, are relevant and could be the focus for further work.

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Competing Interests

The authors have no competing interests to declare.

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