A RESEARCH DESIGN
IN TECHNOLOGY-ENHANCED SCAFFOLDING
IN LANGUAGE TEACHING:
WHAT LESSONLAMS CAN OFFER AT THE INTERFACE OF
EDUCATIONAL AND LANGUAGE LEARNING RESEARCH

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Abstract

This chapter aims to provide a language learning design principle using the Learning Activity Management System (LAMS) as a platform in authentic classroom situations. A LessonLAMS sequence has been developed for this research project and was designed using a 'Dynamic Scaffolding Technique' within the learner's zone of proximal development (ZPD) (Vygotsky & Cole, 1978). Participants for this study were South East Queensland secondary students who are studying Korean as a foreign language as an elective subject. The learning design of the LessonLAMS sequence was incorporated in classroom instruction with the research focus on technology-enhanced learning tasks, which was designed and implemented in the foreign language classroom at the participating school.

Keywords: technology enhanced language learning, Korean as a Foreign Language, LAMS, LessonLAMS, computer assisted language learning

Introduction

In recent years, a Learning Activity Management System (LAMS) has been developed by researchers at Macquarie University to assist in teaching online content. It can be defined as an online web-based system for creating, managing and delivering sequences of collaborative learning activities (Cameron, 2007). This research uses a more recently developed version of LAMS to teach secondary students online. This newly developed program is called LessonLAMS and is able to implement features of effective language learning design using various multimedia technologies. It has the potential to enrich language education by creating motivational and communicative lessons that can be utilised to provide diverse resources which are at the disposal of teachers (Bower, 2010; Brenes Castano, Contero Urgal, Rodrigez

Gomez, Gomez Ruiz, & Gallego, 2011). LessonLAMS represents an authentic learning management system which enables teachers and students to use media that is appropriate to the specific elements of their language learning (Otto & Pusack, 2009). This means that LessonLAMS is a very diverse system or tool that has the potential to enhance student learning at different levels.

This project will investigate how learners complete assigned and carefully sequenced learning activities within their zone of proximal development by using the feedback and help system within LessonLAMS. This study will use the Education Queensland curriculum and will be based on the traditional course syllabus and topics in Korean as a foreign language for secondary college students in Queensland, Australia. The learning design is carefully created using LessonLAMS for the target learners in order to gain an insight into learner-driven practices when they are accessing available scaffolding.

The focus of this study is the scaffolding of language learning that LAMS is able to provide through its use. The study particularly engages with learner-driven activities to support students' individual zones of proximal development (ZPD) (Vygotsky & Cole, 1978) in the pursuit of learning Korean as a Foreign Language. ZPD has been defined in detail below, but in brief it is a well-known Vygotskian method of learner support that involves the learner working with some assistance until they are able to work at that level without assistance. The sequenced tasks within LessonLAMS are carefully considered to provide maximum opportunities to approach and extend individual ZPDs (Willis & Willis, 2007), and in the case presented here creating technology enhanced dynamic scaffolding. The idea of this is to optimise the students' learning capabilities through the use of the LAMS system.

Teaching Less Commonly Taught Languages

It is important to provide adequate and appropriate learning materials for both language teachers and language learners (Richards, 2001). However, in less commonly taught languages (LCTLs), such as Korean, teachers often encounter difficulties with language materials and teaching methods. For example, due to limited research and the lack of shared practical experience, selecting appropriate methods and corresponding materials is difficult for both less experienced teachers and even for native speakers and experienced teachers of the language. While computers and the Internet provide new possibilities to explore teaching methods in LCTLs, tailoring electronic resources such as web-based materials for students is very time-consuming and inefficient, and utilising these authentic resources can make it difficult for teachers to manage the needs of the beginning learner (Hémard & Cushion,

2002). As lessons also need to be planned for the specific learning goal and objectives of the language program, relying only on ready-made language learning materials in LCTLs is often impossible (Donaldson & Haggstrom, 2005).

Moreover, the lack of popularity of the various LCTLs means that both traditional learning materials and electronically designed resources are often based on proven activities for English as a second language, instead of being specifically designed for the best delivery of a particular LCTL However, LCTLs taught in Australia are frequently different from English, for example using a variety of Asian scripts and featuring grammar structures quite different from familiar English or European language structures. A language like the Korean language differs significantly from English in such aspects as sentence structure and morphology (word structure). As stated above, the number of learning materials for LCTLs designed for the target language culture and linguistics structure is very limited (Warschauer, 2005). In addition, even if materials are designed based on targeting LCTLs' culture or linguistic differences, these are usually not suitable for beginning Korean language learners' needs (Debski, 1999). LessonLAMS therefore potentially offers an opportunity to create more suitably adapted and scaffolded materials for beginning learners of Korean as a Foreign Language and other LCTLs.

The Zone of Proximal Development (ZPD)

The zone of proximal development (ZPD) can be defined as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky & Cole, 1978, p. 86). The definition was created with child development in mind, and ZPD has now become a well-known concept of Vygotskian socio-cultural psychology. Later Wertsch (1984) clarified the theoretical construct, including terms such as situation definition, inter-subjectivity, and semiotic mediation which will be relevant for this study. The concept of situation definition is relevant here, because it describes the need to synchronise what the task designer intends, and how the student defines the task. If semiotic mediation between the task designer and the student is successful, that is if the student defines the language and symbolism used in the task in the way that it was intended, inter-subjectivity is reached. Wells (1999), further, summarised those dialogic characteristics of ZPD expansion that can be applied in any situation in which individuals are developing mastery of a practice, or understanding a topic, while participating in any activity. Kinginger (2002) later discussed three different interpretations of ZPD that are the research

focus of American language teaching contexts, called 'skill,' 'scaffolding' and 'meta-linguistic or collaborative dialogue,' which will be explored in more detail with regards to the current research project.

Luckin (2001) emphasises that ZPD is useful for theoretically constructing an educational software design. Accordingly, a learning design is proposed for this study with flexible scaffolding that is either self-maintaining or maintained with students' expected input. This means that LAMS sequences will provide a variety of scaffolding for students depending on their actual answers while they are completing the learning sequence. From a software or system design perspective, such an approach focuses on learners to develop capabilities that they first experience in assisted or collaborative learning situations within their ZPD. This research project will focus on the actual use of feedback and scaffolding support structures within LessonsLAMS to illuminate how learners of Korean negotiate their ZPD within the LessonLAMS possibilities.

Scaffolding students with their learning

Different strategies can be used to support teaching. One of these that is increasingly and commonly used is scaffolding. On example is that the computer can act as a scaffold through a software program that tutors and guides the learner toward achieving specific outcomes (Wood & Wood, 1996). Englert, Manalo and Zhao (2004) suggest that technology can hasten the beginning of the learning process by enabling more sophisticated levels of performance through instrument assistance. This enables students to schedule, organize and employ cognate mental functions before they can accomplish those activities independently. Puntambekar and Hubscher (2005) report that a technology tool design based on the multiple levels of the students' understanding found in a classroom would enhance and catalyse the process of scaffolding students towards their ZPD. Our research is attempting to find out how these concepts apply to the feedback and scaffolding structures in LessonLAMS, in particular in a non-Latin script based sequence of lessons for beginning learners of Korean.

The learning and teaching activities for this study will use the literal interpretation of 'scaffolding' which is a temporary framework used to support people or materials in construction. Once the structure is successfully completed, the scaffolding is gradually removed. This term was used in the field of education by Wood, Bruner and Ross (1976) in considering the initial instructional relationship between an adult (expert) and a child (less expert), in particular in the area of skill acquisition and problem solving. Even though the

term 'scaffolding' is vague, the metaphor has been expanded and applied to educational research and practice in numerous ways.

For the proposed study it means that LessonLams provides scaffolding through its feedback and help structures by the use of the branching tool. Importantly, the 'scaffold' can gradually be reduced in use when students become more confident in their understanding of Korean language structures.

LAMS and Learning Design

A learning design is defined as "the application of learning design knowledge when developing a concrete unit of learning, e.g. a course, a lesson, a curriculum, a learning event" (Koper, 2005, p. 3). Under this definition, the term 'learning design' is used to indicate all the elements of learning activities a teacher can design and allocate, for example, learning tasks, questions, group formation, and learning materials to be used by the students (Kordaki, 2011). Furthermore, since technology is involved in classroom instruction in this project, learning design could be alternatively used in a digitalised lesson plan from the teacher's perspective (Campbell & Cameron, 2009) as well.

One tool that has been suggested as a tool for creating learning design as an authoring tool is through the use of LAMS. This is also a pedagogical design tool as well as a motivating tool for learners in a technology enhanced teaching and learning environment. An example of this is in language teaching and learning when using or selecting an authoring tool or system, Otto and Pusack (2009) indicate that good technology-enhanced language learning (TELL) authoring tools enable teachers to produce software (materials and tasks) specific to the needs of language teaching and learning, meeting high standards of suitability, interactivity, and used of media for all individual students in a classroom. According to some research findings, the user interface of LAMS functions not only for teachers but also for learners as a motivation tool (Katsenos & Papadakis, 2011; Lee & Hwang, 2007). These motivating aspects together with the feedback and scaffolding tools, such as the branching tool will be at the centre of this investigation into students' self-directed use of LessonLAMS.

Methodology

This project aims to introduce secondary students who are currently learning Korean as a foreign language to the Internet tool called LessonLAMS. It aims to investigate how this technology tool can enhance their scaffolded learning and ZPD extension.

This study uses a case study approach which allowed a detailed examination of a single individual or a single discrete social unit (Ary, Jacobs, & Razavieh, 1990). Yin defines a case study as an investigation of "a contemporary phenomenon within its real life context" (Yin, 2003, p. 13). By using case study methodology to focus "on process rather than outcome, on discovery rather than confirmation" (Burns, 2000, p. 460), this study aimed to gain an in-depth understanding of the use of LessonLAMS to provide a scaffold of students' learning. Case studies allow readers to judge the implications of the study for themselves as it is possible to recognise the complexity and "embeddedness of social truths" (Adelman, Jenkins, & Kemmis, 1983, p. 8) which other forms of research may not necessarily reveal. This methodology was also chosen because case studies "observe effects in real contexts" (Cohen, Manion, & Morrison, 2000, p. 181), with contexts being both unique and dynamic (Cohen et al., 2000).

The participants for this study are secondary students between 12 and 16 years old, who are undertaking the Korean program at a regional secondary school in Terms 3 and 4 of 2012. The sample size is between 20 and 30 and is not gender based. The year level varies as the students are in years 8 to 12. It is proposed data will be collected each week during the two school terms for approximately 20 weeks. At least one LAMS sequence will be completed each week by the students involved in the study with the researcher asking some open ended questions at the end of each sequence about the scaffolding provided to the students. This data will later be coded in NVivo for recurring themes.

A pre and post survey will also be conducted as part of this research. The survey will include both open-ended and closed survey questions and it will be used to collect background information initially and students' thoughts and the changes made through the use of the scaffolding. The survey will comprise multiple choice as well as multiple answer, short answer, opinion scale and yes/no structures. The questions will also cover limited and relevant personal information, participants' language background, and basic computer skills and motivation towards language learning using ICT. The survey will consist of short statement of the purpose as well as approximately 20 questions based on the use of help and feedback structures in the LessonLAMS.

It is also possible for data to be collected from the left hand side of the 'supportive activities' as shown in Figure 1. These supportive activities will be designed, based on both language learning theories of gradually increasing input in the second language and using the dynamic scaffolding technique by assigning learning tasks and activities between current level and developmental level of learners' ZPD. The data collection is focused on which

learning activities are mostly accessed by whom, when, and why. In addition, the learners' results from the sequence will be collected, to give an additional insight into learning processes. The LessonLAMS sequence will have two levels of assessment in order to provide scaffolding tasks to facilitate the main tasks for effective language learning.
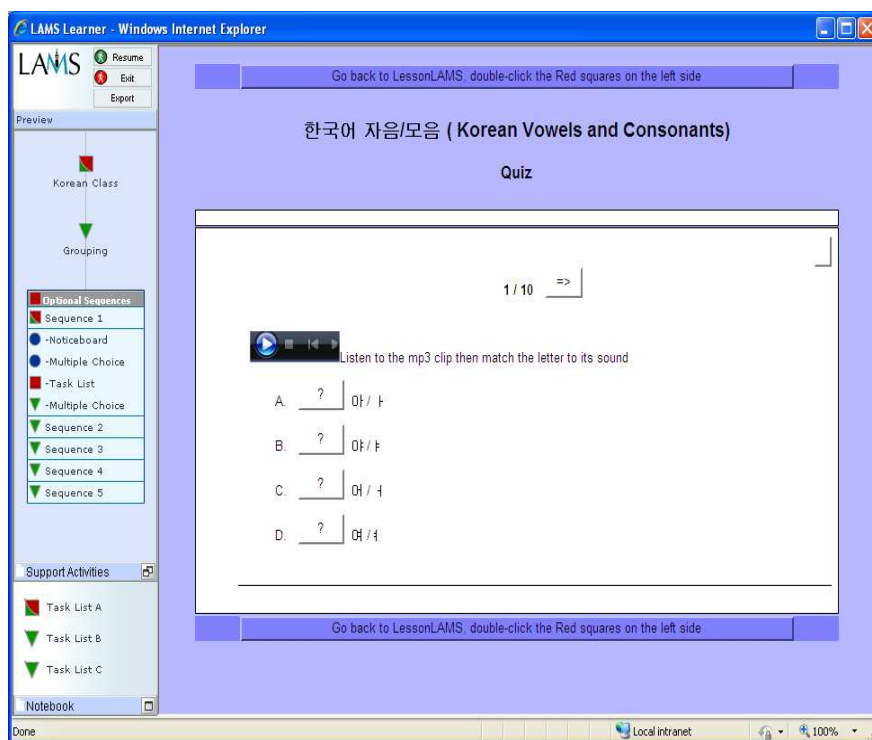

Figure 1. Learner's view of LessonLAMS Sequences.

Focus group interviews will also be conducted at the school. The focus group members will be selected randomly at the end of each term and they will be selected from students whose parents have given permission for the students to participate in the study. The group will consist of approximately five students who completed the LessonLAMS tasks. This group interview will take 30 to 40 minutes at the end of each term with the interview content being recorded. The purpose of the focus group interviews is to elicit student self-reporting on accessing the scaffolding and feedback tools in LessonLAMS.

Using LessonLAMS

Data will be collected during two school terms and lessons will be conducted using LessonLAMS each week. Each lesson will be fifty minutes long and the number of classes per week will vary depending on the year level. The LessonLAMS is designed to last for

thirty minutes each week during the term. The topic and learning objectives are related to the Term 3 and 4 syllabi for each respective year levels. There is no specific classroom book but the cohort uses a variety of materials including a particular web-site and multimedia resources (e.g. mp3 files).
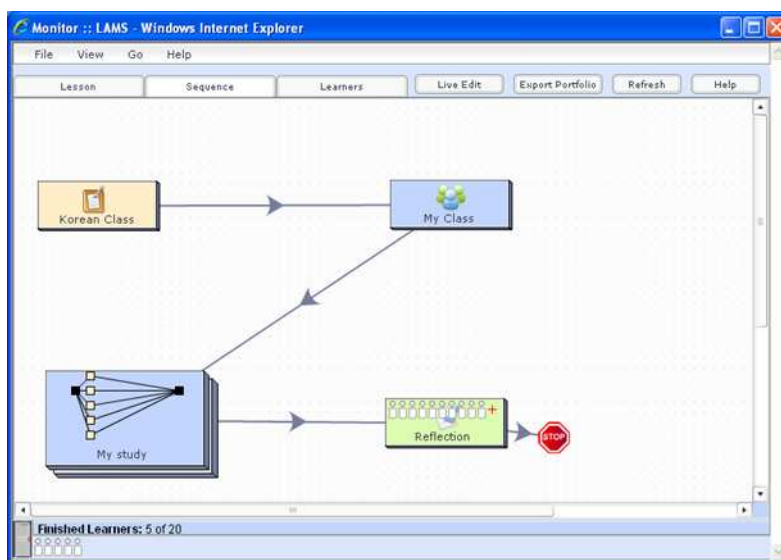

Figure 2. Teacher's monitoring system of sequences.

As is shown in Figure 2, the teacher can observe all learners in the learning sequence process. This example sequence shows the use of the branching tool. In the study, this tool will provide the correct scaffolding that the students require. Students will complete whole class activities at the beginning of the LAMS sequence and when they reach the branching tool they will be asked a question and based on their answer they will then do the next set of individual activities. These activities will therefore provide an amount of scaffolding based on individual student responses, taking into account their individual ZPDs. The teacher will need to make sure that contextual and semiotic understanding is successful for both the task design and the level of Korean used, so that inter-subjectivity is reached when students complete these sequences. This needs to be done in dialogue with the students and by activating their metalinguistic and collaborative awareness.

Data analysis

This research project uses qualitative research methodology and the data will be analysed by "examining, categorising, tabulating, [and] testing" (Yin, 2003, p. 109) the data. All of the

interview data will be transcribed as well as responses from the open ended survey data and other available qualitative data from Lesson LAMS. After transcription there will be a preliminary exploration of the data which allows the researchers to become familiar with them and then create memos containing any ideas that were formulated (Creswell, 2002).

This data will be placed into an analysis software program called NVivo. This program will facilitate organising and managing the data and provide a searching tool (Creswell, 2002) for this research. The data will then be coded, which is "the process of segmenting and labelling text to form descriptions and broad themes in the data" (Creswell, 2002, p. 266). It will also allow the researchers to manage the text data that may be unstructured and assist with the "processes of indexing, searching, and theorising" (Creswell, 2005, p. 237) and will help the researchers to "examine features and relationships in texts" (Gibbs, 2002, p. 11).

New ideas emerging from the data will be noted. The data will then be looked at in terms of answering the research questions with themes being developed by looking at the codes that the students most frequently discussed (Creswell, 2005). These themes will be refined during the analysis of the data with the data being linked by "recognising substantive rather than formal relations between things" (Dey, 1998, p. 152).

Conclusions

As can be seen from the proposed study above, LessonLAMS is a promising tool for both teaching online and research into self-directed second language learning techniques. Through scaffolding and feedback, LessonLAMS has the potential to cater for an approximation and extension of ZPD, enabling learners to move forward and move beyond their current Korean language abilities. While careful planning of the learning tasks is required of the classroom teacher, the actual practice of extending knowledge and use of Korean can be achieved by individual students using LessonLAMS independently when the right levels of contextual understanding and linguistic skills are provided.

By using LessonLAMS for languages less frequently taught in Australian settings, this enables classroom teachers to provide their students with relevant and suitably adapted learning opportunities beyond set textbooks or other developed material for more frequently taught languages. Furthermore, the manipulation of individual ZPD through the use of scaffolding and feedback tools that are currently available in LessonLAMS provides a powerful teaching tool that can potentially be used in various ways and in other curriculum areas in the future. It is also a promising addition to all language learning classroom settings,

and that requires more explorations and analyses of its applications in a variety of subjects and settings.

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