EVALUATING MOBILE LANGUAGE LEARNING: TEACHERS’ PERSPECTIVES

Sobah Abbas Petersen  
Department of Computer and Information Sciences  
Norwegian University of Science and Technology, Trondheim, Norway  
Email: sap@idi.ntnu.no

ABSTRACT

This paper describes the evaluation of a mobile language learning system PALLAS by language teachers. The aim of the paper is to draw attention to the role of teachers in the design of mobile language learning systems and their perspectives on such systems. Three main issues were identified during the evaluation; mobility of the learner versus mobility of the teacher, learner-centred versus teacher-centred and the effort required by teachers and the need for collaboration among teachers. The paper discusses ideas for enhancing the design of PALLAS to address the issues raised by the teachers.

KEYWORDS

Mobile Language Learning, Teacher’s Perspective, Evaluation, Evaluation Framework, Personalisation, Contextualisation

1. INTRODUCTION

Mobile learning systems provide opportunities for learners to pursue their learning outside of their classrooms and when and where they desire. Learners are able to enhance their learning arenas and engage in explorative types of learning. In this paper, we introduce a mobile learning system, PALLAS, which supports personalised and contextualised language learning on mobile devices. PALLAS provides capabilities to support a variety of learning resources including input from the teachers. The motivation for this is to try and bridge and align the formal and the informal learning process. Since teachers can also contribute learning resources as well as follow the activities of the learners via the system log, the teachers are also an important group of users of PALLAS.

Mobile learning systems are well-suited for a learner-centred approach and thus often consider the learners as their users. The views of the teacher do not always play a significant role in the design or evaluation of the systems. For example, MyArtSpace, a mobile learning system to support enquiry-led museum learning, was evaluated by the learners (school children); the role of the teacher was to set an assignment and conduct pre- and post-visit lessons (Sharples et al., 2007). Most mobile language learning systems are designed to serve a very specific purpose such as helping language learners improve their pronunciations, e.g. (Uther et al., 2005) and the role of the teacher is not incorporated in the system. A system that has a lot of similarities with PALLAS is LOCH, language learning outside the classrooms with handhelds, where foreign students in Japan use a PDA to interact with their teacher while they are out in the city interacting with Japanese people (Ogata et al., 2008). The teacher sets assignments to students that require the use of the Japanese language in an everyday situation such as finding the price of a product.

In PALLAS, we have tried to combine tasks and activities set by the teacher with other language learning resources. Thus, the role of the teacher is visible within the system and can play an important role in the learning process. In PALLAS, language teachers are an important group of users. The teachers could guide the learners as well as motivate and stimulate them using different activities and approaches that can be contextualised, using the new capabilities offered by mobile technology.

The evaluation of PALLAS by language teachers highlighted the importance of considering the teachers’ perspectives. The main contribution of this paper is to report the results of the evaluation of the PALLAS
mobile language learning system by language teachers and to discuss the issues that were raised by the teachers. The rest of the paper is organised as follows: Section 2 provides an overview of PALLAS and describes the role of the teacher and the teacher client; Section 3 describes the evaluation of PALLAS and the evaluation framework that was used; Section 4 discusses the evaluation results from the teachers’ perspectives; Section 5 proposes ideas for enhancing the design of PALLAS to support teachers better and Section 5 concludes the paper.

2. THE PALLAS SYSTEM

PALLAS is a mobile language learning system that is designed to enable real life language learning scenarios by providing personalised and contextualised access to learning resources via a mobile device. It is designed to support the enhancement of learning arenas from the classroom to the outside world by providing mobile access to a variety of learning resources. It provides the capability for teachers to add learning resources so that the learners can experience a range of learning activities depending on their learning context. In PALLAS, the learners can choose between an exploratory type of learning, using their own initiative, or follow learning tasks and activities that are set by the teacher. An overview of the PALLAS system and its main users are shown in Figure 1. Teachers are able to provide exercises, tasks and activities that are contextualised as well as context-dependent triggers to students. They provide their input to the system via a personal computer (PC).

Learners have a variety of ways to use PALLAS. They can use a PC to log onto a learner portal web site on the PALLAS server or they can use mobile devices such as mobile phones and PDAs. The learner’s profile is updated every time whichever device the learner uses to access the PALLAS system. The mobile devices can use PALLAS in a number of ways: they can run a custom client application that provides all the functionality, they can use a mobile web browser as a thin client or they can query the system via SMS. If the learner is using a mobile device with the PALLAS mobile client application installed, they could use a GPS unit to automatically obtain location information.

![Figure 1 PALLAS and its users](image)

PALLAS provides access to a variety of other learning resources. It can access learning resources from Content Management Systems (CMS), published by publishing houses which may include text books and learning resources that are published on the internet by other universities. Resources available from third party applications such as dictionaries, thesauri and maps can also be accessed. The diversity of content is designed to support a learner to acquire knowledge as well as how to use it in a variety of situations. We have used the idea of Anchored Instructions (Tretiakov and Kinshuk, 2003), which proposes that the learning activity is designed around an anchor. Analogous to this, we have used the context of the learner as the anchor point for the selection of learning resources.

PALLAS provides personalised and contextualised learning resources, which is believed to be an important aspect of mobile learning, e.g. (Sylwenn et al., 2005) and (Paredes et al., 2005). In our work, we consider personalisation as a part of contextualisation. In PALLAS, contextualisation is achieved using the profile of the learner and environmental parameters. The learner’s profile contains information such as the
learner’s age, skill level, native language, interests and courses taken. Environmental parameters include location, time and day and the mobile device that is used by the learner. The learning resources that are provided to the learner are filtered according to these parameters.

A complete description of the PALLAS system is available from (Markiewicz, 2006). PALLAS is implemented using Microsoft Windows technology and the .NET development platform.

2.1 The Role of the Teacher

In PALLAS, the teacher plays the role of a facilitator of learning, e.g. (Tretiakov and Kinshuk, 2003), that defines and produces learning resources that are relevant to the learners in the various situations that they may desire to learn. This involves taking into consideration the learner’s context and designing the resources accordingly. The role of the teacher in PALLAS is two-fold: facilitator and administrator. As a facilitator of learning, the teacher is able to create learning tasks and exercises (e.g. quizzes) that a learner can perform, obtain (download and make available from PALLAS) learning resources that are available in third party CMS, add context triggers to the tasks, exercises and the content obtained from CMS and link these CMS contents to the tasks and exercises as appropriate. These functions are designed to have a focus on defining appropriate learning resources to the learners.

As an administrator, the teacher is able to add learners so that they can use PALLAS, assign specific tasks and exercises to learners and select which content that should be made available to the different learners. The teacher is also able to check the performance of the learners to obtain an indication of their learning process, for example to see if there is a positive or a negative trend in the learning process and grade learners. These functionalities that can be performed by the teacher are designed towards managing her students and following their learning processes.

2.2 Capabilities: Teacher Client

![Figure 2 Context Trigger: User Interface for the Teacher to create Context Triggers](image)

The PALLAS system is based on a central server architecture, where the server is the main hub of communication, content storage and content distribution. A mobile smart client allows learners to access language learning content anytime and anywhere, via a mobile device and a teacher client allows teachers to
manage their students (learners) and the content that should be made available to them. Using the mobile client, the learner is able to select the activity that she wants to perform such as perform a query, do some tests or exercises or access the dictionary service. The learner is also able to update her profile manually using the mobile client.

All the data provided via the teacher client is stored on the PALLAS server so that it is available to all the client applications. Teachers can add and delete student accounts and have access to their student profiles. They can create tasks to be performed by the students, quizzes and tests for the students, add points of interest with context triggers so that a student is notified when a context fires. Points of interest or context triggers are defined by a teacher to indicate a specific event that is context dependent, see Figure 2. For example, a museum in the city could be a context trigger and if the student is in the vicinity of that museum, the student can be notified about it; or the teacher could define a radio or a TV program at a specific time as a context trigger so that the student is reminded or notified about the program at that specific time.

The teacher can create language learning resources that are either public and can be accessed by other teachers that use PALLAS, or ones that are private to the teacher that created the content. Figure 2 also shows the PALLAS interface for the teacher. The left hand side of the screen provides a menu of capabilities available to the teacher for content creation and the management of her students. The right hand side of the screen shows how the teacher could add a new context trigger and assign it, e.g. to learners of a specific skills level. The menu of capabilities are on display constantly while the right had side of the screen varies according to the menu item chosen by the teacher.

3. EVALUATION

The PALLAS system has been evaluated by three language teachers from their perspective and the results of this evaluation is discussed in the next section. All three teachers teach French to students of different levels of language skills at our university. Two of the teachers teach the French language, including grammar, reading, writing and speaking, to beginner and advanced learners. Both these teachers are familiar with technologies for distance learning and have used such technologies in their classes. The third one teaches French culture and society as well as the language and teaches learners that have basic knowledge of the French language. He does not use technology in his teaching.

The evaluation was conducted as a cognitive walkthrough, where the teachers were asked to read a scenario for the use of PALLAS. Then, they were given an introduction to the system by presenting its objectives and motivations for the work, a detailed description of the module for teachers and the user interface as well as the capabilities available for learners. The system was described using screen shots. The teachers were then interviewed about the system and the questions were based on an evaluation framework that we have developed, which is described in the following subsection. During the interviews, the teachers were posed the questions from the evaluation framework and their answers were noted. It also included discussions for clarification of various aspects and to understand the teachers’ perceptions and attitudes towards the system.

3.1 Evaluation Framework

Mobile learning systems are usually evaluated by their users or mobile learners and the evaluations focus on the usability and usefulness aspects of the system when the systems are in use, e.g. (Sharples et al., 2007), (Naismith et al., 2005) and (Sharples et al., 2004). Avelis et al. highlights that mobile learning resources combine two very different aspects: software and learning (Avellis et al., 2004). Thus, the evaluation of mobile learning systems should take into account these two aspects. They proposed a framework that consists of four evaluation categories: (i) educational features, (ii) technical features, (iii) usability and (iv) content.

For the evaluation of PALLAS by the teachers, the category usability is not applicable as the evaluation did not include the use of the system. However, the other three categories that were proposed by Avelis et al. are relevant for our purposes. We have adapted these main categories and enhanced them by considering sub-questions for each category. In addition to these categories, we have also included attitudinal categories, e.g. (Motiwalla, 2007), to evaluate the teachers’ perception of the system and to understand their general attitude towards the role of the system. Since PALLAS is aimed at providing personalised learning resources, we
have also included some questions that address this aspect. We have used an overview paper (Traxler and Kukulska-Hulme, 2005) and the framework proposed by Avelis et al. (Avellis et al., 2004) as our main sources of input in designing the evaluation framework.

Table 1. Evaluation Framework from a Teacher’s Perspective

<table>
<thead>
<tr>
<th>Evaluation Category</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td>Is the system consistent with your teaching and learning philosophy and approaches? Is the system appropriate to language learners? What level of learners is it most suited to? Does it support learners with different levels of language skills? Does the system increase the flexibility of learning? Is this an effective means of providing personalised learning? Are the context triggers a useful means of making the learner aware of language learning resources? Are the context triggers a useful way to provide contextualised learning material?</td>
</tr>
<tr>
<td><strong>Learning Resources or contents</strong></td>
<td>Do the different learning resources support the topics and activities in the curriculum you teach? Is combination of a variety of learning resources a useful way to support language learning? Are the learning resources presented in a suitable manner? Do you think learning resources can be created easily using the system?</td>
</tr>
<tr>
<td><strong>Access to the system and the specific contents</strong></td>
<td>Does the system, in general, improve the learners’ access to learning resources? Do you think the system provides easy access to learning resources for teachers and for learners?</td>
</tr>
<tr>
<td><strong>Device and technology</strong></td>
<td>Is the web interface for the teacher module a suitable means for teachers to contribute learning resources? Do you see a need for a mobile interface for teachers? If so, in what kinds of situations? Is the mobile device a suitable way to support mobile language learners? Is it desirable that the learners have different access modes – mobile device + PC?</td>
</tr>
<tr>
<td><strong>Usefulness of the system</strong></td>
<td>How would you rate the usefulness of the system for teachers and learners? (scale)</td>
</tr>
<tr>
<td><strong>Added Value</strong></td>
<td>How much value does the system add to your current teaching practice? (scale)</td>
</tr>
<tr>
<td><strong>Strengths and weaknesses</strong></td>
<td>In your opinion, what are the main strengths and weaknesses of the system?</td>
</tr>
<tr>
<td><strong>User’s (Teacher’s) View</strong></td>
<td>How would you use a system such as PALLAS in your language teaching?</td>
</tr>
</tbody>
</table>

4. EVALUATION RESULTS: TEACHERS’ PERSPECTIVES

The evaluation given by all three teachers was very positive with very few negative comments. This may be due to the fact that it is easier to be positive about a system while evaluating concepts and the design. The teachers may have been able to identify more weaknesses of the system if they had been using the system. Having said that, the teachers were quite critical in their evaluation and it was possible to identify weaknesses and possible extensions or improvements to the system. The main criticism of the system was the lack of support for dialogue between the learners and the teacher and among the learners. One teacher said that the system was for passive learners as it did not provide content and activities to make them speak the language. The rest of this section will discuss three issues that we identified during the evaluation that highlight how mobile learning systems may be sometimes perceived by teachers. These issues will also influence the design of mobile learning systems.

4.1 Mobility of learner vs. mobility of teacher

All three teachers agreed that access to PALLAS by learners via a mobile device was an extension of learning beyond the boundaries of the classroom and that it was desirable and beneficial for the learners to
have a mobile interface. However, all three agreed that a mobile interface was not desirable for the teachers. They all preferred the PC interface for a number of reasons, the most obvious of which was the screen size and the keyboard. When asked if they see any need for a mobile interface for teachers, two of the teachers did not see a need for that. The third said that she would use it if she had to and only in the case where she did not have access to a PC and as an emergency solution. Two teachers pointed out that they were paid to work at a specific time and place, i.e. in their offices, during working hours and using their PCs. Unlike the PC, most people consider their mobile devices as a personal device for personal use (Vavoula and Sharples, 2008). If the teachers are required to use their mobile devices for accessing or receiving notifications from PALLAS, it blurs the boundary between their work and personal life. The teachers would feel pressured to work in their own time and at home. They expressed that the PC interface helps to distinguish between work and life.

One of the arguments for providing teachers access to mobile learning systems via mobile devices is to facilitate interaction with the teacher anytime, anywhere. For example, if a student would like to inform the teacher about an interesting resource or ask a query, mobile access enhances the ability of the teacher to provide more timely feedback to the learners. Could this mismatch in the desirability for mobility support for learners and teachers raise false expectations among learners? Could it lead to disappointment and frustrations among learners?

4.2 Learner-centred vs. teacher-centred

The issue of control over the learners was raised by one of the teachers. This can be interpreted as the possibility for the teacher to be able to follow up or review what activities the learners had been involved in. PALLAS does not provide a direct means of following up the students’ activities. Instead, it uses context triggers to stimulate, motivate, encourage and guide the learners. The teachers felt that depending on the age group of the learners, the need for control or follow-up of the learners’ activities will vary. For example, school children will require more follow up than university students or adult learners and that it was important to try and reach a balance between control and flexibility in the learning process. This brings up the issue of freedom of learning (anytime, anywhere) versus being taught and teacher control. In (Vavoula and Sharples, 2008), the authors map learning contexts from classroom to mobile situations on a “vagueness of context” scale and capturing the learning that occurs across this scale was identified as a challenge in evaluating mobile learning. The diversity of learning resources supported by PALLAS spans this scale and this is seen as a challenge for the teachers as well. Mobile learning systems such as PALLAS moves the control of the learning process from the teacher to the learners. A learner-centred approach, where the focus is on supporting the needs of the learner at anytime tends towards more freedom in learning whereas a teacher-centred approach is more about teaching something. While our classroom teachers appreciate the benefits that PALLAS adds to language learning, PALLAS challenges them to think of a more learner-centred approach.

The teachers expressed a desire to see what and how much learning resources a learner has accessed via PALLAS. They were interested in seeing the history of the learner’s activities, which is currently supported by the system. PALLAS opens up vast and varied opportunities for learners. Different learners do different things and use different amounts of time on the system. The teachers would like to have an indication of how much is done by each learner using PALLAS. They believed that it was important to be able to judge how much PALLAS actually contributes to the learning process. While this is desirable from a teacher’s perspective, assessing the contribution of any learning support is a continuing challenge (Vavoula and Sharples, 2008).

4.3 Effort by teachers leads to collaboration

The teachers saw the variety of learning resources supported by PALLAS as a huge potential to widen the learning arena for the learners. However, one of the teachers pointed out that a lot of effort was also required by the teacher to ensure that the students had access to adequate resources and activities before it becomes useful for the learners. The ability to create tasks, quizzes and exercises as well as linking them to third party resources requires considerable effort from the teachers. There is also a need to find the right balance of learning resources that are provided by the teacher and obtained from other sources such as from CMS, other universities and third party learning environments.
One teacher proposed collaboration among the teachers to minimise the work load. PALLAS supports sharing of the resources that are added by teachers among other teachers to encourage collaboration among teachers. Such a system opens up opportunities for collaboration not only for the learners, but also for teachers. Some of the benefits that teachers could experience from collaboration are shared workload, reflection, experience sharing and feeling connected pedagogically and intellectually with their peers (Hug and Möller, 2005).

The reason for feeling that a huge amount of resources such as tasks and exercises must be provided by the teacher rather than mostly links to existing learning resources may be leaning towards a teacher-centred approach. So, finding the right balance of the types of learning resources are connected with the pedagogic approach for the system.

5. ENHANCING THE DESIGN

This section proposes some ideas for improving the design of mobile language learning systems such as PALLAS, which combines learning from the teacher as well as other sources. For supporting language learning, it is important to support audio resources such that the learner could submit an audio file that the teacher could comment on. In addition to quizzes and exercises, the teacher should be able to provide activities that use audio, e.g. an exercise to improve the pronunciation and the possibility to provide audio feedback for the learner. Note that the current system supports multimedia files as third party resources. So, access to phonetic and pronunciation dictionaries can be provided. Ideas from podcasting could also be incorporated to provide improved support for audio resources, e.g. (Munro, 2005).

As the teachers do not desire to have mobile access to the system, it is hard to facilitate that a student can interact with the teacher anytime and obtain timely feedback. A capability that will help teachers follow up their students better would be to notify the teachers when they log into PALLAS, if there are any messages or requests from their students. Of course, the notification capability can be extended to the teacher’s mobile device if desired, so that the teacher does not have to be logged into PALLAS to be made aware. Ideas from awareness system research can provide valuable input here. Such systems help people to maintain awareness of each other, where awareness has been described as an understanding of others’ activities, thus facilitating informal communication (Dourish and Bellotti, 1992). The system could also support teachers in selecting their working hours so that it only sends notifications to their mobile devices when desired by the teacher. This allows a dynamic, proactive behaviour by the system while respecting the teacher’s privacy.

Support for collaboration among the teachers can be enhanced by adding a recommender system based on teacher’s profiles, e.g. their interests, activities and experiences. Recommender systems fill the role of the social process of recommendations by people (Resnick and Varian, 1997). The system could recommend other teachers that may be interested in collaboration or that may be interesting to collaborate with.

As the resources in the system increase, it will become harder for the teachers to keep a track of existing resources. Capabilities to support easier search of existing resources as well as means to avoid duplication of resources must be provided.

6. CONCLUSION

This paper describes the evaluation of a mobile language learning system, PALLAS, by language teachers. The aim of the paper is to draw attention to the role of teachers in the design of mobile learning systems and their perspectives on such systems. Three main issues were identified during the evaluation; mobility of the learner versus mobility of the teacher, learner-centred versus teacher-centred and the effort required by teachers and the need for collaboration among teachers. These issues are discussed and ideas for enhancing the design are proposed. These ideas focus on capabilities that would provide the teachers better support for collaboration in the process of adding learning resources to PALLAS. It also considers how teachers could follow their students better at any time, while maintaining their privacy and a distinction between their work and private life. It is important for mobile language learning systems designed to complement classroom learning to consider the perspectives of teachers. This will ensure that the systems are designed to allow for
the appropriate balance of the learning model and learning resources and the learners as well as teachers, if they are to be users of the system, have the flexibility that they desire in the learning process.

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